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MMM INTERMAG 2025

# 2025 Joint MMM-Intermag Conference

# PROGRAM BOOK

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## Session TU
# TUTORIAL: SYMMETRY IN MAGNETISM

Cindi Dennis, Chair
National Institute of Standards and Technology, Gaithersburg, MD, United States

**2:30**

**Welcome & Introductions**

**2:35**

**TU-01**. **New Prospects of Symmetry in Magnetotransport Studies.** ***(Invited)*** *H. Chen*[1] *1. Colorado State University, Fort Collins, CO, United States*

**3:20**

**TU-02**. **How to Synthesize Magnetic Materials in Various Forms of Powder and Bulk.** ***(Invited)*** *Y. Hirayama*[1] *1. Innovative Functional Materials Research Institute, National Institute of Advanced Industrial Science and Technology (AIST), Nagoya, Japan*

**4:05**

**TU-03**. **Frustration in Magnetism: Misery Loves Company.** ***(Invited)*** *N. Leo*[1] *1. Loughborough University, Loughborough, United Kingdom*



## Session AA
# SPIN CALORITRONIC METROLOGY

Joseph Barker, Chair
University of Leeds, Leeds, United Kingdom

**8:30**

**AA-01**. **Nernst effect in topologically and magnetically non-trivial materials.** ***(Invited)*** *H. Reichlova*[1] *1. Institute of Physics, Czech Academy of Sciences, Praha, Czechia*

**9:06**

**AA-02**. **Lock-in Thermography and Thermoreflectance for Imaging and Revealing Thermal Responses in Spin Caloritonic Structures.** ***(Invited)*** *R. Iguchi*[1] *1. National Institute for Materials Science, Tsukuba, Japan*

**9:42**

**AA-03**. **Local Measurement of Thermal Spin Dynamics via NV Center Magnetometry.** ***(Invited)*** *N. Maksimovic*[1], R. Xue[1], P. Dolgirev[1], L. Xia[2], R. Kitagawa[3], A. Müller[4], F. Machado[5,1], D. Klein[2,6], D. MacNeill[2], K. Watanabe[7], T. Taniguchi[7], P. Jarillo-Herrero[2], M. Lukin[1], E. Demler[4] and A. Yacoby[1] *1. Harvard University, Cambridge, MA, United States; 2. MIT, Cambridge, MA, United States; 3. Tokyo Institute of Technology, Tokyo, Japan; 4. ETH Zurich, Zurich, Switzerland; 5. Harvard-Smithsonian Center for Astrophysics, Cambridge, MA, United States; 6. Weizmann Institute of Science, Rehovot, Israel; 7. National Institute for Materials Science, Tsukuba, Japan*

**10:18**

**Break**

**10:45**

**AA-04**. **Driving, transporting and sensing orbital currents at terahertz rates.** ***(Invited)*** *T. Seifert*[1] *1. Free University of Berlin, Berlin, Germany*

**11:21**

**AA-05**. **Tunnel magneto-Seebeck effect and thermal conductivity of tunnel barriers.** ***(Invited)*** *T. Kuschel*[1] *1. Faculty of Physics, Bielefeld University, Bielefeld, Germany*

TUESDAY MORNING 8:30

CELESTIN E

## Session AB
## ULTRAFAST SPIN-PHONON DYNAMICS

Oksana Chubykalo-Fesenko, Co-Chair
Instituto de Ciencia de Materiales de Madrid, CSIC, Madrid, Spain
Carl Davies, Co-Chair
Radboud University, Nijmegen, Netherlands

**8:30**

**AB-01**. **Ultrafast Phononic Switching of Magnetic Order.** ***(Invited)*** *A. Kirilyuk*[1] *1. FELIX Laboratory, Nijmegen, Netherlands*

**9:06**

**AB-02**. **Polarized phonon-spin conversion in rare-earth and 2D materials.** ***(Invited)*** *H. Zhu*[1] *1. Rice University, Houston, TX, United States*

**9:42**

**AB-03**. **Magnetophononics and the Chiral Phonon Misnomer.** ***(Invited)*** *R. Merlin*[1] *1. Physics, University of Michigan, Ann Arbor, MI, United States*

**10:18**

**Break**

**10:18**

**AB-04**. **Magnon and Phonon Dynamics on Ultrafast Timescales.** ***(Invited)*** *U. Staub*[1] *1. Swiss Light Source, Paul Scherrer Institute, Villigen, Switzerland*

**10:54**

**AB-05**. **Role of polarized phonons during ultrafast demagnetization.** ***(Invited)*** *U. Nowak*[1] *1. Department of Physics, University of Konstanz, Konstanz, Germany*

TUESDAY MORNING 8:30

CELESTIN A

## Session AC
## SPIN-ORBITRONICS I: ANGULAR MOMENTUM COMPENSATION, OUT-OF-PLAN TORQUES AND ENERGY EFFICIENT SWITCHING

Kai Litzius, Chair
University of Augsburg, Augsburg, Germany

**8:30**

**AC-01**. **Room temperature energy-efficient spin-orbit torque switching in two-dimensional van der Waals $Fe_3GeTe_2$ induced by topological insulators.** ***(Invited)*** *J. Zhang*[1], W. Xie[1] and T. Nie[1] *1. Beihang University, Beijing, China*

**9:06**

**AC-02**. **Electrical mutual switching in $Mn_3Sn$/Mo/CoFeB heterostructure.** *J. Yoon*[1], Y. Takeuchi[1,2], R. Takechi[1], J. Han[1], T. Uchimura[1], Y. Yamane[1], S. Kanai[1,4,5], J. Ieda[3], H. Ohno[1] and S. Fukami[1,6] *1. Tohoku University, Sendai, Japan; 2. National Institute for Materials Science, Tsukuba, Japan; 3. Japan Atomic Energy Agency, Tokai, Japan; 4. Japan Science and Technology Agency, Kawaguchi, Japan; 5. National Institute for Quantum Science and Technology, Takasaki, Japan; 6. Inamori Research Institute for Science, Kyoto, Japan*

**9:18**

**AC-03**. **Alloying Rare Earth Nitrides for Angular Momentum Compensation.** *E. Joshy*[1,2], J. Miller[1] and S. Granville[1,2] *1. Robinson Research Institute, Victoria University of Wellington, Wellington, New Zealand; 2. The MacDiarmid Institute for Advanced Materials and Nanotechnology, Wellington, New Zealand*

**9:30**

**AC-04**. **Optimization of orbital torques in ferrimagnets and relationship with Gilbert damping.** S. Ding[1], W. Legrand[1], H. Wang[1], M. Kang[1], P. Noël[1] and *P. Gambardella*[1] *1. Department of Materials, Zurich, Switzerland*

**AC-05**. **Collinear spin current induced by artificial modulation of interfacial symmetry.** *Z. Li*[1] and Z. Zhang[1] *1. Nanjing University, Nanjing, China*

Now virtual

**9:42**

**AC-06**. **Magnetization dynamics in beyond room temperature van der Waals magnet.** *H. Bangar*[1], L. Pandey[1], B. Zhao[1] and S.P. Dash[1] *1. Department of Microelectronic and Nanotechnology, Chalmers University of Technology, Göteborg, Sweden*

**9:54**

**AC-07**. **Temperature dependence of spin-orbit torque in $L1_2$-ordered $Mn_3Pt$.** *C. Zhang*[1], Z. Tang[1], L. Yu[1], M. Al-Mahdawi[2] and M. Oogane[1,2] *1. Department of Applied Physics, Tohoku University, Sendai, Japan; 2. Center for Science and Innovation in Spintronics, Tohoku University, Sendai, Japan*

**10:06**

**Break**

**10:45**

**AC-08**. **Giant Spin Hall Effect with Multi-Directional Spin Components in $Ni_4W$.** *Y. Yang*[1], S. Lee[1], Y. Chen[1], J. Qi[1], D. Sousa[1], M. Odlyzko[1], J. Garcia-Barriocanal[1], G. Yu[1], G. Haugstad[1], Y. Fan[1], Y. Huang[1], D. Lyu[1], Z. Cresswell[1], T. Low[1] and J. Wang[1] *1. University of Minnesota, Minneapolis, MN, United States*

**AC-09**. **Withdrawn**

**10:57**

**AC-10**. **Distinct Temperature Dependency of Charge to Spin Conversion from Rashba-Edelstein Effect.** *J. Yoon*[1], J. Lee[2], M. Kim[1,3], S. Lee[1], K. Kim[4], Y. Choi[2], S. Park[2], D. Kim[3] and S. Choe[1] *1. Department of Physics and Astronomy, Seoul National University, Seoul, The Republic of Korea; 2. Division of Scientific Instrumentation and Management, Korea Basic Science Institute, Daejeon, The Republic of Korea; 3. Center for Spintronics, Korea Institute of Science and Technology, Seoul, The Republic of Korea; 4. Department of Physics, Yonsei University, Seoul, The Republic of Korea*

**11:09**

**AC-11**. **Orbital-to-Spin Ratio of Dynamic Magnetization in Co/Pt.** *O.A. Bakare*[1], G.T. Street[1], R.E. Maizel[1], C. Klewe[2] and S. Emori[1] *1. Physics, Virginia Tech, Blacksburg, VA, United States; 2. Lawrence Berkeley National Laboratory, Berkeley, CA, United States*

**11:21**

**AC-12**. **Out-of-Plane Spin Torque via Symmetry Engineering in an Oxide Polar Metal.** *S. Zhou*[1], J. Schimpf[2], H. Taghinejad[2], P. Meisenheimer[2], J. Analytis[2], S. Cheema[4], L. Martin[3] and L.M. Caretta[1] *1. Brown University, Providence, RI, United States; 2. UC Berkeley, Berkeley, CA, United States; 3. Rice University, Houstin, TX, United States; 4. Massachusetts Institute of Technology, Cambridge, MA, United States*

**11:33**

**AC-13**. **Conventional and Unconventional Spin-Orbit Torques in a Single Ferromagnetic Layer.** *K. Han*[1,2], D. Yun[2], S. Jang[2,3], J. Ahn[1,2], Y. Nah[2,4], Y. Kim[2,4], M. Kang[2,5], S. Hong[2], O. Lee[2] and H. Koo[1,2] *1. KU-KIST Graduate School of Converging Science and Technology, Korea University, Seoul, The Republic of Korea; 2. Center for Semiconductor Technology, Korea Institute of Science and Technology, Seoul, The Republic of Korea; 3. Materials Science and Engineering, Seoul National University, Seoul, The Republic of Korea; 4. Electrical Engineering, Korea University, Seoul, The Republic of Korea; 5. Materials Science and Engineering, Korea University, Seoul, The Republic of Korea*

TUESDAY MORNING 8:30

CELESTIN B

## Session AD
## MAGNETIZATION DYNAMICS AND MICROMAGNETICS I

Stavros Komineas, Co-Chair
University of Crete, Heraklion, Greece
Giovanni Finocchio, Co-Chair
University of Messina, Messina, Italy

**8:30**

**AD-01**. **Non-Hermitian dynamics on the Bloch sphere.** ***(Invited)*** *S. Komineas*[1,2] *1. Mathematics and Applied Mathematics, University of Crete, Heraklion, Greece; 2. Applied and Computational Mathematics, Foundation for Research and Technology, Heraklion, Greece*

**9:06**

**AD-02**. **Deep Learning-Based Feature Engineering for Prediction of Magnetic properties of materials.** *A. Kashyap*[1] and P. Joshi[1] *1. School of Physical Sciences, IIT Mandi, Mandi, India*

**9:18**

**AD-03**. **Shape Optimization of Tunneling Magnetoresistance Sensor Design via Automated Micromagnetic Simulations.** *C. Fillies*[1], C. Wager[1], T. Schrefl[1], S. Tibus[2], S.J. Holt[3], A. Petrocchi[3], S.A. Pathak[3], M. Lang[3] and H. Fangohr[3] *1. Department für Integrierte Sensorsysteme, Universität für Weiterbildung Krems, Wiener Neustadt, Austria; 2. Robert Bosch GmbH, Reutlingen, Germany; 3. Structure and Dynamics of Matter, Max Planck Institute, Hamburg, Germany*

**9:30**

**AD-04**. **Semi-classical derivation of a micromagnetic model for antiferromagnets and regularization of ill-posedness.** *M. Hu*[1], E. Iacocca[2], M.J. Donahue[3] and M.A. Hoefer[1] *1. Applied Mathematics, University of Colorado Boulder, Boulder, CO, United States; 2. Department of Physics and Energy Science, University of Colorado Colorado Springs, Colorado Springs, CO, United States; 3. Applied and Computational Mathematics Division, National Institute of Standards and Technology, Gaithersburg, MD, United States*

**AD-05**. **Withdrawn**

**9:42**

**AD-06**. **Periodic dispersion diagrams via finite element micromagnetics.** *F. Ai*[1], Z. Lin[1] and V. Lomakin[1] *1. University of California, San Diego, La Jolla, CA, United States*

**9:54**

**AD-07**. **Discretization Anisotropy In Micromagnetics.** *S.J. Holt*[1,2], M. Lang[1,2], S.A. Pathak[1,2], A. Petrocchi[1,2] and H. Fangohr[1,2,3] *1. Max Planck Institute for the Structure and Dynamics of Matter, Hamburg, Germany; 2. Center for Free-Electron Laser Science, Hamburg, Dominican Republic; 3. University of Southampton, Southampton, United Kingdom*

**10:06**

**break**

**10:45**

**AD-08**. **Micromagnetics of Nanoparticle Chains.** *M.J. Donahue*[1], T.Q. Bui[2], F.M. Abel[3,4], S.I. Woods[2], E. De Lima Correa[4,5] and C. Dennis[4] *1. Information Technology Laboratory, National Institute of Standards and Technology, Gaithersburg, MD, United States; 2. Physical Measurement Laboratory, National Institute of Standards and Technology, Gaithersburg, MD, United States; 3. Physics, United States Naval Academy, Annapolis, MD, United States; 4. Material Measurement Laboratory, National Institute of Standards and Technology, Gaithersburg, MD, United States; 5. Theiss Research, La Jolla, CA, United States*

**10:57**

**AD-09**. **Route to minimally dissipative switching in magnets via terahertz phonon pumping.** M. Strungaru[1], M.O. Ellis[2], S. Ruta[3], R.F. Evans[4], R.W. Chantrell[4] and *O. Chubykalo-Fesenko*[5] *1. Computer Science, University of Manchester, Manchester, United Kingdom; 2. School of Computer Science, University of Sheffield, Sheffield, United Kingdom; 3. College of Business, Technology and Engineering, Sheffield Hallam University, Sheffield, United Kingdom; 4. School of Physics, Engineering and Technology, University of York, York, United Kingdom; 5. Instituto de Ciencia de Materiales de Madrid, CSIC, Madrid, Spain*

**11:09**

**AD-10**. **Comprehensive Machine Learning Framework for Predicting Magnetic Properties and Identifying High-Performance Magnetic Materials.** *S. Itani*[1], Y. Zhang[1,2] and J. Zang[1] *1. Physics and Astronomy, University of New Hampshire, Durham, NH, United States; 2. Chemistry, University of New Hampshire, Durham, NH, United States*

**11:21**

**AD-11**. **Leveraging Parallel Computing for High-Performance Simulation of Magnetic Hysteresis and Eddy Current Losses.** *J. Duan*[1] and V. Lomakin[1] *1. University of California, San Diego, San Diego, CA, United States*

**11:33**

**AD-12**. **Midpoint geometric integrators for inertial magnetization dynamics.** M. d'Aquino[1], *S. Perna*[1] and C. Serpico[1] *1. DIETI, University of Naples Federico II, Naples, Italy*

**11:45**

**AD-13**. **Impact of exceptional points on nonlinear dynamics of coupled spin-torque oscillators.** *S. Perna*[1], K. Ho[2], S. Wittrock[3], M. d'Aquino[1], R. Lebrun[2], V. Cros[2] and C. Serpico[1] *1. DIETI, University of Naples Federico II, Naples, Italy; 2. CNRS Thales, France, Palaiseau, France; 3. Helmholtz Institute, Berlin, Germany*

TUESDAY MORNING 8:30

CELESTIN C

## Session AE
# ALTERMAGNETS AND ALTERMAGNETIC SPINTRONICS

Lukas Nadvornik, Chair
Charles University, Prague, Czechia

**8:30**

**AE-01**. **Unconventional magnetism: the emergence of nodal altermagnetism and beyond.** ***(Invited)*** *J. Sinova*[1,2] *1. Johannes Gutenberg University Mainz, Mainz, Germany; 2. Texas A&M University, College Station, TX, United States*

**9:06**

**AE-02**. **Electrical detection of acoustic antiferromagnetic resonance in compensated synthetic antiferromagnets.** *C. Song*[1], C. Chen[1], P. Liu[1] and F. Pan[1] *1. Tsinghua University, Beijing, China*

**9:18**

**AE-03**. **Phenomenology of Altermagnets and Structure, Dynamics and Control of Altermanetic Textures.** *O. Gomonay*[1], V. Kravchuk[2], K. Yershov[2], J. van den Brink[2] and J. Sinova[1] *1. Johannes Gutenberg University of Mainz, Mainz, Germany; 2. Leibniz Institute for Solid State and Materials Research in Dresden, Dresden, Germany*

**9:30**

**AE-04**. **Demonstration of single-variant altermagnetic $RuO_2$(101) thin films on $Al_2O_3$*r*-plane substrates.** *Z. Wen*[1], C. He[1], J. Okabayashi[2], Y. Miura[1,3], T. Ohkubo[1], T. Seki[4,5], H. Sukegawa[1] and S. Mitani[1] *1. National Institute for Materials Science (NIMS), Tsukuba, Japan; 2. Research Center for Spectrochemistry, The University of Tokyo, Tokyo, Japan; 3. Kyoto Institute of Technology, Kyoto, Japan; 4. Institute for Materials Research, Tohoku University, Sendai, Japan; 5. Center for Science and Innovation in Spintronics, Tohoku University, Sendai, Japan*

**9:42**

**AE-05**. **Epitaxial growth and Observation of Time Reversal Symmetry Breaking in Altermagnetic $RuO_2$.** *A. Akashdeep*[1], O. Fedchenko[1], J. Minár[2], Q.L. Nguyen[5], D. Kutnyakhov[4], M. Kläui[1], T. Jungwirth[3], G. Jakob[1], L. Smejkal[1,3], J. Sinova[1,3] and H. Elmers[1] *1. Institut für Physik, Johannes Gutenberg-Universität Mainz, Mainz, Germany; 2. New Technologies Research Center, University of West Bohemia, Piezen, Czechia; 3. Institute of Physics Academy of Sciences of the Czech Republic, Praha 6, Czechia; 4. Deutsches Elektronen-Synchrotron DESY, Hamburg, Germany; 5. Linac Coherent Light Source, SLAC National Accelerator Laboratory, Menlo Park, CA, United States*

**9:54**

**AE-06**. **Manipulation of the Anomalous Hall Effect in MnTe Altermagnetic Thin Films.** *S. Bey*[1], S. Fields[2], N. Combs[2], B.G. Márkus[3,1], D. Beke[3,1], J. Wang[1,4], L. Riney[1], K. Yoshimura[1], A. Ievlev[5], M. Zhukovskyi[6], T. Orlova[6], L. Forró[3,1], S.P. Bennett[2], X. Liu[1] and B.A. Assaf[1] *1. Dept. of Physics and Astronomy, The University of Notre Dame, Notre Dame, IN, United States; 2. Materials Science and Technology Division, U.S. Naval Research Laboratory, Washington, DC, United States; 3. Stavropoulus Center for Complex Quantum Matter, The University of Notre Dame, Notre Dame, IN, United States; 4. Materials Dept., UC Santa Barbara, Santa Barbara, CA, United States; 5. Center for Nanophase Materials Sciences, Oak Ridge National Laboratory, Oak Ridge, TN, United States; 6. Notre Dame Integrated Imaging Facility, The University of Notre Dame, Notre Dame, IN, United States*

**10:06**

**AE-07**. **Altermagnetic variants in thin films of $Mn_5Si$.** *J. Rial*[1], M. Leiviskä[1,2], G. Skobjin[3], A. Badura[2,4], G. Gaudin[1], F. Disdier[1], R. Schlitz[3], I. Kounta[5], S. Beckert[6], D. Kriegner[2], A. Thomas[6,7], E. Schmoranzerová[4], L. Smejkal[2,8], J. Sinova[8,9], T. Jungwirth[2,10], L. Michez[5], H. Reichlova[2], S. Goennenwein[3], O. Gomonay[8] and V. Baltz[1] *1. SPINTEC, Grenoble, France; 2. Institute of Physics, Czech Academy of Sciences, Prague, Czechia; 3. Department of Physics, University of Konstanz, Konstanz, Germany; 4. Faculty of Mathematics and Physics, Charles University, Prague, Czechia; 5. Aix-Marseille University, Marseille, France; 6. Institute of Solid State and Materials Physics, TU Dresden, Dresden, Germany; 7. Leibniz Institute of Solid State and Materials Science, IFW Dresden, Dresden, Germany; 8. Institute for Physics, Johannes Gutenberg University Mainz, Mainz, Germany; 9. Department of Physics, Texas A&M University, Texas, TX, United States; 10. School of Physics and Astronomy, University of Nottingham, Nottingham, United Kingdom*

**10:18**

**Break**

**10:45**

**AE-08**. **Observation of unconventional spin current in altermagnetic CrSb.** *C. Tseng*[1], S. Karube[1,2], H. Narita[1], R. Hisatomi[1,2], D. Kan[1], Y. Shiota[1,2], Y. Shimakawa[1] and T. Ono[1,2] *1. Institute for Chemical Research, Kyoto University, Kyoto, Japan; 2. Center for Spintronics Research Network, Kyoto University, Kyoto, Japan*

**10:57**

**AE-09**. **Anisotropic Spin to Charge Conversion in the Altermagnet $RuO_2$ Capped with YIG.** *D. Qu*[1], Y. Wang[2], C. Liao[2], Y. Tien[2] and S. Huang[2] *1. Center for Condensed Matter Sciences, National Taiwan University, Taipei, Taiwan; 2. Department of Physics, National Taiwan University, Taipei, Taiwan*

**11:09**

**AE-10**. **Altermagnetism in the Hopping Regime.** *E. Galindez Ruales*[1], L. Šmejkal[1,4], S. Das[1], C. Schmitt[1], F. Fuhrmann[1], E. Baek[2,1], A. Ross[1], R. Jaeschke Ubiergo[1], V. Bharadwaj[1], R. González-Hernández[3], A. Rothschild[5], J. Sinova[1,4], C. You[2], G. Jakob[1] and M. Kläui[1,6] *1. Institute of Physics, Johannes Gutenberg University Mainz, Mainz, Germany; 2. Department of Physics and Chemistry, DGIST, Daegu, The Republic of Korea; 3. Grupo de Investigacíon en Física Aplicada, Departamento de Física, Universidad del Norte, Barranquilla, Colombia; 4. Institute of Physics, Academy of Sciences of the Czech Republic, Prague, Czechia; 5. Department of Materials Science and Engineering, Technion-Israel Institute of Technology, Haifa, Israel; 6. Center for Quantum Spintronics, Norwegian University of Science and Technology, Trondheim, Norway*

**11:21**

**AE-11**. **Tunable Localized Currents at Crystallographic Domain Boundaries in Altermagnet RuO2.** *G.M. Pantano*[1,2], E. Thareja[1], L. Smejkal[2,3], J. Sinova[2] and J.D. Gayles[1] *1. Department of Physics, University of South Florida, Tampa, FL, United States; 2. Institut für Physik, Johannes Gutenberg Universität Mainz, Mainz, Germany; 3. Institute of Physics, Czech Academy of Sciences, Prague, Czechia*

**11:33**

**AE-12**. **Coexistence of Anomalous Hall Effect and Weak Magnetization in Nominally Collinear Antiferromagnet MnTe.** *M. Sawicki*[1,2], K. Kluczyk[3], K. Gas[1,4], M.J. Grzybowski[3], P. Skupinski[1], M.A. Borysiewicz[5], T. Fas[3], J. Suffczynski[3], J.Z. Domagala[1], K. Grasza[1], A. Mycielski[1], M. Baj[3], K.H. Ahn[6], K. Vyborny[6] and M. Gryglas-Borysiewicz[3] *1. Institute of Physics, Polish Academy of Sciences, Warsaw, Poland; 2. Research Institute of Electrical Communication, Tohoku University, Sendai, Japan; 3. Faculty of Physics, University of Warsaw, Warsaw, Poland; 4. Center for Science and Innovation in Spintronics, Tohoku University, Sendai, Japan; 5. Lukasiewicz Research Network - Institute of Microelectronics and Photonics, Warsaw, Poland; 6. FZU-Institute of Physics of the Czech Academy of Sciences, Praha, Czechia*

**11:45**

**AE-13**. **Giant strain-induced spin splitting effect in MnTe, a *g*-wave altermagnetic semiconductor.** *K. Belashchenko*[1] *1. University of Nebraska-Lincoln, Lincoln, NE, United States*

TUESDAY MORNING 8:30

IMPERIAL 5AB

## Session AF
## STRUCTURED MATERIALS I

Cristina Gomez-Polo, Chair
Universidad Publica de Navarra, Pamplona, Spain

**8:30**

**AF-01**. **Design and control of three-dimensional topological magnetic fields using interwoven helical nanostructures.** *J. Fullerton*[1] and C. Phatak[1,2] *1. Materials Science Division, Argonne national laboratory, Lemont, IL, United States; 2. Department of materials science and engineering, Northwestern University, Evanston, IL, United States*

**8:42**

**AF-02**. **3D Printing of Flexible Magnetic Nanocomposite via Selective Laser Sintering (SLS) with Magnetic Pole Patterning.** *N. Tarabay*[1], M. Shakibmanesh[1] and C. Velez[2,1] *1. Department of Electrical Engineering and Computer Science, University of California, Irvine, Irvine, CA, United States; 2. Department of Mechanical and Aerospace Engineering, University of California, Irvine, Irvine, CA, United States*

**8:54**

**AF-03**. **Soft X-ray Tomography of Curvilinear Spin Textures.** *D.W. Raftrey*[1,2], P. Fischer[1,2], O. Bezsmertna[3], R. Xu[3], D. Makarov[3], D. Bhattacharya[4], C. Langton[4], K. Liu[4] and A. Sorrentino[5] *1. Material Sciences Division, Lawrence Berkeley National Laboratory, Berkeley, CA, United States; 2. Physics, University of California, Santa Cruz, Santa Cruz, CA, United States; 3. Intelligent Materials and Systems, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 4. Physics, Georgetown University, District of Columbia, DC, United States; 5. MISTRAL beamline, ALBA Light Source, Cerdanyola del Vallès, Spain*

**9:06**

**AF-04**. **Domain wall dynamics in cylindrical nanowires under high current pulses.** *C. Bran*[5], E. Saugar[6], S. Catalano[1], J. Marqués-Marchán[6], R. Perez Del Real[6], A. Asenjo[6], M. Foerster[2], M. Angel[2], A. Fraile Rodríguez[3], M. Vázquez[6], F. Casanova[4] and O. Chubykalo-Fesenko[6] *1. Centro de Física de Materiales CFM/MPC (CSIC-UPV/EHU), San Sebastian, Spain; 2. ALBA Synchrotron, Cerdanyola del Valles, Spain; 3. Universitat de Barcelona, Barcelona, Spain; 4. CIC nanoGUNE, San Sebastian, Spain; 5. Instituto de Nanociencia y Materiales de Aragón (INMA-CSIC), Universidad de Zaragoza, Zaragoza, Spain; 6. Institute of Materials Science of Madrid, Madrid, Spain*

**9:18**

**AF-05**. **Interface Exchange Coupling in Hollow Nanostructures.** *S. Slimani*[1,2], M. Vasilakaki[3], K. Trohidou[3], N. Yaacoub[4] and D. Peddis[1,2] *1. Department of Chemistry and Industrial Chemistry, University of Genova, Genova, Italy; 2. Institute of Structure of Matter, National Research Council, Rome, Italy; 3. Institute of Nanoscience and Nanotechnology, NCSR "Demokritos", Attiki, Greece; 4. Institut Des Molécules Et Matériaux du Mans (IMMM) CNRS UMR, Le Mans, France*

**9:30**

**AF-06**. **Experimentally probed magnetic reversal modes in $Fe_3O_4$ magnetic nanotubes, including solid-state dewetting effects.** *J.L. Palma*[1,2], A. Pereira[3], E. Saavedra[4] and J. Escrig[4,2] *1. Engineering School, Universidad Central de Chile, Santiago, Chile; 2. Center for The Development of Nanoscience And Nanotechnology CEDENNA, Santiago, Chile; 3. Universidad Adolfo Ibañez, Santiago, Chile; 4. Physics Department, Universidad de Santiago de Chile, Santiago, Chile*

**9:42**

**AF-07**. **Magnetic field driven spatial light modulators made by giant vertically aligned nanocomposites of garnet and perovskite.** *K. Hayashi*[1], Y. Kunai[1,2], P.E. Lauer[1] and C.A. Ross[1] *1. Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA, United States; 2. Advanced Research Core, Fujikura Limited, Kouto-ku, Japan*

**9:54**

**AF-08**. **Engineering the Self-assembly of Epitaxial $CoFe_2O_4$ – $BiFeO_3$ Multiferroic Nanocomposites Using Focused Ion Beam Lithography.** *R. Huynh*[1], T. Su[1] and C.A. Ross[1] *1. Massachusetts Institute of Technology, Cambridge, MA, United States*

**AF-09**. **Withdrawn.**

**10:06**

**Break**

**10:45**

**AF-10**. **Surface Spin Configurations in Magnetic Nanoparticles.** *N. Kim*[1], H. Wang[2], H. Chen[2] and S. Majetich[2,1] *1. Materials Science and Engineering, Carnegie Mellon University, Pittsburgh, PA, United States; 2. Physics, Carnegie Mellon University, Pittsburgh, PA, United States*

**10:57**

**AF-11**. **DFT Guided Synthesis of Substituted Ferrite Magnetic Nanoparticles to Study Effective Magnetic Anisotropy.** *A.D. Malaj*[1], C. Leies[1], S.S. Laha[1], V.R. Punyapu[2], R. Getman[2] and O.T. Mefford[1] *1. Materials Science and Engineering, Clemson University, Clemson, SC, United States; 2. William G. Lowrie Department of Chemical and Biomolecular Engineering, The Ohio State University, Columbus, OH, United States*

**AF-12**. **Withdrawn**

**11:09**

**AF-14**. **Investigation of Element Mutual Interaction in Nanopatterned Ferromagnetic Thin Film Array.** *H. Yin*[1] and A. El-Ghazaly[1] *1. Electrical and Computer Engineering, Cornell University, Ithaca, NY, United States*

**11:21**

**AF-15**. **Tailoring Spin Textures in $La_{0.7}Sr_{0.3}MnO_3$-based Micromagnets.** D. Sasaki[1,2], T. Sahoo[1], I. Nihal[1], I. Snowden[1], M. Frame[1], S. Retterer[3], B. Achinuq[2], A. Scholl[2], P. Rickhaus[4], J. Lenz[4] and *Y. Takamura*[1] *1. Materials Science and Engineering, University of California, Davis, Davis, CA, United States; 2. Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, CA, United States; 3. Center for Nanophase Materials Sciences, Oak Ridge National Laboratory, Oak Ridge, TN, United States; 4. QNami, Muttenz, Switzerland*

## Session AG
# ELECTRICAL MACHINES AND POWER ELECTRONICS I

Chins Chinnasamy, Chair
Oak Ridge National Laboratory, Knoxville, TN, United States

**8:30**

**AG-01**. **Development of inductor and transformer with both small iron loss and small copper loss for high frequency power converters.** ***(Invited)*** *T. Sato*[1] and T. Mizuno[1] *1. Electrical and Computer Engineering, Shinshu University, Nagano, Japan*

**9:06**

**AG-03**. **Influences of magnetic property of beam electroplated with 3d ferromagnetic transition metal film on the output characteristics in perpendicular magnetic field assisted and inverse magnetostrictive electromagnetic vibration powered generators.** *Y. Nakamura*[1], S. Aketa[1], S. Kamiya[1], H. Kamogawa[1,2] and M. Ohtake[1] *1. Faculty of Engineering, Yokohama National University, Yokohama, Japan; 2. Technical Development Department, Kanto Kasei Co., Ltd., Yokosuka, Japan*

**AG-04**. **Topology Optimization for a Magnetic Actuator Using Different Gradient-Based Solvers.** *M. Mahmoud*[1,2,3], M. Ibrahim[1,2,4] and P. Sergeant[1,2] *1. Department of Electromechanical, Systems, and Metal Engineering, Ghent University, Gent, Belgium; 2. FlandersMake@UGent, Core Lab MIRO, Leuven, Belgium; 3. Electrical Engineering Department, Faculty of Engineering, Minia University, Minia, Egypt; 4. Department of Electrical Engineering, Kafrelshiekh University, Kafrelshiekh 33511, Egypt*

Now VP5-13

**9:18**

**AG-05**. **Sensitivity analysis framework for a MIMO magnetic levitation actuator.** *G. Zuidema*[1], D. Krop[1] and E. Lomonova[1] *1. Electrical Engineering, Eindhoven University of Technology, Eindhoven, Netherlands*

**9:30**

**AG-06**. **Instrumentation and Characterization of Mixed GO Electrical Steel Magnetic Cores.** *O. Dabaj*[1], C. Demian[1], J. Lecointe[1] and J. Blaszkowski[2] *1. Univ. Artois, UR 4025, Laboratoire Systèmes Électrotechniques et Environnement (LSEE), Béthune, France; 2. Thyssenkrupp Electrical Steel, Isbergues, France*

**9:42**

**AG-07**. **Fleet Digital Twin of Permanent Magnet Synchronous Motors: A Novel Approach for Virtual Validation.** *M. Azeem*[1,2], M. Gulec[1,2], K. Vanthuyne[1,2] and P. Sergeant[1,2] *1. University of Ghent, Ghent, Belgium; 2. Flanders Make@ UGent - MIRO, Ghent, Belgium*

**9:54**

**AG-08**. **A Cost-Effective 12/10 Fractional Slot Concentrated Winding Synchronous Reluctance Motor for Electric Mid-Drive Two Wheeler Application.** G. Shasikanth[1], *K. Anbukumar*[1] and M. Azhagar Raj[1] *1. Department of Electrical and Electronics Engineering, Anna University, Chennai, India*

**10:06**

**AG-09**. **Optimal Design Study for High Power Density of PMSM for Traction of Hydrogen Powered Train.** *J. Lim*[1], C. Park[1], H. Lee[1], J. Lee[1], I. Jo[2] and S. Kim[2] *1. Korea National University of Transportation, Uiwang, The Republic of Korea; 2. Hanyang University, Seoul, The Republic of Korea*

**10:18**

**Break**

**10:45**

**AG-10**. **Improvement of Torque and Efficiency of Magnetic-Geared Switched Reluctance Motor.** *K. Iwaki*[1] and K. Nakamura[1] *1. Graduate School of Engineering, Tohoku University, Sendai, Japan*

**10:57**

**AG-11**. **Research on a new type of electrothermal multi-energy dual-stator motor and loss optimization.** J. Yuan[1], *H. Wang*[1], H. Zhou[1] and B. Peng[1] *1. School of Electronic Engineering and Automation, Wuhan University, Wuhan, China*

**11:09**

**AG-13**. **Design and Single Rotor Fault Analysis of A Magnetically Geared Segment Stator Contra-Rotating Switched Reluctance Motor for flying vehicles application.** *S. Ip*[1] and K. Cheng[2] *1. Electrical and Electronic Engineering, The Hong Kong Polytechnic University, Hong Kong SAR, Hong Kong; 2. Electrical Engineering, University of California, Merced, Merced, CA, United States*

TUESDAY MORNING 9:00

EXHIBIT HALL

## Session AP
## SPINTRONICS I
## (Poster Session)

Jiahao Han, Chair
Tohoku University, Sendai, Japan

**AP-01**. **Withdrawn**

**AP-02**. **Harnessing Exchange Bias and Magnetic Proximity Effects for Superconducting Spintronics: A Novel GdN/FeMn Heterostructure.** *V. Singhal*[1], P.K. Sharma[1], B. Dutta[1] and A. Pal[1] *1. MEMS, IIT Bombay, Mumbai, India*

**AP-03**. **Direct X-PEEM imaging of the altermagnetic order of Hematite.** *E. Galindez Ruales*[1], C. Schmitt[1], R. González-Hernández[2], O. Gomonay[1], E. Golias[3], Y. Niu[3], A. Zakharov[3] and M. Kläui[1,4] *1. Institute of Physics, Johannes Gutenberg University Mainz, Mainz, Germany; 2. Grupo de Investigacíon en Física Aplicada, Departamento de Física, Universidad del Norte, Barranquilla, Colombia; 3. MAX IV Laboratory, Lund, Sweden; 4. Center for Quantum Spintronics, Norwegian University of Science and Technology, Trondheim, Norway*

**AP-04**. **Electric-field-controlled picosecond switching of antiferromagnets.** *V. Lopez-Dominguez*[1] *1. Institute of Advanced Materials, Universitat Jaume I, Castellon de la Plana, Spain*

**AP-05**. **Effect of controlled oxidation of Ni→NiO in YIG/Ta/Ni heterostructure.** S.K. Jha[1,2], M. Sharma[1,3], N.K. Puri[2] and *B.K. Kuanr*[1] *1. Special Centre for Nanoscience, Jawaharlal Nehru University, New Delhi, India; 2. Applied Physics Department, Delhi Technological University, New Delhi, India; 3. Department of Physics, Deshbandhu College, University of Delhi, New Delhi, India*

**AP-07**. **Enhancing Magnetic Tunnel Junction-Based Molecular Spintronic Devices (MTJMSDs) Through Bottom Electrode Trenching for Small Molecule Attachment.** *E. Peigney*[1], H. Brown[1], B. Sankhi[1] and P. Tyagi[1] *1. NSF CREST Center for Nanotechnology Research and Education, University of the District of Columbia, Washington, DC, United States*

**AP-08**. **Probing an amplified spin-orbit torque effect in antiferromagnetic oxide utilizing a magnetoresistance-based loop-shift method.** H. Tseng[1] and *C. Yang*[1] *1. Materials Science and Engineering, National Yang Ming Chiao Tung University, Hsinchu, Taiwan*

TUESDAY MORNING 9:00

EXHIBIT HALL

## Session AQ
## APPLICATIONS OF MAGNETIC MATERIALS AND DEVICES (Poster Session)

Sevde Nur Arpaci, Chair
Northwestern University, Evanston, IL, United States

**AQ-01**. **Additive Manufacturing of Stretchable Frequency-Reconfigurable Frequency Selective Surfaces with Split-Ring Resonators.** *T. Boland*[1], C.S. Smith[1] and H. ElBidweihy[1] *1. Electrical and Computer Engineering, United States Naval Academy, Annapolis, MD, United States*

**AQ-02**. **Inspection of CFRP plate backside delamination using electromagnetic vibration and sound pressure measurement.** *Y. Hosono*[1], S. Niwa[1], R. Takasugi[1], T. Ohashi[3] and Y. Gotoh[2] *1. Graduate School of Engineering, Oita University, Oita, Japan; 2. Faculty of Science and Technology, Oita university, Oita, Japan; 3. IHI Corporation, Yokohama, Japan*

**AQ-03**. **Micromagnetic Simulations of Concentration Detection Capability of Large Area Low Aspect Ratio GMR Sensors in Biomedical Diagnostics.** *R.A. Mendonsa*[1], S. Liang[1], D. Tonini[1] and J. Wang[1] *1. University of Minnesota, Minneapolis, MN, United States*

**AQ-04**. **Numerical analysis of inspection method of hot spring scale attached to steel pipes in geothermal power plants using electromagnetic vibration.** *R. Takasugi*[1], H. Ikusada[1], Y. Hosono[1], S. Niwa[4], Y. Gao[2], T. Sasayama[3] and Y. Gotoh[2] *1. Division of Mechatronics, Graduate School of Engineering, Oita University, Oita, Japan; 2. Division of Intelligent Mechanical System, Faculty of Science and Technology, Oita University, Oita, Japan; 3. Graduate School of Information Science and Electrical Engineering, Kyushu University, Fukuoka, Japan; 4. Division of Mechanical Energy Engineering, Graduate School of Engineering, Oita University, Oita, Japan*

**AQ-05**. **A Self-Assembled Magnetic Millirobot with an Elastic 3D Linear Structure for Minimally Invasive Medicine.** *Y. Lee*[1], J. Lee[2] and S. Jeon[2] *1. Mechanical Engineering, Kongju National University, Cheonan, Chungnam, The Republic of Korea; 2. Mechanical and Automotive Engineering, Kongju National University, Cheonan, Chungnam, The Republic of Korea*

**AQ-06**. **Hydrogen gas sensing using Pd coated spin-valve GMR with magneto-strictive FeSiB layer.** *D. Oshima*[1], T. Kato[1,2] and S. Iwata[3] *1. Department of Electronics, Natoya University, Nagoya, Japan; 2. Institute of Materias and Systems for Sustainability, Nagoya University, Nagoya, Japan; 3. Nagoya Industrial Science Research Institute, Nagoya, Japan*

**AQ-07**. **Detecting and Differentiating Magnetic Signals from Moving Magnetic Nanoparticles for Enhanced Biosensing and Diagnostic Applications.** *K. Hwang*[1], D. Brown[1], S. Attanayake[1], D. Luu[1], M. Nguyen[2], T. Lee[2] and M. Phan[1] *1. Physics, University of South Florida, Tampa, FL, United States; 2. Chemistry, University of Houston, Houston, TX, United States*

**AQ-08**. **Magnetoconvection analysis of the cooling properties of magnetic nanoparticles in vegetable-based transformer oil.** *H. Lee*[1] *1. Division of Smart Convergence Engineering, Changshin University, Changwon-si, The Republic of Korea*

## Session AR
# BIO-MAGNETISM AND BIOMAGNETIC APPLICATIONS (Poster Session)

Ping Liu, Chair
University of Texas at Arlington, Keller, TX, United States

**AR-01**. **Towards next-generation nerve repair: using glass-coated magnetic microwires to enhance and guide neurite outgrowth.** X. Zhang[1,2], K. Neuman[1], B.T. Lejeune[1], A. Koppes[1], R. Koppes[1], *M. Vázquez*[3] and L.H. Lewis[1,2,4] *1. Chemical Engineering, Northeastern University, Boston, MA, United States; 2. Mechanical and Industrial Engineering, Northeastern University, Boston, MA, United States; 3. Instituto de Ciencia de Materiales de Madrid, CSIC, Madrid, Spain; 4. Physics, Northeastern University, Boston, MA, United States*

**AR-02**. **Magnetic relaxation of Gd doped $MnFe_2O_4$ nanoparticles for MR effect and heat dissipation.** *N. Kataoka*[1,4], K. Aoki[1], A. Usui[3], T. Sakamoto[1], H. Amano[1], Y. Kusumoto[1] and Y. Ichiyanagi[1,2] *1. Physics, Yokohama National University, Yokohama, Japan; 2. Osaka University, Toyonaka, Japan; 3. Tohoku University, Sendai, Japan; 4. Sojitsu Corporation, Tokyo, Japan*

**AR-03**. **Directional Dependence of Moderate Magnetic Fields on HT22 Cell Proliferation.** *M. Pirbhai*[1], N. Wagner[1], C. Ferguson[3] and A. Estevez[2] *1. Physics, St. Lawrence University, Canton, NY, United States; 2. Biology, St.Lawrence University, Canton, NY, United States; 3. Bioengineering, University of Oregon, Eugene, OR, United States*

**AR-04**. **Optimization of a Quadrupole Magnetic Sorter for Continuous Flow Fractionation of Red Blood Cells from whole blood.** *K. Paz Gonzalez*[1], S. Ciannella[1], L. Nguyen T. Tran[1], X. Wu[3], H. Choe[3], P. Iyer[3], K. Wu[2], J. Chalmers[3] and J. Gomez-Pastora[1] *1. Chemical Engineering, Texas Tech University, Lubbock, TX, United States; 2. Electrical and Computer Engineering, Texas Tech University, Lubbock, TX, United States; 3. William G. Lowrie Department of Chemical and Biomolecular Engineering, The Ohio State University, Columbus, OH, United States*

**AR-05**. **Conformable Electromagnetic Shielding Materials for Intentional Low to Medium Frequency Electromagnetic Interference in Brain Implants.** *W. Lohr*[1], K. Feng[2], S. Smith[3] and R.L. Hadimani[2,4] *1. Department of Biomedical Engineering, Virginia Commonwealth University, Richmond, VA, United States; 2. Mechanical and Nuclear Engineering, Virginia Commonwealth University, Richmond, VA, United States; 3. Chemical & Life Science Engineering, Virginia Commonwealth University, Richmond, VA, United States; 4. Electrical and Computer Engineering, Iowa State University, Ames, IA, United States*

**AR-06**. **Systematic Analysis of Transcranial Magnetic Stimulation Motor Response and EEG Functional Connectivity Relationship in Mild to Moderate TBI Patients.** *E.R. Sprouse*[5], C.M. Harris[1,2], A. Jamil[3,6], L. Manning-Franke[4] and R.L. Hadimani[2,5] *1. Department of Life Sciences, Virginia Commonwealth University, Richmond, VA, United States; 2. Department of Mechanical and Nuclear Engineering, Virginia Commonwealth University, Richmond, VA, United States; 3. Massachusetts General Hospital, Boston, MA, United States; 4. Department of Physical Medicine and Rehabilitation, Virginia Commonwealth University, Richmond, VA, United States; 5. Department of Biomedical Engineering, Virginia Commonwealth University, Richmond, VA, United States; 6. Harvard Medical School, Boston, MA, United States*

**AR-07**. **Relationship of Motor Threshold in Transcranial Magnetic Stimulation with Quantitative Measures of White Matter Anisotropy.** C.M. Harris[4,1], C.J. Lewis[3,1], C.L. Peterson[3] and *R.L. Hadimani*[1,2] *1. Department of Mechanical and Nuclear Engineering, Virginia Commonwealth University, Richmond, VA, United States; 2. Department of Electrical and Computer Engineering, Iowa State University, Ames, IA, United States; 3. Department of Biomedical Engineering, Virginia Commonwealth University, Richmond, VA, United States; 4. Center for Biological Data Science, Virginia Commonwealth University, Richmond, VA, United States*

**AR-08**. **Co-Fe nanowires for the destruction of cancer cells through magnetomechanical effect.** H. Chiriac[1], A. Minuti[1], C. Stavila[1] and *N. Lupu*[1] *1. National Institute of Research and Development for Technical Physics, Iasi, Romania*

TUESDAY MORNING 9:00

EXHIBIT HALL

## Session AS
## ELECTRONIC STRUCTURE, MAGNETISM AND FUNDAMENTAL PHYSICAL PROPERTIES I (Poster Session)

Santosh KC, Co-Chair
San Diego State University, San Diego, CA, United States
Tej Nath Lamichhane, Co-Chair
University of Central Oklahoma, Edmond, Oklahoma, United States

**AS-01**. **Modeling Magnetic Dipoles in Atoms Based on Hypothetical Magnetic Monopoles.** *R.R. Morusupalli*[1,2] *1. HP Inc, Palo Alto, CA, United States; 2. Formerly with Department of Materials Science and Engineering, Stanford, CA, United States*

**AS-02**. **Various magnetic properties and spin states of $Ba_3Co_{1-x}Ca_xRu_2O_9$ ($0 \leq x \leq 1$).** *Y. Yasui*[1], A. Nagaya[1], A. Horie[1], I. Terasaki[2] and J. Kikuchi[1] *1. Physics, Meiji University, Kawasaki, Japan; 2. Physics, Nagoya University, Nagoya, Japan*

**AS-03**. **Adsorption of Ag, Au, Cu, and Ni on $MoS_2$: theory and experiment.** *A.J. Stollenwerk*[1], H. Harms[1], C.J. Cunningham[1], C. Sadler[1], E. O'Leary[2], T. Kidd[1] and P. Lukashev[1] *1. University of Northern Iowa, Cedar Falls, IA, United States; 2. Iowa State University, Ames, IA, United States*

**AS-04**. **Effect of surface preparation on spin glass behavior at the Ni/$MoS_2$ interface.** *H.A. Harms*[1], C.J. Cunningham[1], C. Hemesath[1], A.J. Stollenwerk[1], P. Lukashev[1], T. Kidd[1], B. Wei[2,3], L. Zhou[2,3], R. Prozorov[3,4] and P. Shand[1] *1. Physics, University of Northern Iowa, Cedar Falls, IA, United States; 2. Material Science and Engineering, Iowa State University, Ames, IA, United States; 3. Materials Sciences and Engineering, Ames National Laboratory, Ames, IA, United States; 4. Physics and Astronomy, Iowa State University, Ames, IA, United States*

**AS-05**. **Competing Antiferromagnetic Interactions and Associated Large Inverse Magnetocaloric Effect in TbSi and $TbSi_{0.6}Ge_{0.4}$.** *A. Kumar*[1], P. Singh[1], A. Doyle[1], D. L. Schlagel[1] and Y. Mudryk[1] *1. Material Science Division, Ames National Laboratory, Ames, IA, United States*

**AS-06**. **Novel Magnetic States in $Ba_3Zn_{1-x}Ca_xRu_2O_9$.** *R. Sadamatsu*[1] and Y. Yasui[1] *1. Physics, Meiji University, Kawasaki, Japan*

**AS-07**. **Effect of Hole Doping on the Structural, Electronic and Magnetic properties of CrAs.** *B.S. Jacobs*[1] and A. Pandey[2] *1. Physics, University of Johannesburg, Johannesburg, South Africa; 2. School of Physics, University of the Witwatersrand, Johannesburg, South Africa*

TUESDAY MORNING 9:00

EXHIBIT HALL

## Session AT
## FAST AND ULTRAFAST MAGNETISATION DYNAMICS (Poster Session)

Carl Davies, Chair
Radboud University, Nijmegen, Netherlands

**AT-01**. **Spin-Orbit Torques in Te/Ferromangetic Devices.** *S. Li*[1], A. Hoffmann[1], C. niu[2], R. Liu[1] and P. Ye[2] *1. University of Illinois at Urbana-Champaign, Urbana, IL, United States; 2. Purdue University, Lafayette, IN, United States*

**AT-02**. **Withdrawn**

**AT-03**. **Sub 100 ps Deterministic Switching of Synthetic Antiferromagnetic p-MTJ purely by the Electric Field.** *J. Qi*[1], Y. Chen[1], Y. Lv[1], D. Zhang[1], O. Benally[1], Y. Huang[2], D. Lyu[1], S. Liang[1], Y. Yang[1] and B. Zink[1] *1. University of Minnesota, Minneapolis, MN, United States; 2. Chiao Tung University, Hsinchu, Taiwan*

**AT-04**. **Directional Damping in $Co_2TiSn$ Thin Films.** *A. Karki*[1], U. Karki[1], R. Nahar[1], R. Nold[1], B. Akintunde[1], N. Derksen[1], A. Hauser[1] and J. Mohammadi[1] *1. Physics and Astronomy, The University of Alabama, Tuscaloosa, AL, United States*

**AT-05**. **Magnetostriction dynamics in CoFe/Pt magnetic multilayers.** *T. Fernandes*[1], F.M. Matinaga[2], L.H. de Andrade[1] and M. Martins[2] *1. SENAN, Centro de Desenvolvimento de Tecnologia Nuclear, Belo Horizonte, Brazil; 2. SEMAV, Centro de Desenvolvimento de Tecnologia Nuclear, Belo Horizonte, Brazil*

**AT-06**. **Observation of coherently coupled cation spin dynamics in an insulating ferrimagnetic oxide.** *C. Klewe*[1], P. Shafer[2,1], J. Shoup[3], C. Kons[3], Y. Pogoryelov[4], R. Knut[4], B.A. Gray[5], H. Jeon[6], B.M. Howe[5], O. Karis[4], Y. Suzuki[7,8], E. Arenholz[2,9], D.A. Arena[3] and S. Emori[10,7] *1. Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, CA, United States; 2. National Synchrotron Light Source II, Brookhaven National Laboratory, Upton, NY, United States; 3. Department of Physics, University of South Florida, Tampa, FL, United States; 4. Department of Physics and Astronomy, Molecular and Condensed Matter Physics, Uppsala University, Uppsala, Sweden; 5. Materials and Manufacturing Directorate, Air Force Research Laboratory, Wright Patterson Air Force Base, WPAFB, OH, United States; 6. KBR, Beavercreek, OH, United States; 7. Geballe Laboratory for Advanced Materials, Stanford University, Stanford, CA, United States; 8. Department of Applied Physics, Stanford University, Stanford, CA, United States; 9. Pacific Northwest National Laboratory, Richland, WA, United States; 10. Department of Physics, Virginia Tech, Blacksburg, VA, United States*

**AT-07**. **On the relevance of the Landau-Lifshitz-Gilbert equation in the optical limit.** *B.J. Assouline*[1] and A. Capua[1] *1. Applied Physics, Hebrew University, Jerusalem, Israel*

## Session AU
# MACHINES OPTIMIZATION, MAGNETIC LOSS, AND THERMAL MODELING I (Poster Session)

Tsung Wei Chang, Chair
National Cheng Kung University, Tainan, Taiwan

**AU-01**. **Modeling Approach for Ultra-Thin Wound Iron Cores Based on Equivalent Complex Permeability.** *X. Li*[1,2], J. Yuan[1,2] and H. Zhou[1,2] *1. State Key Laboratory of Power Grid Environmental Protection, Wuhan University, Wuhan, China; 2. School of Electrical Engineering and Automation, Wuhan University, Wuhan, China*

**AU-02**. **Analysis of Core Loss of 10MW Direct Drive Permanent Magnet Synchronous Generator considering 3D Magnetic Flux Path and Rotor Overhang.** *S. Kim*[1], H. Shin[2], K. Shin[3] and J. Choi[1] *1. Chungnam National University, Daejeon, The Republic of Korea; 2. Hyundai Mobis, Uiwang, The Republic of Korea; 3. Changwon National University, Changwon, The Republic of Korea*

**AU-04**. **Investigation of the contribution of Grain-Oriented Sheets to the performance of an Axial-Flux Switched-Reluctance Machine.** A. El Hajj[1], J. Drappier[1], *A. Tounzi*[1] and J. Korecki[1] *1. University of Lille, Lille, France*

**AU-05**. **A Frequency Independent Excess Loss Modeling for Arbitrary Waveforms.** *T. Yamada*[1], K. Semba[1], T. Sato[1] and H. Sano[1] *1. JMAG Business Company, JSOL Corporation, Tokyo, Japan*

**AU-06**. **Surrogate Model Based Drive Cycle Modelling and Optimization of Synchronous Reluctance Machines for Electric Vehicles.** *Y. Gong*[1], A. Gneiting[1], S. Weigel[1], N. Parspour[1] and Z. An[1] *1. Institute of Electrical Energy Conversion (IEW), University of Stuttgart, Stuttgart, Germany*

**AU-07**. **Effect of Laser Welding on Magnetic Properties of Laminated Cores of Non-Oriented Electrical Steel Sheets Cut by EDM and Laser Cutting.** *Y. Tsuchida*[1] and K. Otsuka[1] *1. Oita University, Oita, Japan*

**AU-08**. **Effect of Saturation Magnetic Flux Density on Cogging Torque of SPMSM According to Rolling Direction of Non-Oriented Electrical Steel.** *J. Kim*[1], Y. Won[2], S. Park[3] and M. Lim[2] *1. Mechanical Engineering, Yeungnam University, Gyeongsan, The Republic of Korea; 2. Automotive Engineering (Automotive-Computer Convergence), Hanyang University, Seoul, The Republic of Korea; 3. Mechanical, Robotics and Energy Engineering, Dongguk University, Seoul, The Republic of Korea*

## Session AV
# ELECTRICAL MACHINES AND POWER ELECTRONICS II (Poster Session)

Christopher H. T. Lee, Chair
Nanyang Technological University, Singapore, Singapore

**AV-01**. **Electromagnetic Vibration and Torque Ripple Analysis of Multi-unit PMSMs.** *Q. Wei*[1], l. Dong[1], W. Li[1], M. Andriollo[2] and D. Zeng[1] *1. Harbin Engineering University, Harbin, China; 2. University of Padova, Padova, Italy*

**AV-04**. Now VP7-12 **Design and Optimization of Wireless Power Transfer Module for Electrically Excited Axial Flux Motor.** *Y. Xin*[1], W. Geng[1], J. Liu[1], Y. Fu[1] and Y. Gu[1] *1. Nanjing University of Science and Technology, Nanjing, China*

**AV-05**. **Research on reduction of cogging torque of spoke type generator using ferrite permanent magnets.** *S. Kim*[1] and S. Jeong[2] *1. KETI, Gangju Metropolitan City, The Republic of Korea; 2. Gwangju University, Gangju Metropolitan City, The Republic of Korea*

**AV-06**. **Design for Performance Improvement of PMa-SynRM with Asymmetric Rotor Shape Considering Mechanical stiffness.** *S. Kim*[1], W. Jung[1], T. Kim[1], K. Shin[2] and J. Choi[1] *1. Department of Electrical Engineering, Chungnam National University, Daejeon, The Republic of Korea; 2. Department of Electrical Engineering, Changwon National University, Changwon, The Republic of Korea*

**AV-07**. **Torque Improvement and Core Loss Reduction with Controllable Flux-Leakage Design in Spoke-Type Flux-Intensifying PM Motors.** M.L. Duong[1], A.T. Huynh[2] and *M. Hsieh*[1] *1. Department of Electrical Engineering, National Cheng Kung University, Tainan, Taiwan; 2. Power Electronics and Machines Centre, Faculty of Engineering, University of Nottingham, Nottingham, United Kingdom*

**AV-08**. **A Novel Traction Motor Design Approach Considering Efficiency Enhancing Current.** *L.J. Caceres Vera*[1] and M. Hsieh[1] *1. Department of Electrical Engineering, National Cheng Kung University, Tainan, Taiwan*

## Session BA
# FUNDAMENTALS AND ADVANCES IN 2D SPINTRONICS

Guoqiang Yu, Chair
Chinese Academy of Sciences, Beijing, China

**2:00**

**BA-01**. **Observation of Quantum Spin Hall States in Monolayer $TaIrTe_4$. *(Invited)*** *Q. Ma*[1] *1. Physics, Boston College, Chestnut Hill, MA, United States*

**2:36**

**BA-02**. **Racetrack Memories enabled by novel spintronic materials and phenomena. *(Invited)*** *S. Parkin*[1] *1. Max Planck Institute of Microstructure Physics, Halle (Saale), Germany*

**3:12**

**BA-03**. **van der Waals Magnets and Antiferromagnets Interacting with Electron Spins. *(Invited)*** *D.C. Ralph*[1], R. Jain[1], T.M. Cham[1], M. Roddy[1], B. Huang[1,4], V. Gupta[1,2] and Y.K. Luo[1,3] *1. Cornell University, Ithaca, NY, United States; 2. Yale University, New Haven, CT, United States; 3. Univ. of Southern California, Los Angeles, CA, United States; 4. Princeton University, Princeton, NJ, United States*

**3:48**

**Break**

**BA-04**. **Withdrawn**

**4:15**

**BA-05**. **Field-free perpendicular magnetization switching by out-of-plane spins from two-dimensional materials. *(Invited)*** G. Shi[1] and *H. Yang*[1] *1. National University of Singapore, Singapore, Singapore*

## Session BB

# MAGNETICS FOR FUTURE TRANSPORTATION – FROM MEMORY TO MOTORS

Min-Fu Hsieh, Chair
National Cheng Kung University, Tainan, Taiwan

**2:00**

**BB-01**. **Embedded STT-MRAM for Automotive Applications.** ***(Invited)*** A. Wang[1], E. Chien[1], C. Chen[1], T. Chiang[1], *K. Huang*[1], R. Wang[1] and H. Chuang[1] *1. TSMC, Hsinchu, Taiwan*

**2:36**

**BB-02**. **About Multiphysic Modelling of High-Speed Electrical Machines for Elctric Powertrains.** ***(Invited)*** L. Dahnoun[1], J. Fontchastagner[1] and *N. Takorabet*[1] *1. GREEN, Université de Lorraine, Nancy, France*

**3:12**

**BB-03**. **An adaptive hybrid magnetic sensing technology for enhanced electric vehicle applications.** ***(Invited)*** *M. Lai*[1] *1. iSentek, New Taipei City, Taiwan*

**3:48**

**Break**

**4:15**

**BB-04**. **High Frequency Magnetic Design for EV Fast Charging.** ***(Invited)*** *A. Knight*[1] *1. Electrical and Software Engineerign, University of Calgary, Calgary, AB, Canada*

**4:51**

**BB-05**. **Materials and Considerations for Motors to Support Efficient Transportation.** ***(Invited)*** *L.H. Lewis*[1] *1. Northeastern University, Boston, MA, United States*

## Session BC
# SPIN-ORBITRONICS II: CHIRAL DEPENDENCE, QUANTUM SPIN TRANSFER AND UNCONVENTIONAL TORQUES

Yang Lv, Chair
University of Minnesota, Minneapolis, MN, United States

**2:00**

**BC-01**. **Chiral-induced Unidirectional Spin-to-charge Conversion.** ***(Invited)*** *A. Wittmann*[1] *1. JGU Mainz, Mainz, Germany*

**2:36**

**BC-02**. **Deterministic Switching of Noncentrosymmetric, Ferromagnetic Weyl Semimetals with Higher-order Spin-orbit Torque.** *N. Fokkens*[1], J. Shi[1] and F. Xue[1] *1. Physics, University of Alabama at Birmingham, Birmingham, AL, United States*

**2:48**

**BC-03**. **Plasmonics for low energy and ultrafast creation of magnetic topological structures.** *R. Sbiaa*[1], W.Z. Al Saidi[1], Y. Dusch[2] and N. Tiercelin[2] *1. Physics, Sultan Qaboos University, Al-Khoud, Oman; 2. CNRS, Centrale Lille, UMR 8520, IEMN, University of Lille, Lille, France*

**3:00**

**BC-04**. **Coexistence of Unconventional Spin Hall Effect and Antisymmetric Planar Hall Effect in $IrO_2$.** *Y. Yang*[1], S. Nair[1], Y. Fan[1], Y. Chen[1], J. Qi[1], S. Lee[1], T. Low[1], B. Jalan[1] and J. Wang[1] *1. University of Minnesota, Minneapolis, MN, United States*

**3:12**

**BC-05**. **Current-Induced Circular Dichroism on Metallic Surfaces: A First-Principles Study.** *F. Mahfouzi*[1], P. Haney[1] and M. Stiles[1] *1. PML, National Institute of Standards and Technology, Gaithersburg, MD, United States*

**3:24**

**BC-06**. **A spin-orbit torque knob to tailor stochasticity for physically secured applications.** *M. Yang*[1] and C. Yang[1] *1. Materials Science and Engineering, National Yang Ming Chiao Tung University, Hsinchu, Taiwan*

**3:36**

**BC-07**. **Large Interfacial Rashba Torques in Atomically Thin Co|Al Systems.** *N. Sebe*[1], S. Krishnia[2], S. Mallick[3], Y. Sassi[1], S. Collin[1], T. Denneulin[4], A. Kovács[4], R.E. Dunin-Borkowski[4], A. Fert[1], J. George[1], V. Cros[1] and H. Jaffrès[1] *1. Laboratoire Albert Fert, Palaiseau, France; 2. Institute of Physics, Johannes Gutenberg University Mainz, Mainz, Germany; 3. SRMIST, Chennai, India; 4. Forschungszentrum Julich, Jülich, Germany*

**3:48**

**Break**

**4:15**

**BC-08**. **Design of an ultra-low magnetic field sensor based on spin Hall magnetoresistance.** M. Kuepferling[1], W. Skowronski[2], E. Losero[1], P. Wisniowski[2], *A. Magni*[1], V. Basso[1], J. Langer[3] and B. Ocker[3] *1. INRiM, Torino, Italy; 2. AGH University of Science and Technology, Krakow, Poland; 3. Singulus Technologies AG, Kahl am Main, Germany*

**4:27**

**BC-10**. **Efficient magnetization switching and non-reciprocal magnon transport via orbital currents.** *S. Krishnia*[1], O. Ledesma[1], R. Gupta[1], E. Galindez Ruales[1], F. Kammerbauer[1], A. Bose[1], C. Bouard[2], S. Martin[2], M. Drouard[2], D. Go[1], G. Jakob[1], Y. Mokrousov[1] and M. Kläui[1] *1. Institut für Physik, Johannes Gutenberg-Universität Mainz, Mainz, Germany; 2. Antaios, Meylan, France*

**4:39**

**BC-11**. **Unconventional Spin-Orbit torques in $Mn_3Pt$.** *R. Klause*[1] and A. Hoffmann[1] *1. Materials Science and Engineering and Materials Research Laboratory, University of Illinois Urbana Champaign, Urbana, IL, United States*

**4:51**

**BC-12**. **In Search of Quantum Spin Transfer in Spin-Orbit Bilayers.** *G.T. Street*[1] and S. Emori[1] *1. Physics, Virginia Tech, Blacksburg, VA, United States*

**5:03**

**BC-13**. **Anti-damping Orbital Torque Driven by Inverse Orbital Rasha-Edelstein Effect in Co/Pt/CuOx.** *P. Bissokarma*[1] and E. Montoya[1] *1. Department of Physics and Astronomy, University of Utah, Salt Lake City, UT, United States*

TUESDAY AFTERNOON 2:00

CELESTIN B

## Session BD
## MAGNETIC RECORDING & SENSORS AND APPLICATIONS I

Ganping Ju, Chair
Seagate Technology, Fremont, CA, United States

**2:00**

**BD-01**. **Determination of oscillation state of a spin-torque oscillator fabricated in a MAMR head using injection locking.** ***(Invited)*** *Y. Nakagawa*[1], H. Suto[2] and T. Maeda[1] *1. Corporate Research and Development Center, Toshiba Corporation, Kawasaki, Japan; 2. Research Center for Magnetic and Spintronic Materials, National Institute for Materials Science (NIMS), Tsukuba, Japan*

**2:36**

**BD-02**. **Chemical Ordering of Sputtered FePt / *h*-BN Granular Media Using RF Substrate Bias.** *B.L. Reese*[1,2], C. Aros-Caballero[1,2,3], E. Eleson[1,2,4], B. Turner[2,5], V. Bollapragada[2,5], D.E. Laughlin[1,2,5] and J. Zhu[1,2,5] *1. Materials Science and Engineering, Carnegie Mellon University, Pittsburgh, PA, United States; 2. Data Storage Systems Center, Carnegie Mellon University, Pittsburgh, PA, United States; 3. Materials Science and Engineering, University of Michigan, Ann Arbor, MI, United States; 4. Materials Science and Engineering, Pennsylvania State University, University Park, PA, United States; 5. Electrical and Computer Engineering, Carnegie Mellon University, Pittsburgh, PA, United States*

**2:48**

**BD-03**. **Laser Current and Write Current Optimization Using DC Noise Measurement in Heat-Assisted Magnetic Recording Hard Disk Drives.** *A. Sakoguchi*[1], J. Zhang[2] and J. Lee[2] *1. Western Digital Technologies GK, Fujisawa, Japan; 2. Western Digital Technologies, Irvine, CA, United States*

**3:00**

**BD-04**. **Dual Layer Media Modeling for Heat Assisted Magnetic Recording.** *A. Venugopal*[1], T.Y. Chang[1], P. Steiner[1] and P. Czoschke[1] *1. Seagate Technology LLC, Bloomington, MN, United States*

**3:12**

**BD-05**. **Mutual Soft-Information Improvement Techniques for Lower Layer Performance Improving in Double-Layered Magnetic Recording Systems.** *A. Khametong*[1], S. Greaves[2] and C. Warisarn[1] *1. College of Advanced Manufacturing Innovation, King Mongkut's Institute of Technology Ladkrabang, Bangkok, Thailand; 2. Research Institute of Electrical Communication (RIEC), Tohoku University, Sendai, Japan*

**3:24**

**BD-07**. **Track Misregistration Estimation Technique based on Hybrid K-means and EM Algorithm in Bit-Patterned Media Recording Systems.** P. Kochcha[1], *K. Kankhunthod*[1] and C. Warisarn[1] *1. College of Advanced Manufacturing Innovation, King Mongkut's Institute of Technology Ladkrabang, Bangkok, Thailand*

**3:36**

**BD-08**. **Advancing Spatially Selective All-Optical Magnetic Switching in Nanomagnets for Magnetic Memory and Computing.** *D. Bromley*[1], T. Farchy[1], J. Gartside[1], D. Cielecki[1], K.D. Stenning[1], A. Vanstone[1], H. Holder[1], T. Zheng[1], X. Xiao[2], R. Sapienza[1], R. Oulton[1] and W.R. Branford[1] *1. Physics, Imperial College London, London, United Kingdom; 2. Technology Innovation Institute, Abu Dhabi, United Arab Emirates*

**3:48**

**Break**

**4:15**

**BD-09**. **Spin Transport Calculation in Aluminum Thin Film by Drift-Diffusion Equation.** *R. Hao*[1] and R. Victora[1]
*1. University of Minnesota, Minneapolis, MN, United States*

**4:27**

**BD-10**. **Study on Planar Hall Magnetoresistive Sensor and its Application for Magnetic Encoder.** *T. Jeon*[1], C. Jeon[1], J. Kim[1], B. Lim[2] and C. Kim[1] *1. Department of Physics and Chemisty, Daegu Gyeongbuk Institute of Science and Technology, Daegu, The Republic of Korea; 2. Department of Smart Sensor Engineering, Andong National Univerisity, Andong, The Republic of Korea*

**4:39**

**BD-12**. **Design Optimization of a Position Sensor for Linearity Range Extension.** M. Mirzaei[1], P. Ripka[1] and *J. Maier*[1]
*1. Electrical Engineering, Czech Technical University, Prague, Czechia*

**4:51**

**BD-13**. **An MLP-based ITI Suppression Method for Multi-Head Multi-Track Bit-Patterned Magnetic Recording.**
S. Koolkarnkhai[2], *C. Warisarn*[1] and P. Kovintavewat[2]
*1. College of Advanced Manufacturing Innovation, King Mongkut's Institute of Technology, Ban, Thailand; 2. Department of Electrical Engineering, Nakhon Pathom Rajabhat University, Nakhon Pathom, Thailand*

TUESDAY AFTERNOON 2:00

CELESTIN C

## Session BE
## ANTIFERROMAGNETS AND FERRIMAGNETS

Xuemei Cheng, Chair
Bryn Mawr College, Bryn Mawr, PA, United States

**2:00**

**BE-01**. **Control of magnon spin transport in multiferroics.** ***(Invited)***
*T. Nan*[1] *1. Tsinghua University, Beijing, China*

**2:36**

**BE-02**. **Mechanisms Of Electrical Switching Of Ultrathin CoO/Pt Bilayers.** *C. Schmitt*[1*], A. Rajan[1], G. Beneke[1], A. Kumar[1], T. Sparmann[1], H. Meer[1], B. Bednarz[1], R. Ramos[2,3], M. Angel[4], M. Foerster[4], E. Saitoh[3,5] and M. Kläui[1] *1. Johannes Gutenberg University Mainz, Mainz, Germany; 2. Universidade de Santiago de Compostela, Santiago de Compostela, Spain; 3. Tohoku University, Sendai, Japan; 4. ALBA Synchrotron Light Facility, Cerdanyola del Valles (Barcelona), Spain; 5. The University of Tokyo, Tokyo, Japan*

**2:48**

**BE-03**. **Emergent Topological Magnetism in As-Grown Polycrystalline FCC FeMn.** *R.E. Maizel*[1], C. Horn[2], M. Murayama[2], S. Channa[3], D. O'Mahoney[3], Y. Suzuki[3], C. Klewe[4], A.T. N'Diaye[4], R. Khatiwada[1], O.A. Bakare[1], G.T. Street[1], S. Abdizadeh[1], J. Zhao[5], M.F. Michel[5], J.J. Heremans[1] and S. Emori[1] *1. Physics, Virginia Tech, Blacksburg, VA, United States; 2. Material Science, Virginia Tech, Blacksburg, VA, United States; 3. Applied Physics and Geballe Laboratory for Advanced Materials, Stanford University, Stanford, CA, United States; 4. Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, CA, United States; 5. Geoscience, Virginia Tech, Blacksburg, VA, United States*

**3:00**

**BE-04**. **Observation of Néel Vector Rotation in Amorphous Ferrimagnetic GdCo Thin Films.** *T. Mandokoro*[1], Y. Shiota[1,2], T. Ito[1], H. Matsumoto[1], H. Narita[1], R. Hisatomi[1,2], S. Karube[1,2] and T. Ono[1,2] *1. ICR, Kyoto Univ, Uji, Japan; 2. CSRN, Kyoto Univniv, Uji, Japan*

**3:12**

**BE-05**. **Comparative investigation of temperature-dependent Gilbert damping in non-collinear antiferromagnetic $Mn_3PtN$ and $Mn_3Pt$ thin films.** *N. Tripathi*[1], S. Mishra[1] and S. Isogami[2] *1. School of Materials Science & Technology, Indian Institute of Technology, IIT(BHU), Varanasi, India; 2. Research Centre for Magnetic and Spintronics Materials, National Institute of Materials Science, Tsukuba, Japan*

**BE-06**. **Withdrawn**

**3:24**

**BE-07**. **Magnetic Spin Hall Effect and Chirality Control of Antiferromagnetic Domain Walls in Compensated Ferrimagnets.** *S. Ko*[1], H. Kim[1], J. Kang[2], P. Cao Van[3], W. Choi[4], S. Kim[4], J. Jeong[3], B. Park[2], A.M. Park[1], K. Kim[5] and K. Kim[1,6] *1. Physics, Korea Advanced Institute of Science and Technology (KAIST), Daejeon, The Republic of Korea; 2. Material Science and Engineering, Korea Advanced Institute of Science and Technology (KAIST), Daejeon, The Republic of Korea; 3. Material Science and Engineering, Chungnam National University, Daejeon, The Republic of Korea; 4. Physics, University of Ulsan, Ulsan, The Republic of Korea; 5. Physics, Yonsei University, Seoul, The Republic of Korea; 6. Graduate School of Quantum Science and Technology, Korea Advanced Institute of Science and Technology (KAIST), Daejeon, The Republic of Korea*

**3:36**

**Break**

**4:15**

**BE-08**. **Manipulation of the quantum-metric structure in a topological chiral antiferromagnet.** ***(Invited)*** *J. Han*[1], T. Uchimura[1], Y. Araki[2], J. Yoon[1], Y. Takeuchi[1,3], Y. Yamane[1], S. Kanai[1,4,5], J. Ieda[2], H. Ohno[1] and S. Fukami[1,6] *1. Tohoku University, Sendai, Japan; 2. Japan Atomic Energy Agency, Tokai, Japan; 3. National Institute for Materials Science, Tsukuba, Japan; 4. PRESTO, Japan Science and Technology Agency, Kawaguchi, Japan; 5. National Institutes for Quantum Science and Technology, Takasaki, Japan; 6. Inamori Research Institute for Science, Kyoto, Japan*

**4:51**

**BE-09**. **Comparison of Magnetometry and Hall Transport in Ferrimagnetic Gd/Co Bilayers: Silent Spins and Altered Anisotropy.** L. Hernandez[1], R.W. Greening[1], M.J. Roos[1], X. Fan[1] and *B.L. Zink*[1] *1. Physics & Astronomy, University of Denver, Denver, CO, United States*

**5:03**

**BE-10**. **Start-to-Finish Tuning of Magnetic Anisotropy in Iron Garnet Thin Films.** *A. Kaczmarek*[1*], M. Aguiar[1], T.P. Grossmark[1], G. Beach[1] and C.A. Ross[1] *1. Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA, United States*

**5:15**

**BE-11**. **Strain Effects on Fluctuation Properties of Noncollinear Antiferromagnets for Probabilistic Computing Applications.** *M. Rahman*[2,1] and M. Stiles[1] *1. Physical Measurement Laboratory, National Institute of Standards and Technology, Gaithersburg, MD, United States; 2. Department of Chemistry & Biochemistry, University of Maryland, College Park, MD, United States*

TUESDAY AFTERNOON 2:00

IMPERIAL 5AB

## Session BF
## HARD MAGNETS I

Ester Palmero, Chair
IMDEA Nanociencia, Madrid, Spain

**2:00**

**BF-01**. **Development of High-Performance Nd-Fe-B Based Magnet: Combating Materials Criticality.** ***(Invited)*** *X. Tang*[1], H. Sepehri-Amin[1], T. Ohkubo[1] and K. Hono[1] *1. National Institute for materials Science, Tsukuba, Japan*

**2:36**

**BF-02**. **Bulk Magnetic Hardening in $Sm(Fe,V)_{12}$ Alloys.** Y. Xu[1], C. Han[2], C. Ni[2], A. Gabay[1] and *G. Hadjipanayis*[1,3] *1. Department of Physics and Astronomy, University of Delaware, Newark, DE, United States; 2. Department of Materials Science and Engineering, University of Delaware, Newark, DE, United States; 3. Department of Chemical Engineering, Northeastern University, Boston, MA, United States*

**2:48**

**BF-03**. **Achieving high coercivity in post-sinter annealed Cu-doped $Sm(Fe,Ti,V)_{12}$-based sintered magnets.** *J. Zhang*[1], X. Tang[1], T. Ohkubo[1], K. Hono[1] and H. Sepehri-Amin[1] *1. National Institute for Materials Science, Tsukuba, Japan*

**3:00**

**BF-04**. **Magnetic Properties and Microstructures of (Nd,Ce)-Fe-B Based HDDR Magnet Powders.** *R. Shimbo*[1,2], T. Horikawa[1,2], M. Yamazaki[2], M. Matsuura[1], R. Kainuma[1] and S. Sugimoto[1] *1. Graduate School of Engineering, Tohoku University, Sendai-shi, Japan; 2. Aichi Steel Corporation, Tokai-shi, Japan*

**3:12**

**BF-05**. **2- and 3-dimensional measurements of magnetic domain wall pinning in $Sm_2(CoFeCuZr)_{17}$.** *A. Kovács*[1], A. Silinga[2], Y. Yang[3], T. Almeida[2], T. Smoliarova[4], B. Xu[3], K. Skokov[3], O. Gutfleisch[3], M. Farle[4] and R.E. Dunin-Borkowski[1] *1. Forschungszentrum Juelich, Juelich, Germany; 2. University of Glasgow, Glasgow, United Kingdom; 3. Technische Universität Darmstadt, Darmstadt, Germany; 4. University of Duisburg-Essen, Duisburg, Germany*

**3:24**

**BF-07**. **Magnetic domain imaging for Sm-Fe-N powder by magnetic force microscopy.** *Y. Hirayama*[1], W. Yamaguchi[1] and S. Okada[1] *1. Innovative Functional Materials Research Institute, Nagoya, Japan*

**3:36**

**BF-08**. **Progress towards Gas Atomized Feedstock to Substitute for Strip Casting in Scalable Manufacturing of Dy-free Ultrafine Grained Nd-Fe-B Magnets.** *B. Finney*[2,1], M.J. Kramer[2], W. Tang[2], B. Cui[2], J. Cui[2,1] and I.E. Anderson[2,1] *1. Materials Science and Engineering, Iowa State University, Ames, IA, United States; 2. Ames National Laboratory, Ames, IA, United States*

**3:48**

**Break**

**4:15**

**BF-09**. **Increase of energy products of $Sm_2Fe_{17}N_3$ sintered magnet using novel sintering aid.** *Y. Iida*[1,2], A. Hosokawa[2], W. Yamaguchi[2] and Y. Hirayama[2] *1. Niterra Co., Ltd., Komaki, Japan; 2. National Institute of Advanced Industrial Science and Technology (AIST), Nagoya, Japan*

**4:27**

**BF-10**. **Metal coating of $Sm_2Fe_{17}N_3$ powder to realize heat-resistant resin-bonded magnet applications.** *W. Yamaguchi*[1], K. Takagi[1], A. Hosokawa[1] and Y. Hirayama[1] *1. National Institute of Advanced Industrial Science and Technology (AIST), Nagoya, Japan*

**4:39**

**BF-11**. **Synthesis Optimization for $Sm_2Fe_{17}N_3$ for Bulk Magnet Fabrication.** *R. Kuchi*[1], I.Z. Hlova[1], X. Liu[1], O. Palasyuk[1], D. Schlagel[1], A. Peirsol[2] and M.J. Kramer[1] *1. Ames National Laboratory, Ames, IA, United States; 2. Iowa State University, Ames, IA, United States*

**4:51**

**BF-12**. **Fe based approaches for rare-earth reduced and free permanent magnets.** *L. Alff*[1] *1. TU Darmstadt, Darmstadt, Germany*

TUESDAY AFTERNOON 2:00

IMPERIAL 5CD

## Session BG
# MAGNETOIONIC AND MAGNETOELECTRIC MATERIALS

Christian Rinaldi, Chair
Politecnico di Milano, Milano, Italy

**2:00**

**BG-01**. **Recent Progress in Nitrogen Magneto-ionics: New Materials and Phenomena for Brain-inspired Memory Devices.** ***(Invited)*** *J. Sort*[1,2], N. López[1], A. Arredondo[1], Z. Tan[1], Z. Ma[1], I. Spasojevic[1], P. Monalisha[1], N. Casañ-Pastor[3], A. Quintana[3], E. Pellicer[1], C. Jensen[5,7], Z. Chen[5], F. Celegato[6], K. Liu[5], J. Nogués[4,2] and E. Menéndez[1] *1. Universitat Autonoma de Barcelona, Bellaterra, Spain; 2. ICREA, Barcelona, Spain; 3. Institut de Ciència de Materials de Barcelona (ICMAB-CSIC), Bellaterra, Spain; 4. Catalan Institute of Nanoscience and Nanotechnology (ICN2), Bellaterra, Spain; 5. Georgetown University, Washington, DC, United States; 6. INRIM, Torino, Italy; 7. NIST, Gaithersburg, MD, United States*

**2:36**

**BG-02**. **Correlations between Defect Density and Magnetic Properties of Heusler Alloy Films.** C. Leung[2], Y. Ling[2], H. Koizumi[1], S. Panda[3], A. Markou[3], E. Lesne[3], C. Felser[3] and *A. Hirohata*[1,3] *1. Center for Science and Innovation in Spintronics, Tohoku UNiversity, Sendai, Japan; 2. Department of Material Science and Engineering, City University of Hong Kong, Kowloon, Hong Kong; 3. Max-Planck-Institut für Chemische Physik fester Stoffe, Dresden, Germany*

**2:48**

**BG-03**. **Control of perpendicular anisotropy and compensation behaviour in $Tb_xCo_{1-x}$ with Hydrogen ion implantation.** *R.G. Hunt*[1], D. Moldarev[1], M.P. Grassi[1], D. Primetzhofer[1] and G. Andersson[1] *1. Physics and Astronomy, Uppsala University, Uppsala, Sweden*

**3:00**

**BG-04**. **Regulating the Magnetic Properties of $La_{0.5}Sr_{0.5}FeO_{3-\delta}$ Through Voltage-Controlled Oxygen Content.** P. Nizet[2], F. Chiabrera[2], *N. López-Pintó*[1], N. Alayo[2], P. Langner[2], F. Baiutti[2], A. Morata[2], J. Sort[1,3] and A. Tarancon[2,3] *1. Universitat Autonoma de Barcelona (UAB), Barcelona, Spain; 2. Institut de Recerca en Energia de Catalunya (IREC), Barcelona, Spain; 3. ICREA, Barcelona, Spain*

**3:12**

**BG-05**. **Ionically Driven Synthesis of Compensated Ferrimagnet $Mn_{4-x}Co_xN$ with Giant Exchange Bias.** *Z. Chen*[1], C. Liu[2], X. Zhang[2] and K. Liu[1] *1. Physics, Georgetown University, Washington, DC, United States; 2. King Abdullah University of Science & Technology, Thuwal, Saudi Arabia*

**Now VP13-10**

**BG-06**. **Magneto-Ionic Vortices: Voltage-Controlled Curling-Spin Analog-Memory Nanomagnets.** *I. Spasojević*[1], Z. Ma[1], A. Barrera[2], F. Celegato[3], A. Palau[2], P. Tiberto[3], K. Buchanan[5] and J. Sort[1,4] *1. Physics Department, Autonomous University of Barcelona, Bellaterra, Spain; 2. Institute of Materials Science of Barcelona (ICMAB), Bellaterra, Spain; 3. Advanced materials and Life science Division, Istituto Nazionale di Ricerca Metrologica (INRIM), Turin, Italy; 4. Catalan Institution for Research and Advanced Studies (ICREA), Bellaterra, Spain; 5. Physics Department, Colorado State University, Fort Collins, CO, United States*

**3:24**

**BG-07**. **Magnetic Phase Diagram of Non-collinear Antiferromagnet $Mn_{3+x}Sn_{1-x}$ Thin Films.** *K. Gas*[1,2], J. Yoon[1], Y. Sato[1], H. Kubota[1], J.Z. Domagala[2], P. Dluzewski[2], Y.K. Edathumkandy[2], Y. Takeuchi[1,3], S. Kanai[1,4,5], H. Ohno[1], M. Sawicki[2,1] and S. Fukami[1] *1. Tohoku University, Sendai, Japan; 2. Institute of Physics, Polish Academy of Sciences, Warsaw, Poland; 3. National Institute for Materials Science, Tsukuba, Japan; 4. PRESTO, Japan Science and Technology Agency (JST), Kawaguchi, Japan; 5. National Institutes for Quantum Science and Technology, Takasaki, Japan*

**3:36**

**Break**

**4:15**

**BG-08**. **Bipolarity of anomalous Nernst effect in quaternary equiatomic Heusler alloys.** A. Chanda[1], J. Nag[2], N. Schulz[1], A. Alam[2], K. G. Suresh[2], M. Phan[1] and *H. Srikanth*[1] *1. Physics, University of south Florida, Tampa, FL, United States; 2. Physics, Indian Institute of Technology Bombay, Bombay, India*

**4:27**

**BG-09**. **Electric Field Control of Magnetization in FeGa microstructures on PMN-PT.** *G. Pradhan*[1,2], F. Celegato[1], A. Magni[1], G. Barrera[1], M. Coisson[1], P. Rizzi[2] and P. Tiberto[1] *1. INRIM, Turin, Italy; 2. UNITO, Turin, Italy*

**4:39**

**BG-10**. **Controlling Magneto-Ionics by Defect Engineering Through Light Ion Implantation.** *Z. Ma*[1], S. Martins[1], Z. Tan[1], S. Chen[2], E. Monteblanco[3], M. Liedke[4], M. Butterling[4], A. Attallah[4], E. Hirschmann[4], A. Wagner[4], D. Ravelosona[3], J. Sort[1] and E. Menéndez[1] *1. Universitat Autònoma de Barcelona, Barcelona, Spain; 2. Université Paris-Saclay, Paris, France; 3. Spin-Ion Technologies, Paris, France; 4. Helmholtz-Zentrum Dresden – Rossendorf, Dresden, Germany*

**4:51**

**BG-11**. **Griffiths phase like behaviour in the nearly half metallic Heusler alloy CoFeVAl: experimental and computational study.** *B. Bandyopadhyay*[1], J. Nag[2,1], S. Paul[1], M.K. Chattopadhyay[3], A. Lakhani[4], A. Alam[1] and K. G. Suresh[1] *1. Physics, IIT BOMBAY, Mumbai, India; 2. Material Research Institute, Pennsylvania State University, PA, PA, United States; 3. Free Electron Laser Utilization Laboratory, Raja Ramanna Centre for Advanced Technology, Indore, India; 4. UGC-DAE Consortium for Scientific Research, Indore, India*

**5:03**

**BG-12**. **Tuning the type of magnetic order through the Cr-substitution in $Co_3O_2BO_3$ Ludwigite.** *D.L. Mariano*[1], D.R. Candela[2], D.C. Freitas[2], C.S. Mejia[4], M.A. Continentino[3] and L. Ghivelder[1] *1. physics, Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil; 2. physics, Universidade Federal Fluminense, Niteroi, Brazil; 3. physics, Centro Brasileiro de Pesquisas Físicas, Rio de Janeiro, Brazil; 4. physics, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany*

**5:15**

**BG-13**. **Giant magnitude of ultraviolet magnetic circular dichroism in thin film $Co_2MnGa_{1-x}Ge_{1-x}$ Heusler alloys.** *S. Granville*[1,2], Y. Zhang[1], Y. Yin[3] and H. Shu[4] *1. Robinson Research Institute, Victoria University of Wellington, Lower Hutt, New Zealand; 2. MacDiarmid Institute for Advanced Materials and Nanotechnology, Wellington, New Zealand; 3. Department of Materials Science & Engineering, Monash University, Clayton, VIC, Australia; 4. Department of Applied Physics, National Pingtung University, Pingtung, Taiwan*

## Session BP
# SPINTRONICS II
# (Poster Session)

Tobias Wagner, Chair
Johannes Gutenberg University Mainz, Mainz, Germany

**BP-01**. **10 MHz Polarization Control in Spintronic Terahertz Emitters.** G. Lezier[1], J. Lampin[2], M. Vanwolleghem[2] and *N. Tiercelin[1] 1. AIMAN-FILMS, Universite de Lille, CNRS, Centrale Lille, Universite Polytechnique des Hauts-de-France, UMR 8520-IEMN, Lille, France; 2. Photonique THz, Universite de Lille, CNRS, Centrale Lille, Universite Polytechnique des Hauts-de-France, UMR 8520-IEMN, Lille, France*

**BP-02**. **Thermal stability of epitaxial and polycrystalline $Mn_3Sn$ nanodots.** *Y. Sato[1,2]*, H. Kubota[1,2], Y. Takeuchi[3,4], Y. Yamane[1,5], J. Yoon[1,2], S. Kanai[1,2,4], J. Ieda[6], H. Ohno[1,4,7] and S. Fukami[1,2,4] *1. Laboratory for Nanoelectronics and Spintronics, RIEC, Tohoku Univ., Sendai, Japan; 2. Graduate School of Engineering, Tohoku Univ., Sendai, Japan; 3. ICYS, NIMS, Tsukuba, Japan; 4. WPI-AIMR, Tohoku Univ., Sendai, Japan; 5. FRIS, Tohoku Univ., Sendai, Japan; 6. ASRC, JAEA, Ibaraki, Japan; 7. CSIS, Tohoku Univ., Sendai, Japan*

**BP-03**. **Enhanced THz Emission in Magnetic Hybrid Nanostructures with $L1_0$ Interfacial FePt layer.** *O. Crisan[1]*, A. Crisan[1] and E. Papaioannou[1,2] *1. National Institute for Materials Physics, Magurele, Romania; 2. Aristotle University of Thessaloniki, Thesssaloniki, Greece*

**BP-04**. **Investigating Magnetic Ordering in Proposed Altermagnetic $RuO_2$ Thin Films.** S. Bhatt[1], *F.M. Abel[2,3]*, T. Adel[3], D.T. Plouff[1], X. Wang[1], V. Sharma[4], S. Jois[4], G.M. Stephen[4], A. Friedman[4], R. Torsi[3], M. Munoz[3], D. Wines[3], A.R. Hight Walker[3], B. Donavon[2], M.E. Jamer[2] and J.Q. Xiao[1] *1. University of Delaware, Newark, DE, United States; 2. United States Naval Academy, Annapolis, MD, United States; 3. National Institute of Standards and Technology, Gaithersburg, MD, United States; 4. Laboratory of Physical Sciences, College Park, MD, United States*

**BP-05**. **Enhancing the Magneto-Optical Kerr Effect in Non-collinear Antiferromagnets via a Dielectric Layer.** *E. Gong[1]*, M. Yoo[1] and A. Hoffmann[1] *1. Materials Science and Engineering, University of Illinois at Urbana-Champaign, Urbana, IL, United States*

**BP-06**. **Effect of strain on altermagnetic properties of $Mn_5Si_3$.** A. Badura[1,2], *E. Schmoranzerová*[2], Z. Sadeghi[2], P. Nemec[2], Z. Soban[1], M. Leiviska[1], H. Reichlova[1,3], S. Beckert[3], V. Baltz[4], I. Kounta[5], L. Michez[5], L. Smejkal[6], J. Sinova[6], S. Goennenwein[7] and D. Kriegner[1] *1. Institute of Physics ASCR v.v.i, Prague, Czechia; 2. Faculty of Mathematics and Physics, Charles University, Prague, Czechia; 3. Technical University Dresden, Dresden, Germany; 4. SPINTEC, Univ. Grenoble Alpes, CNRS, CEA, Grenoble, France; 5. Aix Marseille University, CNRS, IM2NP, Marseille, France; 6. Institute of Physics, Johannes Gutenberg University Mainz, Mainz, Germany; 7. Department of Physics, University of Konstanz, Konstanz, Germany*

**BP-07**. **Withdrawn**

**BP-08**. **Intricate Extraordinary Hall Effect and Magnetization Switching in GdFeCo Device with a Vertical Composition Gradient.** R.C. Bhatt[1], L. Ye[1], J. Lin[1], N. Hai[2], J. Wu[2] and *T. Wu*[1] *1. Graduate School of Materials Science, National Yunlin University of Science and Technology, Yunlin, Taiwan; 2. Department of Physics, National Changhua University of Education, Changhua, Taiwan*

TUESDAY AFTERNOON 2:30

EXHIBIT HALL

## Session BQ
## SENSORS AND APPLICATIONS II (Poster Session)

Alexandria Will-Cole, Chair
Sandia National Laboratories, Albuquerque, NM, United States

**BQ-01**. **Effects of wire diameter on the sensitivity of output voltages for amorphous wire–based magnetic sensors.** *F. Akagi*[1], S. Yamada[1], Y. Honkura[2] and S. Honkura[2] *1. Kogakuin University, Tokyo, Japan; 2. MagneDesign corporation, Aichi, Japan*

**BQ-02**. **Method for Estimating Crack Length and Depth using RBF in Eddy Current Testing.** *D. Kosaka*[1], H. Hanawa[2] and T. Hirano[3] *1. Polytechnic University, Kodaira-shi, Japan; 2. The Japanese Association for Non-Destructive Testing Industry, Chiyoda-ku, Japan; 3. Hazardous Materials Safety Techniques Association, Minato-ku, Japan*

**BQ-03**. **Material-Dependent Sensitivity Degradation of Magnetoelastic Torque Transducers Under Cyclic Torsional Stress.** *R. Kari*[1] and M. Callahan[1] *1. MagCanica, Inc., San Diego, CA, United States*

**BQ-04**. **Expanding the Field Range of PHE Sensors for Increased Industrial Applicability.** *D. Lahav*[1], M. Schultz[1], S. Amrusi[2], A. Grosz[2] and L. Klein[1] *1. Physics, Bar Ilan Institute of Nanotechnology and Advanced Materials, Department of Physics, Bar-Ilan University, Ramat Gan, Tel Aviv 52900, Israel; 2. Department of Electrical and Computer Engineering, Ben-Gurion University of the Negev, Beer-Sheva, Israel*

**BQ-05**. **Localization of multiple cracks in a cylindrical ferromagnetic rod based on the Fourier coefficients of the radial leakage magnetic flux.** *K. Shiku*[1] and T. Nara[1] *1. The University of Tokyo, Bunkyo-ku, Japan*

**BQ-06**. **Optimal Design of Dual Induction Eddy Current Probe for Vibration Suppression.** *K. Matsushima*[1], D. Kosaka[1] and Y. Kumakura[2] *1. Polytechnic University, Kodaira, Japan; 2. Tex Riken Co., Ltd, Nishinomiya, Japan*

TUESDAY AFTERNOON 2:30

EXHIBIT HALL

## Session BR
# BIOMAGNETICS AND EMERGING TOPICS RELATED TO MAGNETISM (Poster Session)

Shin Yabukami, Co-Chair
Tohoku University, Sendai, Japan
Xian Wu, Co-Chair
The Ohio State University, Burlington, MA, United States

**BR-01**. **Advancing Single-Cell Hematological Analysis: A Microfluidic Approach to Measure RBC Physical Properties.** *L. Nguyen T. Tran*[1], K. Paz Gonzalez[1], H. Choe[2], X. Wu[2], P. Iyer[2], K. Wu[3], J. Chalmers[2] and J. Gomez-Pastora[1] *1. Chemical Engineering, Texas Tech University, Lubbock, TX, United States; 2. Chemical and Biomolecular Engineering, The Ohio State University, Columbus, OH, United States; 3. Electrical and Computer Engineering, Texas Tech University, Lubbock, TX, United States*

**BR-02**. **Study of Oversized SPIO Nanoparticles with a Magnetic Particle Spectrometer for Suitability as MPI Tracers.** *C. Bastajian*[1,2], C. McDonough[1], C. Hunt[1,3] and A. Tonyushkin[1] *1. Physics, Oakland University, Rochester, MI, United States; 2. Electrical Engineering, Oakland University, Rochester, MI, United States; 3. Mechanical Engineering, Oakland University, Rochester, MI, United States*

**BR-03**. **Tuning Excitation Field Amplitude for Higher Magnetic Particle Imaging Resolution: A Modeling Study.** *E. Azizi*[1], B. Rezaei[1], S. Mostufa[1], C. Li[1], J. Gomez-Pastora[2], R. He[1] and K. Wu[1] *1. Electrical and Computer Engineering, Texas Tech University, Lubbock, TX, United States; 2. Chemical Engineering, Texas Tech University, Lubbock, TX, United States*

**BR-04**. **Experimental investigation of magnetic microbead recovery using a quadrupole magnetic field: insights toward process intensification.** S. Ciannella[1], X. Wu[2], *H. Choe*[2], K. Wu[3], J. Chalmers[2] and J. Gomez-Pastora[1] *1. Department of Chemical Engineering, Texas Tech University, Lubbock, TX, United States; 2. William G. Lowrie Department of Chemical and Biomolecular Engineering, The Ohio State University, Columbus, OH, United States; 3. Department of Electrical and Computer Engineering, Texas Tech University, Lubbock, TX, United States*

**BR-05**. **Basic Study on the Application of Wireless Power Transfer to Sensing Systems related to functionalized petri dishes.** *R. Jomae*[1], Y. Hara[1], M. Yokosawa[1], F. Sato[1], O. Ito[1], K. Sagara[2] and S. Sasaki[2] *1. Tohoku Gakuin University, Sendai, Japan; 2. Hikaridenshi, Osaki, Japan*

**BR-06**. **Impact of Number of Paramagnetic Nanostructure Coupled with Two Ferromagnetic Electrodes of a Cross-Junction Shaped Molecular Spintronics Device at Different Thermal Energies.** C. D'Angelo[1] and *P. Tyagi*[1] *1. University of the District of Columbia, Washington, DC, United States*

**BR-07**. **Magnetic Field-Flow Fractionation of Diamagnetic Particles.** *N. Carlstedt*[1], P. Brungi[1], P. Wang[1] and P. Andrei[1] *1. Florida State University, Tallahassee, FL, United States*

**BR-08**. **Synthesized and Commercial Iron Sulfide Particles as Contaminant Sorbents.** *N. Shuvo*[1,3], J. Bussey[2,3], A. Lere-Adams[2,3], M. Dixon Wilkins[3], S. Karcher[3] and J. McCloy[1,2,3] *1. Chemistry, Washington State University, Pullman, WA, United States; 2. School of Mechanical and Materials Engineering, Washington State University, Pullman, WA, United States; 3. Institute of Materials Research, Washington State University, Pullman, WA, United States*

TUESDAY AFTERNOON 2:30

EXHIBIT HALL

## Session BS
## ELECTRONIC STRUCTURE, MAGNETISM AND FUNDAMENTAL PHYSICAL PROPERTIES II (Poster Session)

Arti Kashyap, Co-Chair
Indian Institute of Technology Mandi, Mandi, India
Hari Paudyal, Co-Chair
University of Iowa, Ames, IA, United States

**BS-01**. **Probing Magnetic Anisotropy and Switching Fields in $TbMn_6Sn_6$ Kagome Quantum Magnet: Impact of Spin Reorientation.** *D. Le*[1], R. Roy Chowdhury[1], W. Zhao[2], J. Karel[2], H. Srikanth[1], J.D. Gayles[1] and M. Phan[1] *1. Department of Physics, University of South Florida, Tampa, FL, United States; 2. Monash University, Melbourne, VIC, Australia*

**BS-02**. **Challenges of Using FeMn for Magnetic Tunnel Junction-Based Molecular Spintronics Devices (MTJMSD).** *B. Sankhi*[1] and P. Tyagi[1] *1. Mechanical Engineering, University of District of Columbia, Washington, DC, United States*

**BS-03**. **Using the critical behavior to probe the relationship between quasi-two-dimensional and three-dimensional spin-glasses.** *T.M. Pekarek*[1], I. Miotkowski[2] and A. Ramdas[2] *1. Physics, University of North Florida, Ja, FL, United States; 2. Physics, Purdue University, West Lafayette, IN, United States*

**BS-04**. **Muon Probing and Magnetism in Cuprate Superconductors.** *C. Boekema*[1,2] *1. Physics, San Jose State, San Jose CA 95106, CA, United States; 2. Ad Fysi Care, Los Gatos CA 95032, CA, United States*

**BS-05**. **Anomalous magnetic behavior and large exchange bias in non-centrosymmetric $Sm_7Pd_3$.** A. Biswas[1], *A. Kumar*[1], D.L. Schlagel[1] and Y. Mudryk[1] *1. Ames National Laboratory, Ames, IA, United States*

**BS-07**. **Spin-resolved Electronic Structure of the Ferromagnetic Triple-layered Ruthenate $Sr_4Ru_3O_{10}$.** *P. Ngabonziza*[2], J. Denlinger[1], A. V. Fedorov[1], G. Cao[3], G. Gebreyesus[4], J. Allen[6] and R. Martin[5] *1. Advanced Light Source, Lawrence Berkeley National Laboratory, California, CA, United States; 2. Physics, Louisiana State University, Baton Rouge, LA, United States; 3. Physics, University of Colorado at Boulder, Boulder, CO, United States; 4. Physics, University of Ghana, Accra, Ghana; 5. Physics, University of Illinois at Urbana-Champaign, Champaign–Urbana, IL, United States; 6. Randall Laboratory of Physics, University of Michigan, Michigan, MI, United States*

**BS-08**. **Transition Phase and Magnetic Properties of $LaTiO_3$ Perovskite Under Hydrostatic Pressure.** J. Cervantes[1], J. Antonio[2], H. Muñoz[3], A. Torres[3] and *E. Carvajal*[3] *1. Universidad Nacional Autónoma de México, Instituto de Investigaciones en Materiales, Ciudad de México, Mexico; 2. Universidad Nacional Autónoma de México, Facultad de Ciencias, Ciudad de México, Mexico; 3. Instituto Politécnico Nacional, ESIME-Cul., Ciudad de México, Mexico*

TUESDAY AFTERNOON 2:30

EXHIBIT HALL

## Session BT
## 2D SPINTRONICS AND TOPOLOGICAL MATERIALS I & DOMAIN WALLS (Poster Session)

Qiming Shao, Chair
The Hong Kong University of Science and Technology, Kowloon, Hong Kong

**BT-01**. **2D magnetism in layered systems with honeycomb lattice: A theoretical calculation.** *K. Pokhrel*[1] and K. Carva[1] *1. Condensed matter, Charles University, Prague, Czechia*

**BT-02**. **Superparamagnetic Properties of Metal-free Nitrogen-doped Graphene Quantum Dots.** *M. Sultan*[1], W. Jadwisienczak[2], B. Weiner[3] and G. Morell[1] *1. Department of Physics, University of Puerto Rico - Rio Piedras, San Juan, PR, United States; 2. School of Electrical Engineering and Computer Science, Ohio University, Athens, OH, United States; 3. Department of Chemistry, University of Puerto Rico - Rio Piedras, San Juan, PR, United States*

**BT-03**. **Investigation of Ferromagnetism Induced in Gamma-Ray Irradiated Molybdenum Disulfide Nano-Thin Films.** *C. Wang*[1] and C. Lee[1] *1. Department of Engineering and System Science, National Tsing Hua University, Hsinchu City, Taiwan*

**BT-04**. **Graphene Induced Invertible Magnetoresistance in Variable Phase Iron Oxides.** *N. Schulz*[1], D. DeTellem[1], G. Datt[2], A. Chanda[1], R. Roy Chowdhury[1], A.I. Ojo[1], T. Sarkar[3], H. Rodríguez Gutiérrez[1], S. Witanachchi[1], D.A. Arena[1], M. Venkata Kamalakar[2], M. Phan[1] and H. Srikanth[1] *1. University of South Florida, Tampa, FL, United States; 2. Department of Physics and Astronomy, Upsala University, Upsala, Sweden; 3. Department of Materials Science and Engineering, Upsala University, Upsala, Sweden*

**BT-05**. Now VP14-10 **Exchange effects from a magnetic substrate in transition metal dichalcogenides zigzag ribbons.** *M.M. Salazar Cardona*[1], O. Avalos Ovando[2,3] and J.P. Ramos Andrade[1] *1. Physics, University of Antofagasta, Antofagasta, Chile; 2. Physics and Astronomy, Ohio University, Athens, OH, United States; 3. Nanoscale and Quantum Phenomena Institute, Athens, OH, United States*

**BT-06**. **Thermal magnetization fluctuation in geometrically constrained magnetic domain wall on the ferromagnetic nanowire.** *S. Ahn*[1] *1. POSTECH, Pohang, The Republic of Korea*

**BT-07**. Now VP12-09 **Dipolar Field-assisted Domain Wall Depinning in Trilayer Structures.** *X. Chen*[2], W. Liu[1] and M. Bryan[3] *1. Electrical Engineering and Electronics, University of Liverpool, Brownlow Hill, United Kingdom; 2. Physics, Royal Holloway, University of London, Egham, United Kingdom; 3. Electrical Engineering, Royal Holloway, University of London, Ehgam, United Kingdom*

**BT-08**. **Impact of Inertial and Nonlinear Damping Effects on the Strain-induced Domain Wall Motion in Bilayer Composite Structure.** *S. Dolui*[1] and S. Dwivedi[1] *1. Mathematics, National Institute of Technology Andhra Pradesh, Tadepalligudem, India*

## Session BU
# ENERGY HARVESTING, VIBRATION ANALYSIS AND ADVANCED MATERIALS MANUFACTURING (Poster Session)

Dushyant Kumar, Chair
Netaji Subhas University of Technology, New Delhi, India

**BU-01**. **Distribution characterization of magnetic flux density variation in soft magnetic rectangular beam during perpendicular magnetic field assisted electromagnetic vibration powered generation.** *Y. Nakamura*[1], S. Kamiya[1] and M. Ohtake[1] *1. Faculty of Engineering, Yokohama National University, Yokohama, Japan*

**BU-02**. **Integrated Micro-Generator Design for Energy Harvesting in Smart Flow Meters.** *P. Liao*[1] and M. Tsai[1] *1. Mechanical Engineering, National Cheng Kung University, Tainan, Taiwan*

**BU-03**. **Robotic End Effector for Magnetic Sample Colleciton.** *L. Schorr*[1], I. Scaparo[1], J.P. Nunez[1], I. Thakur[1], F. Hanna[1] and R.L. Hadimani[1,2] *1. Department of Mechanical Engineering, Virginia Commonwealth University, Richmond, VA, United States; 2. Department of Biomedical Engineering, Virginia Commonwealth University, Richmond, VA, United States*

**BU-04**. **Exploring the Magnetic and Magnetocaloric Properties of PLA Composite Filaments of $Mn_{0.5}Fe_{0.5}Ni_{0.95}Cr_{0.05}Si_{0.95}Al_{0.05}$ for Additive Manufacturing.** *T.F. McKenzie*[1], J.R. DeFeo[2], A. Bhatta[1], J. Casey[2], V. Yenugonda[2], S. Mukaddaskhonov[1], G. Toromani[1], A.K. Pathak[2] and M. Khan[1] *1. Physics, Miami University, Oxford, OH, United States; 2. Physics, SUNY Buffalo State University, Buffalo, NY, United States*

**BU-05**. **Crossover from mono to multi-stable coupled non-linearity in a wideband electromagnetic vibrational energy harvester for self-powering wireless sensor nodes.** *S. Roy*[1], A. Amann[2] and K. Roy[1] *1. School of Physics, Tyndall National Institute, Cork, Ireland; 2. School of Mathematical Science, University College Cork, Cork, Ireland*

**BU-06**. **Beyond 1-watt energy harvester based on beam vibration and electromagnetic induction.** *H. Kijima-Aoki*[1] and H. Masumoto[1] *1. Tohoku University, Sendai, Japan*

**BU-07**. **Withdrawn**

**BU-08**. **Withdrawn**

## Session BV
# ELECTRICAL MACHINES AND POWER ELECTRONICS III (Poster Session)

Massimo Pasquale, Chair
INRIM, Torino, Italy

**BV-01**. **Study on an Assistance Yoke Structure for Improving Magnetization Performance Through Post-Assembly Magnetization.** *J. Hwang*[1], T. Kim[1], J. Moon[1] and D. Kang[1] *1. Energy Conversion System Lab(ECSL), Keimyung University, Daegu, The Republic of Korea*

**BV-02**. **Design and Analysis for Improved Efficiency Based on Design Variables and Performances Considering the Nonlinear Core Material of IPMSM.** *S. Lee*[1], T. Kim[1], Y. Choi[1], K. Shin[2] and J. Choi[1] *1. Chungnam National University, Daejeon, The Republic of Korea; 2. Changwon National University, Changwon, The Republic of Korea*

**BV-03**. **Design and Experimental Verification of a Surface-Mounted Permanent Magnet Synchronous Machine with Bread-Loaf Shape Magnets Considering Multi-physics Analysis.** *S. Kim*[1], S. Kim[1], W. Jung[1], K. Shin[2] and J. Choi[1] *1. Chungnam National University, Daejeon, The Republic of Korea; 2. Changwon National University, Changwon, The Republic of Korea*

**BV-04**. **Electromagnetic Analysis of AFPM based on Quasi-3D FEM Considering End Effects.** *J. Jang*[1], J. Yang[1], H. Ban[1], K. Shin[2] and J. Choi[1] *1. Department of Electrical Engineering, Chungnam National University, Daejeon, The Republic of Korea; 2. Department of Electrical Engineering, Changwon National University, Changwon, The Republic of Korea*

**BV-05**. **Optimal Split Ratio Design of Outer Rotor SPMSM Considering Variations in Magnetic Properties of Ferrite PM within the Same Grade.** *K. Kim*[1], Y. Bai[1], J. Kim[2] and M. Lim[1] *1. Automotive engineering, Hanyang University, Seoul, The Republic of Korea; 2. Mechanical Engineering, Yeungnam University, Gyeongsan, The Republic of Korea*

**BV-06**. **Analysis of Magnetic Field Behavior and Core Losses in Permanent Magnet Synchronous Generators for Wave Energy Converter according to Load Conditions.** *W. Jung*[1], J. Park[1], S. Kim[1], K. Kim[2], J. Park[2], K. Shin[3] and J. Choi[1] *1. Chungnam National University, Daejeon, The Republic of Korea; 2. Korea Research Institute of Ships and Ocean Engineering, Daejeon, The Republic of Korea; 3. Changwon National University, Changwon, The Republic of Korea*

**BV-08**. **Temperature Performance of SmFe12 Permanent Magnets in Electric Motors.** *H. Baldino*[2], D. Hedlund[1] and P. Kulik[1] *1. Electrical and Computer Engineering, University of Central Florida, Orlando, FL, United States; 2. Material Science and Engineering, University of Central Florida, Orlando, FL, United States*

TUESDAY
EVENING
6:45

CELESTIN D

## EVENING SESSION: SCIENCE AND HISTORY OF ROCK AND ROLL

Amal El-Ghazaly, Co-Chair
Cornell University, Ithaca, NY, United States
Vivek Amin, Co-Chair
Indiana University
Matt Sakakeeny, Co-Chair
Tulane University

WEDNESDAY
MORNING
8:30

CELESTIN D

### Session CA

## TOPOLOGICAL THERMOELECTRICS: UTILIZING TOPOLOGY AND SPIN FOR NEXT-GENERATION ENERGY CONVERSION

Sarah Watzman, Chair
University of Cincinnati, Cincinnati, OH, United States

**8:30**

**CA-01**. **Topology for energy efficient spintronics and energy conversion.** ***(Invited)*** *C. Felser*[1] *1. Topological Quantum Chemistry, Max Planck Institute Chemical Physics of Solids, Dresden, Germany*

**CA-02**. **Withdrawn**

**9:06**

**CA-03**. **Thermoelectric Properties of Thin Films of Cadmium Arsenide.** ***(Invited)*** *S. Stemmer*[1] *1. University of California, Santa Barbara, Santa Barbara, CA, United States*

**9:42**

**CA-04**. **Record-Breaking Nernst Thermopower and Thermal Hall Angle in YbMnBi2.** ***(Invited)*** J. Wen[1], K. Manna[2,3], D. Vu[4,5], Y. Pan[2,6], C. Felser[2], B. Skinner[7] and *J.P. Heremans*[1,4,7] *1. Department of Materials Science and Engineering, The Ohio State University, Columbus, OH, United States; 2. Max Planck Institute for Chemical Physics of Solids, Dresden, Germany; 3. Department of Physics, Indian Institute of Technology Delhi, New Delhi, India; 4. Department of Mechanical and Aerospace Engineering, The Ohio State University, Columbus, OH, United States; 5. Department of Applied Physics, Yale University, New Haven, CT, United States; 6. Center of Quantum Materials & Devices, Chongqing University, Chongqing, China; 7. Department of Physics, The Ohio State University, Columbus, OH, United States*

**10:18**

**Break**

**10:45**

**CA-05**. **Unusual transport properties of TiSe2 and GeTe for Solid-State Cooling.** ***(Invited)*** *M. Zebarjadi*[1], S. Akhanda[1] and S. Das[1] *1. University of Virginia, Charlottesville, VA, United States*

WEDNESDAY MORNING 8:30

CELESTIN E

## Session CB
## WHEN MAGNONS MEET QUANTUM SPINS

Gianluca Gubbiotti, Chair
IOM-CNR, Perugia, Italy

**8:30**

**CB-01**. **Quantum magnonics via color centers.** ***(Invited)*** *Y. Tserkovnyak*[1] *1. Physics and Astronomy, University of California, Los Angeles, Los Angeles, CA, United States*

**CB-02**. **Withdrawn**

**9:06**

**CB-03**. **Using spins and microwaves to probe an ultra-low damping organic-based ferrimagnet.** ***(Invited)*** *G. Fuchs*[1] *1. Cornell University, Ithaca, NY, United States*

**CB-04**. **Withdrawn**

**9:42**

**CB-05**. **Nonlinear spin dynamics in magnon/nitrogen-vacancy hybrid system.** ***(Invited)*** *Z. Hu*[1], Z. He[1], Q. Wang[1], C. Chou[1], J. Hou[1] and L. Liu[1] *1. Massachusetts Institute of Technology, Cambridge, MA, United States*

## Session CC
# 2D SPINTRONICS AND TOPOLOGICAL MATERIALS II

Guoqiang Yu, Chair
Chinese Academy of Sciences, Beijing, China

**8:30**

**CC-01**. **Proximity Phenomena in Van der Waals Heterostructures.**
***(Invited)*** J. Svetlik[2], T. Guillet[2], V. Zatko[2], F. Herling[2], R. Galceran[3], W. Savero Torres[2], L. Camosi[2], M. Jamet[4], F. Bonell[4], J. Sierra[2] and *S.O. Valenzuela*[1,2] *1. ICREA, Barcelona, Spain; 2. ICN2 - Catalan Institute of Nanoscience and Nanotechnology, Bellaterra, Spain; 3. University of Barcelona, Barcelona, Spain; 4. SPINTEC, Grenoble, France*

**CC-02**. **Withdrawn**

**9:06**

**CC-03**. **Thickness-Dependent Behavior of Magnetic Domains in van der Waals $Fe_3GeTe_2$ during Magnetization Reversal.**
*J. Garland*[1,2], J. Fullerton[2], P. Cai[3], Y. Li[2], E. Santos[3], C. Phatak[2,4] and A. Petford-Long[2,4] *1. Applied Physics Program, Northwestern University, Evanston, IL, United States; 2. Materials Science Division, Argonne National Laboratory, Lemont, IL, United States; 3. School of Physics and Astronomy, University of Edinburgh, Edinburgh, United Kingdom; 4. Materials Science and Engineering Department, Northwestern University, Evanston, IL, United States*

**9:18**

**CC-04**. **Origin and Thermal Evolution of Exchange Bias in $MnPS_3$/$Fe_3GeTe_2$ antiferromagnetic/ferromagnetic van der Waals Heterostructures.** *A. Puthirath Balan*[1], A. Kumar[1], P. Reiser[2], J. Vas[3], T. Denneulin[3], D. Le[4], T. Saunderson[1,10], M. Tschudin[2], C. Pellet-Mary[2], D. Dutta[2], C. Schrader[2], T. Scholz[5], J. Geuchies[6], S. Fu[6], H. Wang[6], A. Bonanni[7], B. Lotsch[5], U. Nowak[8], G. Jakob[1], J.D. Gayles[4], A. Kovács[3], R.E. Dunin-Borkowski[3], P. Maletinsky[2] and M. Kläui[1,9] *1. Institute of Physics, Johannes Gutenberg University Mainz, Mainz, Germany; 2. Department of Physics, University of Basel, Basel, Switzerland; 3. Ernst Ruska-Centre for Microscopy and Spectroscopy with Electrons and Peter Grünberg Institute, Forschungszentrum Jülich, Julich, Germany; 4. Department of Physics, University of South Florida, Florida, FL, United States; 5. Max Planck Institute for Solid State Research, Stuttgart, Germany; 6. Max Planck Institute for Polymer Research Mainz, Mainz, Germany; 7. Johannes Kepler University Linz, Linz, Austria; 8. Department of Physics, University of Konstanz, Konstanz, Germany; 9. Centre for Quantum Spintronics, Department of Physics, Norwegian University of Science and Technology, Trondheim, Norway; 10. Peter Grünberg Institut and Institute for Advanced Simulation, Forschungszentrum Jülich and JARA, Julich, Germany*

**9:30**

**CC-05**. **Gilbert damping in large-area CVD monolayer $MoS_2$/permalloy heterostructures.** *H. De Libero*[1], E. Chalmers[1], N. Natera Cordero[1], A. Strudwick[1], I. Vera Marun[1] and T. Thomson[1] *1. University of Manchester, Manchester, United Kingdom*

**9:42**

**CC-06**. **Phase and compositional influence on the magnetic properties of atmospheric chemical vapour deposition (APCVD) grown $FeTe_x$ ($1 \leq x \leq 2$) system.** *B.P. Jena*[1] and S. Chandran[1] *1. Physics, IIT Madras, Chennai, India*

**9:54**

**CC-07**. **Room Temperature 2D Ferromagnetism in Chromium doped Transition-Metal Dichalcogenide $PdTe_2$.** *S. Cheng*[1], H. Shiu[1], Y. Lai[1], W. Tseng[1], W. Chen[1], T. Chuang[1], D. Wei[1], C. Lue[2] and Y. Hsu[1,3] *1. National Synchrotron Radiation Research Center, Hsinchu, Taiwan; 2. Department of Physics, National Cheng Kung University, Tainan, Taiwan; 3. Department of Photonics, National Cheng Kung University, Tainan, Taiwan*

**10:06**

**Break**

**10:45**

**CC-08**. ***C*-paired spin-valley locking in layered van der Waals antiferromagnetic materials.** ***(Invited)*** *J. Liu*[1] *1. Physics, Hong Kong University of Science and Technology, Kowloon, Hong Kong*

**11:21**

**CC-09**. **Valley-spin-polarization of $MoS_2$ monolayer induced by ferromagnetic order of an antiferromagnet.** C. Chan[1] and *C. Yang*[1] *1. Materials Science and Engineering, National Yang Ming Chiao Tung University, Hsinchu, Taiwan*

**11:33**

**CC-10**. **Enhanced Controllability of Valley Polarization in ML-$WSe_2$ Using the Single-Contact Method.** *J. Siao*[1], H. Lin[1], T. Lin[1], Y. Chu[1] and M. Lin[1,2,3] *1. Physics, National Taiwan University, Taipei, Taiwan; 2. Atomic and Molecular Sciences, Academia Sinica, Taipei, Taiwan; 3. Research Center for Applied Sciences, Academia Sinica, Taipei, Taiwan*

**11:45**

**CC-11**. **Withdrawn**

WEDNESDAY
MORNING
8:30

CELESTIN B

## Session CD
# MAGNONICS I: MAGNON MANIPULATION AND APPLICATION

Jacob Wisser, Chair
National Institute of Standards and Technology, Broomfield, CO, United States

**8:30**

**CD-01**. **Reconfigurable standalone magnonic devices exploiting micromagnets and MEMS.** ***(Invited)*** *R. Bertacco*[1] *1. Department of Physics, Politecnico di Milano, Milano, Italy*

**9:06**

**CD-02**. **Magneto-ionic voltage control of spin-wave phase with negligible amplitude modulation.** *L. Flajsman*[1], M. Ameziane[1], R. Mansell[1] and S. van Dijken[1] *1. Aalto University, Espoo, Finland*

**CD-03**. **Withdrawn**

**9:18**

**CD-04**. **On-chip integrated spin-wave transducers: optimization and nonlinear limits.** F. Kohl[1], M. Wagner[1], B. Heinz[1] and *P. Pirro*[1] *1. Physics, RPTU Kaiserslautern, Kaiserslautern, Germany*

**9:30**

**CD-05**. **Very Narrow Linewidth of Propagating Magnons with Submicron-Scale Wavelength and Associated Damping.** *J. Lim*[1], T. Lo[1], R. Klause[1], Y. Li[2], V. Novosad[2] and A. Hoffmann[1] *1. Materials Science and Engineering, University of Illinois Urbana-Champaign, Urbana, IL, United States; 2. Materials Science Division, Argonne National Laboratory, Lemont, IL, United States*

**9:42**

**CD-06**. **Spin pumping driven by magnon-photon polaritons in a ferromagnet-coplanar superconducting resonator hybrid system.** *D. Wagle*[1*], Y. Li[2], A. Rai[1] and B. Jungfleisch[1] *1. Physics and Astronomy, University of Delaware, Newark, DE, United States; 2. Argonne National Labortory, Lemont, IL, United States*

**9:54**

**CD-07**. **Magnon lifetimes in YIG spheres for quantum magnonics at millikelvin temperatures.** R. Serha[1,2], K. McAllister[3], D. Schmoll[1,2], P.E. Schmidt[8], I.Y. Yang[5,6], M. Trupke[8,7], S. Knauer[1], T. Reimann[4], C. Dubs[4], C. Gonzalez Ballestero[9], M. Aspelmeyer[7,8], G. Kirchmair[5,6], *D.A. Bozhko*[3] and A. Chumak[1] *1. Faculty of Physics, University of Vienna, Vienna, Austria; 2. Vienna Doctoral School in Physics, University of Vienna, Vienna, Austria; 3. Department of Physics and Energy Science, University of Colorado Colorado Springs, Colorado Springs, CO, United States; 4. INNOVENT e.V. Technologieentwicklung, Jena, Germany; 5. Institute for Quantum Optics and Quantum Information, Austrian Academy of Sciences, Innsbruck, Austria; 6. Institute for Experimental Physics, University of Innsbruck, Innsbruck, Austria; 7. Vienna Center for Quantum Science and Technology (VCQ), Faculty of Physics, University of Vienna, Vienna, Austria; 8. Institute for Quantum Optics and Quantum Information (IQOQI) Vienna, Austrian Academy of Sciences, Vienna, Austria; 9. Institute for Theoretical Physics, Vienna University of Technology, Vienna, Austria*

**10:06**

**Break**

**10:45**

**CD-08**. **Shaping non-reciprocal caustic beams.** *V. Vlaminck*[1,2], D. Stoeffler[4], D. Wagle[3], V.M. Castel[1,2], L. Temdie-Kom[1,2], M.T. Kaffash[3], H. Majjad[4], Y. Henry[4], B. Jungfleisch[3] and M. Bailleul[4] *1. MO, IMT Atlantique, Brest, France; 2. Lab-STICC, Brest, France; 3. University of Delaware, Newark, DE, United States; 4. IPCMS, Strasbourg, France*

**10:57**

**CD-09**. **Mutual nonlinear interactions between parametrically excited spin-wave modes in a YIG microdisk.** *G. Soares*[1], R. Lopes Seeger[1,2], A. Kolli[1], M. Massouras[2], N. Beaulieu[3], J. Ben Youssef[3], M. Muñoz[4], P. Che[6], A. Anane[6], S. Perna[5], M. d'Aquino[5], C. Serpico[5], T. Srivastava[2], H. Merbouche[1], J. Kim[2] and G. de Loubens[1] *1. Service de Physique de l'État Condensé, CEA Paris-Saclay, Université Paris-Saclay, CNRS, Gif-sur-Yvette, France; 2. Centre de Nanosciences et de Nanotechnologies, Université Paris-Saclay, CNRS, Palaiseau, France; 3. LabSTICC, CNRS, Université de Bretagne Occidentale, Brest, France; 4. Instituto de Tecnologías Físicas y de la Información (CSIC), Madrid, Spain; 5. Department of Electrical Engineering and ICT,University of Naples Federico II, Napoli, Italy; 6. Laboratoire Albert Fert, CNRS, Thales, Univ. Paris-Saclay, Palaiseau, France*

**11:09**

**CD-10**. **Three-dimensional nanoscale control of magnetism in crystalline Yttrium Iron Garnet for magnonics.** V. Levati[1], *M. Vitali*[1], A. Del Giacco[1], N. Pellizzi[1], R. Silvani[2], L. Ciaccarini Mavilla[2], M. Madami[2], I. Biancardi[1], D. Girardi[1], M. Panzeri[1], P. Florio[1], D. Breitbach[3], P. Pirro[3], G. Corrielli[4], R. Osellame[4], R. Bertacco[1], V. Russo[1], A. Li Bassi[1], S. Tacchi[5], D. Petti[1] and E. Albisetti[1] *1. Politecnico di Milano, Milan, Italy; 2. Università di Perugia, Perugia, Italy; 3. RPTU Kaiserslautern-Landau, Kaiserslautern, Germany; 4. CNR-IFN, Milan, Italy; 5. CNR-IOM, Perugia, Italy*

**11:21**

**CD-11**. **Fabrication and Characterization of Suspended YIG Microstructures.** *S.W. Kurfman*[1], F. Heyroth[2] and G. Schmidt[1,2] *1. Institute for Physics, Martin Luther University Halle-Wittenberg, Halle (Saale), Germany; 2. Interdisziplinäres Zentrum für Materialwissenschaften, Martin Luther University Halle-Wittenberg, Halle (Saale), Germany*

**11:33**

**CD-12**. **Imaging of magnon modes in a YIG microdisk with a magnetic vortex.** *L. Peeters*[1], L. Flajsman[1] and S. van Dijken[1] *1. Applied Physics, Aalto University, Espoo, Finland*

**11:45**

**CD-13**. **Manipulation of Spin-wave Transport in a YIG Film by an Array of Magnetic Vortices.** *J. Hyun*[1], N. Kuznetsov[1], L. Flajsman[1] and S. van Dijken[1] *1. Department of Applied Physics, Aalto University, Espoo, Finland*

## Session CE
# MAGNETORESISTIVE SENSORS

Victor Lopez-Dominguez, Chair
Universitat Jaume I, Castellon de la Plana, Spain

**8:30**

**CE-01**. **TMR Sensors on the Edge: non-invasive and agnostic monitoring of Industrial Tools.** ***(Invited)*** *R. Ferreira*[1], E. Paz[1], A. Talantsev[1], A. Araújo[1], E. Iranmehr[1] and T. Boehnert[1] *1. INL - International Iberian Nanotechnology Laboratory, Braga, Portugal*

**9:06**

**CE-02**. **Arrays of coupled magnetic tunnel junctions for sensor applications.** *A. Meo*[1], F. Garesci[2], A. Grimaldi[2,3], D. Rodrigues[1], M. Carpentieri[1] and G. Finocchio[3] *1. Department of Electrical and Information Engineering, Politecnico di Bari, Bari, Italy; 2. Department of Engineering, University of Messina, Messina, Italy; 3. Department of Mathematical and Computer Sciences, Physical Sciences and Earth Sciences, University of Messina, Messina, Italy*

**CE-03**. **Withdrawn**

**9:18**

**CE-04**. **Flexible planar-Hall magnetometer with nT resolution at extremely low frequencies.** *J. Schmidtpeter*[1,2], P.T. Das[1], P. Makushko[1], E. Oliveros-Mata[1], Y. Zabila[1], C. Schubert[1], T. Wondrak[2] and D. Makarov[1] *1. Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf e.V., Dresden, Germany; 2. Institute of Fluid Dynamics, Helmholtz-Zentrum Dresden-Rossendorf e.V., Dresden, Germany*

**9:30**

**CE-05**. **Multi-Functional Flexible Planar Hall Effect Sensors.** *D. Lahav*[1], H. Nhalil[1], M. Schultz[1], S. Amrusi[2], A. Grosz[2] and L. Klein[1] *1. Physics, Bar Ilan Institute of Nanotechnology and Advanced Materials, Department of Physics, Bar-Ilan University, Ramat Gan, Tel Aviv 52900, Israel; 2. Electrical and Computer Engineering, Ben-Gurion University of the Negev, Beer-Sheva, Israel*

**9:42**

**CE-06**. **Optically Broadband Piezo-Optomechanical Magnetometer.** Z. Castillo[1,2], *B.P. Smith*[1], A. Will-Cole[1], M. Dong[3], K. Bussmann[4], P. Finkel[4] and M. Eichenfield[1,5] *1. Sandia National Laboratories, Albuquerque, NM, United States; 2. Department of Physics and Astronomy, University of New Mexico, Albuquerque, NM, United States; 3. The MITRE Corporation, Bedford, MA, United States; 4. US Naval Research Laboratory, Washington, DC, United States; 5. Wyant College of Optical Sciences, University of Arizona, Tucson, AZ, United States*

**9:54**

**CE-07**. **Organic Solvent Chemical Sensing with various Magnetic Tunnel Junction based Molecular Spintronics Device Configurations.** *H. Brown*[1] and P. Tyagi[1] *1. University of The District of Columbia, Washington, DC, United States*

**10:06**

**Break**

**10:45**

**CE-08**. **Gain Enhancement and Ground Plane Immunity of Mechanically Driven Thin-Film Bulk Acoustic Wave Resonator Magnetoelectric Antenna Arrays.** *B. Luo*[1*], X. Liang[1], H. Chen[1], N. Sun[1], H. Lin[2] and N.X. Sun[1] *1. Electrical and computer engineering, Northeastern University, Boston, MA, United States; 2. Winchester Technologies, Burlington, MA, United States*

**CE-09**. Now VP16-14 **Advanced TMR Sensor-Based Magnetrodes for High-Sensitivity Biomagnetic Field Detection.** *J. Chen*[1,2,3] *1. State Key Laboratory of Transducer Technology, Aerospace Information Research Institute, Chinese Academy of Sciences, Beijing, China; 2. School of Electronic, Electrical and Communication Engineering, University of Chinese Academy of Sciences, Beijing, China; 3. College of Materials Sciences and Opto-Electronic Technology, University of Chinese Academy of Sciences, Beijing, China*

**10:57**

**CE-11**. **Multichannel Giant Magnetoresistance Eddy-Current Probes with Dynamic Liftoff Correction.** *L. Bui*[1,2], J. Jeng[1], H. Huang[1] and T. Nguyen[1] *1. Department of Mechanical Engineering, National Kaohsiung University of Science and Technology, Kaohsiung, Taiwan; 2. Faculty of Mechanical Engineering, Hung Yen University of Technology and Education, Hung yen, Vietnam*

**11:09**

**CE-12**. **Noise Characterization of Spin-Transfer-Torque-based Magnetic Field Sensor.** *K. Komuro*[1], H. Nicolas[2], B. Dieny[3], D. Oshima[1], T. Kato[4] and R. Sousa[3] *1. Electronics, Graduate School of Engineering, Nagoya University, Nagoya, Japan; 2. University of Strasbourg, Strasbourg, France; 3. IRIG, Spintec, Grenoble, France; 4. IMaSS, Nagoya University, Nagoya, Japan*

**11:21**

**CE-13**. **Simultaneous measurements of magnetomyographic and magnetocardiographic signals using SQUIDs and relocatable magnetoresistive-device-based flux sensors.** *Y. Adachi*[1], T. Tatsuoka[2], T. Fukui[3], T. Shibuya[4] and S. Kawabata[5] *1. Applied Electronics Laboratory, Kanazawa Institute of Technology, Kanazawa, Japan; 2. METOOL Inc., Tokyo, Japan; 3. LibreFields LLC, Tokyo, Japan; 4. TDK Corp., Tokyo, Japan; 5. Department of Advanced Technology in Medicine, Tokyo Medical and Dental University, Tokyo, Japan*

WEDNESDAY MORNING 8:30

IMPERIAL 5AB

## Session CF
## HARD MAGNETS II

George Hadjipanayis, Chair
University of Delaware, Newark, DE, United States

**8:30**

**CF-01**. **Assessing Induced Short-Range Order and Magnetocrystalline Anisotropy in Equiatomic FeNi.** *L.H. Lewis*[1], P. Stamenov[2], P. Henry[3], J. O'Brien[2] and S. Langridge[3] *1. Northeastern University, Boston, MA, United States; 2. Trinity College, Dublin, Ireland; 3. Rutherford Appleton Laboratory, Didcot, United Kingdom*

**CF-02**. **Withdrawn**

**8:42**

**CF-03**. **Influence of Strain and Applied Field on the $L1_0$ Atomic Ordering and Subsequent Hard Magnetic Properties of Near-Equiatomic FeNi.** *C.D. Woodgate*[1,2], L.H. Lewis[3,4] and J.B. Staunton[1] *1. Department of Physics, University of Warwick, Coventry, United Kingdom; 2. H. H. Wills Physics Laboratory, University of Bristol, Bristol, United Kingdom; 3. Department of Chemical Engineering, Northeastern University, Boston, MA, United States; 4. Department of Mechanical and Industrial Engineering, Northeastern University, Boston, MA, United States*

**8:54**

**CF-04**. **Synthesis of $Fe_5C_2$ nanocrystals with enhanced anisotropy.** *P. Joshi*[1], H. Abbas[1], T. Karki[1], J. Mohapatra[1] and P. Liu[1] *1. Department of Physics, University of Texas at Arlington, Arlington, TX, United States*

**9:06**

**CF-05**. **A novel ferromagnetic phase $Fe_3Cu$ exhibiting high anisotropy.** *H. Abbas*[1], P. Joshi[1], T. Karki[1], J. Mohapatra[1] and P. Liu[1] *1. Physics, University of Texas at Arlington, Arlington, TX, United States*

**9:18**

**CF-06**. **Process-Structure-Property Relationships in Additively Manufactured Alnico Permanent Magnets.** *A.R. Duong*[1], I.M. Smith[3], K. Snyder[2], S. Sarker[1], O. Bishop[1,2], E. Carpenter[3] and R. Barua[1] *1. Mechanical Engineering, Virginia Commonwealth University, Richmond, VA, United States; 2. Commonwealth Center for Advanced Manufacturing, Disputanta, VA, United States; 3. Chemistry, Virginia Commonwealth University, Richmond, VA, United States*

**9:30**

**CF-07**. **Influence of Nitrogen Stoichiometry on the Crystal Structure and Magnetic Properties of Antiperovskite $Mn_3GeN$.** *S. O'Donnell*[1,2], C.E. Regier[2], S. Mahatara[1], S. Lany[1], S. Bauers[1], R.W. Smaha[1] and J.R. Neilson[2] *1. National Renewable Energy Laboratory, Golden, CO, United States; 2. Chemistry, Colorado State University, Fort Collins, CO, United States*

**9:42**

**CF-08**. **Densification of Nitride Permanent Magnet Nanoparticles.** *R.W. Smaha*[1,2], S. O'Donnell[1,2], R. Kuchi[1,3], Y. Wu[1,4], R. Kinner[1,5], S. Bauers[1,2], F. Johnson[1,4], I.Z. Hlova[1,3] and M.J. Kramer[1,3] *1. Critical Materials Innovation Hub, U.S. Department of Energy, Ames, IA, United States; 2. National Renewable Energy Laboratory, Golden, CO, United States; 3. Ames National Laboratory, Ames, IA, United States; 4. Niron Magnetics, Minneapolis, MN, United States; 5. Powdermet, Euclid, OH, United States*

**9:54**

**CF-09**. **Giant coercivity in Manganese Substituted Strontium M-type Hexaferrite Nanopowders.** *A. Sassi*[1,2], A. Pasko[1], S. Gam-Derouich[4], V. Yenugonda[2], F. Mazaleyrat[1] and A. Pathak[2,3] *1. SATIE, CNRS, Université Paris-Saclay, ENS Paris-Saclay, Gif-sur-Yvette, France; 2. Department of Physics, SUNY Buffalo State, Buffalo, NY, United States; 3. One Research Circle, GE Aerospace Research, Niskayuna, NY, United States; 4. ITODYS, UMR CNRS 71086, Université Paris Diderot, Sorbonne Paris Cité, Paris, France*

**10:06**

**Break**

**10:45**

**CF-10**. **$L1_0$ FeNi films synthesized through denitriding of reactively sputtered FeNiN.** *W. Beeson*[1], C. Jensen[2], V. Stanic[3], J. Jordan-Sweet[3], H. Zhang[4], S. Krylyuk[4], A. Davydov[4], J. Borchers[2], A.J. Grutter[2], C. Kinane[5], A. Caruana[5] and K. Liu[1] *1. Department of Physics, Georgetown University, Washington, DC, United States; 2. NIST Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, MD, United States; 3. IBM T.J. Watson Research Center, Yorktown Heights, NY, United States; 4. Materials Science and Engineering Division, National Institute of Standards and Technology, Gaithersburg, MD, United States; 5. ISIS, Rutherford Appleton Lab, Didcot, United Kingdom*

**10:57**

**CF-11**. **Optimization of Coercivity and Price of a Permanent Magnet considering the Microstructure.** *C. Wager*[1,2], C. Fillies[1], T. Schrefl[1,2], A. Kovacs[1,2], H. Oezelt[1], D. Böhm[1], Q. Ali[1], H. Yamano[3], M. Yano[3], N. Sakuma[3], A. Kinoshita[3], T. Shoji[3] and A. Kato[3] *1. Department of Integrated Sensor Systems, University for Continuing Education Krems, Wiener Neustadt, Austria; 2. Christian Doppler Laboratory for magnet design through physics informed machine learning, Wiener Neustadt, Austria; 3. Toyota Motor Corporation, Shizuoka, Japan*

**11:09**

**CF-12**. **FeCo nanowire – strontium ferrite composites: an alternative for the fabrication of rare-earth-free permanent magnets.** *L. Perez*[1,2], A. Berja[3], L. Álvaro-Gómez[1], L. Gómez-Cruz[2], L. Lorenzo[2], C. Granados Miralles[3], C. Salazar[4], A. Pérez[4], C. Garijo[4], C. Fernández[4] and A. Quesada[3] *1. Fisica de Materiales, Universidad Complutense de Madrid, Madrid, Spain; 2. IMDEA Nanociencia, Madrid, Spain; 3. Instituto de Cerámica y Vidrio - CSIC, Madrid, Spain; 4. Lurederra Technological Center, Los Arcos, Navarra, Spain*

**11:21**

**CF-13**. **First-Principles Study of Influence of Nitrogen Stoichiometry on Magnetic Ordering in $Mn_3AN$ (A = Ge, Ga).** *S. Mahatara*[1], S. O'Donnell[1,2], R.W. Smaha[1], J.R. Neilson[2], S. Bauers[1] and S. Lany[1] *1. MCCS, National Renewable Energy Laboratory, Golden, CO, United States; 2. Department of Chemistry, Colorado State University, Fort Collins, CO, United States*

**11:33**

**CF-14**. **Enhancing magnetic properties and Curie temperature of 4d and 5d transition metal and p-block element co-doped $Fe_2P$ alloys.** K. Baatartsogt[1], T. Namsrai[2], J. Narmandakh[1], U. Enkhnaran[1], S. Deleg[1], O. Narantogtokh[2], S. Dorj[2], O. Tumentsereg[3], O. Khorgolkhuu[4] and *O. Dorj*[3] *1. Functional Materials Laboratory, Institute of Physics and Technology, Mongolian Academy of Sciences, Ulaanbaatar, Mongolia; 2. Physics, National University of Mongolia, Ulaanbaatar, Mongolia; 3. Physics, Incheon National University, Incheon, The Republic of Korea; 4. National Institute for Computational Sciences, Oak Ridge, TN, United States*

**11:45**

**CF-15**. **Hot Axial Pressure during Quenching of Bulk Millimetric $(Mn_{0.6}Al_{0.4})_{98}C_2$: Influence on their Hard Magnetic Properties.**
V. Madurga[1], J. Vergara[1,2] and *C. Favieres[1,2] 1. Laboratory of Magnetism. Department of Science, Physics, Public University of Navarre, Pamplona, Spain; 2. IMANAT^2. Institute for Advanced Materials and Mathematics, Public University of Navarre, Pamplona, Spain*

WEDNESDAY MORNING 8:30

IMPERIAL 5CD

## Session CG
# MAGNETOELECTRIC MATERIALS AND PHENOMENA I

Paola Tiberto, Chair
INRIM, Torino, Italy

**8:30**

**CG-01**. **Chirality: a new degree of freedom for skyrmionics.** ***(Invited)***
C. Gueneau[1], F. Ibrahim[1], J. Fischer[1], C. Fillion[1], L. Vojáček[1], R. Kumar[1], A. Fassatoui[2], S. Pizzini[2], L. Ranno[2], D. Ourdani[3], M. Belmeguenai[3], Y. Roussigné[3], S. Chérif[3], S. Auffret[1], J. Faure-Vincent[1], I. Joumard[1], O. Boulle[1], G. Gaudin[1], L.D. Buda-Prejbeanu[1], M. Chshiev[1,4], C. Baraduc[1] and *H. Béa[1,4] 1. Spintec, Grenoble, France; 2. Néel Institute, Grenoble, France; 3. Laboratoire des Sciences des Procédés et des Matériaux, Villetaneuse, France; 4. Institut Universitaire de France, Paris, France*

**9:06**

**CG-02**. **Epitaxial Strain Induced Enhancement of Dielectric Constant and VCMA Effect in MgO Based Magnetic Tunnel Junctions.**
*T. Nozaki*[1], H. Onoda[1], S. Tamaru[1], H. Nakayama[1], M. Konoto[1], T. Nozaki[1] and S. Yuasa[1] *1. Research Center for Emerging Computing Technologies, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan*

**9:18**

**CG-04**. **RIXS-MCD of Multiferroic ε-$Fe_2O_3$ Nanoparticles.**
*R. Nickel*[1], G. Buccoliero[1], M. dos Reis Cantarino[1] and K. Kummer[1] *1. ESRF, Grenoble, France*

**CG-05. Withdrawn**

**9:30**

**CG-07**. **Electrically Controlled Dzyaloshinskii–Moriya Interaction via Magnetic Textures in a Weyl Semimetal.** *Y. Semenov*[1] and K.W. Kim[1] *1. North Carolina State University, Raleigh, NC, United States*

**9:42**

**CG-08**. **Compositional Tuning of Magnetic and Magnetotransport Properties of $Co_2MnGa_{1-x}Ge_x$ Heusler alloys thin films - from a Weyl semi-metal to a Half-metal.** *B. Patel*[1,2], Y. Zhang[1] and S. Granville[1,2] *1. Robinson Research Institute, Victoria University of Wellington, Wellington, Netherlands; 2. MacDiarmid Institute for Advanced Materials and Nanotechnology, Wellington, New Zealand*

**9:54**

**CG-10**. **Ferroelectric control of magnetic anisotropy in the layered multiferroic $Co/Hf_{0.5}Zr_{0.5}O_2$.** G. Gandini[1], J. Hertel[2], G. Spaccia[1], D. Benettin[1], F. Fagiani[1], M. Cantoni[1], T. Gurieva[2], C.A. Durner[2], M. Lederer[2], B. Lilienthal-Uhlig[2], A. Manchon[3] and *C. Rinaldi*[1] *1. Physics, Politecnico di Milano, Milano, Italy; 2. Center Nanoelectronic Technologies (CNT), Fraunhofer IPMS, Dresden, Germany; 3. Aix-Marseille Université, CNRS, CINAM, Marseille, France*

**10:06**

**Break**

**10:45**

**CG-09**. **Voltage control of spin-to-charge interconversion in $Mn_2Au$ films.** ***(Invited)*** *C. Song*[1], X. Chen[1], L. Huang[1] and F. Pan[1] *1. Tsinghua University, Beijing, China*

**11:21**

**CG-11**. **Magnetic and Structural Polymorphism of CuMnSb Thin Films.** *M. Sawicki*[1,2], A. Ciechan[1], P. Dluzewski[1], S. Kret[1], K. Gas[1,3], L. Scheffler[4,5], C. Gould[4,5], J. Kleinlein[4,5], L.W. Molenkamp[4,5] and P. Boguslawski[1] *1. Institute of Physics, Polish Academy of Sciences, Warszawa, Poland; 2. Research Institute of Electrical Communication, Tohoku University, Sendai, Japan; 3. Center for Science and Innovation in Spintronics, Tohoku University, Sendai, Japan; 4. Physikalisches Institut (EP3), Universitaet Wuerzburg, Wuerzburg, Germany; 5. Institute for Topological Insulators, Universitaet Wuerzburg, Wuerzburg, Germany*

## Session CP
# SOFT MAGNETIC MATERIALS I
# (Poster Session)

Frank Abel, Chair
United States Naval Academy, Annapolis, MD, United States

**CP-01**. **Magnetic, structural, and morphological properties behavior of $Ni_{1-x}Co_xFe_2O_4$ magnetic nanoparticles: theoretical and experimental study.** *J.A. Lopez Medina*[2], C. Velez[1], N. Tarabay[3], D. Dominguez Vargas[4], S. Sharma[2], P. Piza[5], J. Guerrero[4], S. Aguila Puentes[4], M. Farias[4], G. Soto[4] and R. Ponce[4] *1. Department of Mechanical and Aerospace Engineering- University of California, Irvine, Irvine, CA, United States; 2. CONAHCYT – IxM - Centro de Nanociencias y Nanotecnología, Universidad Nacional Autónoma de México, Ensenada, Mexico; 3. Department of Electrical Engineering and Computer Science- University of California, Irvine, Irvine, CA, United States; 4. Centro de Nanociencias y Nanotecnología, Universidad Nacional Autónoma de México, Ensenada, Mexico; 5. Centro de Investigación en Materiales Avanzados, Chihuahua, Mexico*

**CP-02**. **Effect of Cerium Doping and Two-step Annealing on Terbium Iron Garnet on Si.** *P. Liu*[1], K. Srinivasan[2,3] and B. Stadler[3,1] *1. Chemical Engineering and Materials Science, University of Minnesota, Minneapolis, MN, United States; 2. Electrical and Computer Engineering, Boise State University, Boise, ID, United States; 3. Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN, United States*

**CP-03**. **A systematic study on the influence of the microscopic structures on FMR of YIG based iron garnet dots.** *Y. Omori*[1], H. Someya[1] and M. Ishida[1] *1. NEC Corporation, Minato-ku, Japan*

**CP-04**. **Additive Manufacturing of Soft Magnetic Material with Insulator Characteristic.** *T. Chang*[1] and P. Huang[2] *1. Electric Motor Technology Research Center, National Cheng Kung University, Tainan, Taiwan; 2. Mechanical Engineering, National Cheng Kung University, Tainan, Taiwan*

**CP-05**. **Magnetic and Thermal Properties of Hybrid Soft Magnetic Composites with Ferrite.** *J. Fuzer*[1], S. Vovk[1], S. Dobák[1], P. Kollár[1], R. Bureš[2], M. Fáberová[2], V. Tsakaloudi[3] and V. Zaspalis[3] *1. Institute of Physics, P.J. Šafárik University in Košice, Košice, Slovakia; 2. Institute of Materials Research, Slovak Academy of Sciences, Košice, Slovakia; 3. Department of Chemical Engineering, Centre for Research and Technology-Hellas, Thessaloniki, Greece*

**CP-06**. **Fabrication of Buffer Layers for Highly Sensitive TMR Sensors with Co-based Heusler alloy electrodes.** *H. Hamasaki*[1], T. Hojo[1], M. Tsunoda[2] and M. Oogane[1] *1. Department of Applied Physics, Graduate School of Engineering, Tohoku University, Sendai, Japan; 2. Development of Electronic Engineering, Graduate School of Engineering, Tohoku University, Sendai, Japan*

**CP-07**. **Chiral Induced Anisotropy in Soft Magnetic Films.** R. Pasnak[1], M. Hasan[1] and *L.M. Malkinski*[1,2] *1. Department of Physics, University of New Orleans, New Orleans, LA, United States; 2. Advanced Materials Research Institute, University of New Orleans, New Orleans, LA, United States*

**CP-08**. **Single domain wall propagation in Co-rich magnetic microwires with graded magnetic anisotropy.** P. Corte-Leon[1,2,3], *V. Zhukova*[1,2,3], J. Blanco[2,3] and A. Zhukov[1,2,4] *1. Polym. and Adv. Mater., Univ. Basque Country, UPV/EHU, San Sebastian, Spain; 2. Appl. Phys., University of Basque Country, EIG, UPV/EHU, San Sebastian, Spain; 3. EHU Quantum Center, University of the Basque Country, UPV/EHU, San Sebastian, Spain; 4. IKERBASQUE, Basque Foundation for Science, Bilbao, Spain*

WEDNESDAY MORNING 9:00

EXHIBIT HALL

## Session CQ
## MAGNONICS II (Poster Session)

Olivier Boulle, Chair
SPINTEC, Grenoble, France

**CQ-01**. **Proposal of Spin Auto-Oscillation Based on Nonlinear Gain-Driven Magnon-Polaritons.** *R. Suzuki*[1], T. Chiba[1,2] and H. Matsueda[1,3] *1. Tohoku University, Sendai-shi, Japan; 2. FRIS, Sendai-shi, Japan; 3. CSIS, Sendai-shi, Japan*

**CQ-02**. **Contribution of Three-magnon Scattering to Gilbert Damping at Elevated Temperatures.** *Y. Chen*[1] and R. Victora[1] *1. University of Minnesota, Minneapolis, MN, United States*

**CQ-03**. **Thickness and Width Dependence of Spin Wave Propagation in Permalloy Microstripe Waveguides.** *D. M S*[1], S.N. Adithya[1], M. Kuchibhotla[1], A.O. Adeyeye[2] and A. Haldar[1] *1. Physics, Indain institute of technology Hyderabad, Hyderabad, India; 2. Physics, Durham university, Durham, United Kingdom*

**CQ-05**. **Spin Wave Dynamics in Bicomponent Sierpinski Square.** *R. Mehta*[1] and S. Saha[1] *1. Department of Physics, Ashoka University, Sonipat-131029, India*

**CQ-06**. **Magneto-Raman spectroscopy of spin waves in bulk $CrI_3$ with Ni.** *C.J. Cunningham*[1], G. Ye[2], C. Nnokwe[2], T. Nguyen[2], C. Sadler[1], K. Wu[2], W. Liu[3], B. Lv[3], P. Lukashev[1], P. Shand[1], A.J. Stollenwerk[1] and R. He[2] *1. Department of Physics, University of Northern Iowa, Cedar Falls, IA, United States; 2. Department of Electrical and Computer Engineering, Texas Tech University, Lubbock, TX, United States; 3. Department of Physics, University of Texas at Dallas, Richardson, TX, United States*

**CQ-07**. **Thickness Dependence of Spin-wave Propagation in Low-damping CoFe Thin Films.** *M. Kiechle*[1], J.J. Wisser[1], W.K. Peria[1], J.M. Shaw[1] and H.T. Nembach[1] *1. Physical Measurement Laboratory, National Institute of Standards and Technology, Boulder, CO, United States*

**CQ-08**. **Brillouin Light Scattering measurements of Dzyaloshinskii Moriya Interaction: reproducibility and uncertainty.** *M. Madami*[1], S. Tacchi[2], C. Marrows[3], E. Darwin[3], B.J. Hickey[3], A. Huxtable[3], A. Magni[4], A. Di Pietro[4], G. Durin[4], M. Kuepferling[4] and G. Carlotti[1] *1. Department of Physics and Geology, University of Perugia, Perugia, Italy; 2. CNR - Istituto Officina dei Materiali, Perugia, Italy; 3. School of Physics and Astronomy, University of Leeds, Leeds, United Kingdom; 4. Istituto Nazionale di Ricerca Mertologica (INRiM), Torino, Italy*

WEDNESDAY MORNING 9:00

EXHIBIT HALL

## Session CR
## BIOMEDICAL THERAPIES AND OTHER BIOMEDICAL APPLICATIONS (Poster Session)

Samuel Oberdick, Chair
National Institute of Standards and Technology, Boulder, CO, United States

**CR-01**. **A Hybrid Machine Learning Algorithm for Predicting Resting Motor Thresholds in Patients with Schizophrenia and Healthy Individuals Undergoing Transcranial Magnetic Stimulation.** Y.R. Saxena[1,2], C.J. Lewis[3], M. Alam[1], J. Atulasimha[1,4], U.M. Mehta[5] and *R.L. Hadimani*[1,3,6] *1. Mechanical and Nuclear Engineering, Virginia Commonwealth University, Richmond, VA, United States; 2. Electrical Engineering and Computer Science, University of California at Berkeley, Berkeley, CA, United States; 3. Biomedical Engineering, Virginia Commonwealth University, Richmond, VA, United States; 4. Electrical and Computer Engineering, Virginia Commonwealth University, Richmond, VA, United States; 5. National Institute of Mental Health and Neurosciences, Bangalore, India; 6. Electrical and Computer Engineering, Iowa State University, Ames, IA, United States*

**CR-02**. **Optimization of pulse magnetic field for effective magnetic hyperthermia treatment.** *A. Kuwahata*[1], Y. Adachi[1], E. Nakamura[2] and S. Yabukami[1] *1. Tohoku University, Sendai, Japan; 2. High Energy Accelerator Research Organization (KEK), Tsukuba, Japan*

**CR-03**. **Development of magnetic hyperthermia coil system for wide treatment temperature area on breast and neck cancer patients.** *A. Yamazaki*[1], T. Kagami[2], A. Kuwahata[1,2] and S. Yabukami[1,2] *1. Graduate School of Engineering, Tohoku University, Sendai, Japan; 2. Graduate School of Biomedical Engineering, Tohoku University, Sendai, Japan*

**CR-04**. **Magnetic Hyperthermia Performance of Commercial Iron Oxide Magnetic Nanoparticles.** B. Rezaei[1], S. Mostufa[1], E. Azizi[1], Y.A. Wang[2], C. Li[1], J. Gomez-Pastora[3], R. He[1] and *K. Wu*[1] *1. Department of Electrical and Computer Engineering, Texas Tech University, Lubbock, TX, United States; 2. Ocean Nano Tech LLC, San Diego, CA, United States; 3. Department of Chemical Engineering, Texas Tech University, Lubbock, TX, United States*

**CR-05**. **Gd-Doped Cobalt Ferrite Nanoparticles: Structural, Magnetic, and Cytotoxicity Studies for Improved Hyperthermia Therapy.** S. Attanayake[1], *S. Jan*[1], Ç. Demirci[2,3], T. Demircan[4], H. Srikanth[1] and M. Phan[1] *1. Physics, University of South Florida, Tampa, FL, United States; 2. Physics, Mugla Sitki Kocman University, Mugla, Turkey; 3. The Center of Research Laboratories, Mugla Sitki Kocman University, Mugla, Turkey; 4. Department of Medical Biology, Mugla Sitki Kocman University, Mugla, Turkey*

**CR-06**. **Effects of X-ray Irradiation on Self-Regulating Hyperthermia Magnetic Nanoparticles of Gadolinium Silicide.** *S. Smith*[1], S.B. Naranjo[2], J.R. Marin[2] and R.L. Hadimani[2] *1. Chemical and Life Science Engineering, Virginia Commonwealth University, Richmond, VA, United States; 2. Mechanical and Nuclear Engineering, Virginia Commonwealth University, Richmond, VA, United States*

**CR-07**. **Evaluation of cytokeratin in lymph node metastasis using magnetic nanoparticles and protein aggregates.** *S. Yabukami*[1,2], T. Murayama[1], K. Kaneko[2], A. Ban[1], Y. Ozawa[3], H. Okamoto[3] and T. Kamei[3] *1. Graduate School of Biomedical Engineering, Tohoku University, Sendai, Japan; 2. Graduate School of Engineering, Tohoku University, Sendai, Japan; 3. Graduate School of Medicine, Tohoku University, Sendai, Japan*

**CR-08**. **Polyol-Mediated Synthesis of Iron Oxide Nanoflowers for Biomedical Applications.** *A.D. Malaj*[1], S.S. Laha[1] and O.T. Mefford[1] *1. Materials Science and Engineering, Clemson University, Clemson, SC, United States*

WEDNESDAY MORNING 9:00

EXHIBIT HALL

## Session CS
## MATERIALS WITH COUPLED MAGNETIC PHENOMENA I
## (Poster Session)

Vijaysankar Kalappattil, Chair
Northeastern University, Burlington, MA, United States

**CS-01**. **Noncollinear Interlayer Exchange Coupling Across IrFe Spacer Layers.** *J. Lisik*[1], S. Myrtle[1] and E. Girt[1] *1. Department of Physics, Simon Fraser University, Burnaby, BC, Canada*

**CS-02**. **Field-induced transformation of complex spin ordering and magnetodielectric and magnetoelastic coupling in MnGeTeO6.** *A. Pal*[1] *1. Faculty of Science and Engineering, University of Groningen, Groningen, Netherlands*

**CS-03**. **Magnetism and magnetocaloric effect of multicomponent rare earth intermetallic compound hydride $Gd_{0.2}Tb_{0.2}Dy_{0.2}Ho_{0.2}Er_{0.2}NiH_{1.4}$.** *A. Mohapatra*[1], D. A. R[1], A. Chelvane[2], A. Morozkin[3], R. S[1] and R. Nirmala[1] *1. Physics, Indian Institute of Technology Madras, Chennai, India; 2. Defence Metallurgical Research Laboratory, Hyderabad, India; 3. Moscow Lomonosov State University, Moscow, Russian Federation*

**CS-06**. **Effects of Boron Content on Magnetostriction and Temperature Dependent Magnetic Damping in FeGaB Thin Films.** *Z. Zhang*[1] and A. Hoffmann[1] *1. Materials Science and Engineering, University of Illinois Urbana-Champaign, Urbana, IL, United States*

**CS-07**. **On correctly assessing the reversibility of the magnetocaloric effect.** *R. Kiefe*[1] and J. Amaral[1] *1. Physics, University of Aveiro, CICECO, Aveiro, Portugal*

**CS-08**. **Phase Transitions and Magnetic Properties of Cu and Fe Doped $Ni_2Mn_{0.55}Cu_{0.35}Fe_{0.10}Ga$ Heusler Alloy.** *H.A. Adedo*[1], J.R. DeFeo[2], V. Yenugonda[2], S. Rahman[1], A.K. Pathak[2] and M. Khan[1] *1. Department of Physics, Miami University, Oxford, OH, United States; 2. Department of Physics, SUNY Buffalo State University, Buffalo, NY, United States*

WEDNESDAY MORNING 9:00

EXHIBIT HALL

## Session CT
## DOMAIN WALLS AND SKYRMIONS I (Poster Session)

Davi Rodrigues, Co-Chair
Politecnico di Bari, Bari, Italy
Lucas Perez, Co-Chair
Universidad Complutense de Madrid, Madrid, Spain

**CT-01**. **Possibility of Achieving Both Skyrmion Stability and High-Speed Transport on W/CoFeB.** *T. Cheng*[1], L. Zhang[1], R. Satone[1], Y. Kurokawa[1], K. Tokunaga[1] and H. Yuasa[1] *1. Graduate school and Faculty of Information Science and Electrical Engineering, Kyushu University, Fukuoka, Japan*

**CT-02**. **Theoretical study of current induced domain wall motion in perpendicularly magnetized nanotubes in three-dimensional magnetic shift register.** *N. Umetsu*[1], H. Tokuhira[1], M. Quinsat[1], S. Hashimoto[1], T. Kondo[1] and M. Kado[1] *1. Frontier Technology R&D institute, Kioxia Corporation, Yokohama, Japan*

**CT-03**. **Kinematic Model of Magnetic Domain Wall Motion for Fast, High-Accuracy Simulations.** *A.J. Edwards*[1], K. Doleh[1], L. Humphrey[1], C.M. Linseisen[1], M.D. Kitcher[2], J.M. Martin[1], C. Cui[3], J.C. Incorvia[3], F. García Sánchez[4], N. Hassan[1] and J.S. Friedman[1] *1. Electrical and Computer Engineering, The University of Texas at Dallas, Richardson, TX, United States; 2. Materials Science & Engineering, Carnegie Mellon University, Pittsburgh, PA, United States; 3. Electrical and Computer Engineering, The University of Texas at Austin, Austin, TX, United States; 4. Departemento de Fisica Aplicada, Universidad de Salamanca, Salamanca, Spain*

**CT-04**. **Micromagnetic Study of the Controlled Conversion of a 360 deg DW to Pairs of Bimeron – Antibimeron.** *P. Babu*[1] and J. Sinha[1] *1. Physics and Nanotechnology, SRM Institute of Science and Technology, Chennai, India*

**CT-06**. **Enhanced High Harmonic Generation Beamline for Ultrafast Resonant Magnetic Scattering.** *I. Binnie*[1], J. Thurston[1], D. Morrill[1], G. Gui[1], C. Klein[1], Y. Li[1], H. Fang[1], H.C. Kapteyn[1] and M.M. Murnane[1] *1. University of Colorado, Boulder, Boulder, CO, United States*

**CT-07**. **Formation Process of Dipole Antiskyrmions in Fe/Gd Multilayers.** *J.A. Reddinger*[1] and B. McMorran[1] *1. Physics, University of Oregon, Eugene, OR, United States*

**CT-08**. **Theoretical Insights into Square Skyrmion Lattice Origin in $GdRu_2Si_2$ and Uniaxial Pressure Effects.** *R. Pathak*[1], S. Sarkar[1], O. Eriksson[1,2] and V. Borisov[1] *1. Physics and Astronomy, Uppsala University, Uppsala, Sweden; 2. Wallenberg Initiative Materials Science for Sustainability, Uppsala University, Uppsala, Sweden*

WEDNESDAY MORNING 9:00

EXHIBIT HALL

## Session CU
## ELECTRICAL MACHINES AND HIGH SPEED ELECTRICAL MACHINES (Poster Session)

Anh Huynh, Chair
University of Nottingham, Nottingham, United Kingdom

**CU-01**. **Novel Dual Inverter Two-Layer Sub-Harmonic Vernier Machine.** *S. Rafin*[1], Q. Ali[2], H. Hussein[1] and O.A. Mohammed[1] *1. Electrical and Computer Engineering, Florida International University, Miami, FL, United States; 2. Electrical Engineering, Sukkur IBA University, Sukkur, Pakistan*

**CU-02**. **Optimized Design of Sub-Harmonic Synchronous Machines.** *S. Rafin*[1], Q. Ali[2], H. Hussein[1] and O.A. Mohammed[1] *1. Electrical and Computer Engineering, Florida International University, Miami, FL, United States; 2. Electrical Engineering, Sukkur IBA University, Sukkur, Pakistan*

**CU-03**. **Analysis of Electromagnetic Characteristic of Hybrid-Type Double-Cage Induction Motor Using Subdomain Method.** *S. Eom*[1], H. Ban[1], K. Yu[1], J. Yang[1], K. Shin[2] and J. Choi[1] *1. Chungnam National University, Daejeon, The Republic of Korea; 2. Changwon National University, Changwon-si, The Republic of Korea*

**CU-04**. **AC loss of high-speed permanent magnet synchronous motor according to winding type considering current harmonics.** *Y. Choi*[1], K. Kwak[1], S. Kim[1], S. Lee[1], K. Shin[2] and J. Choi[1] *1. Chungnam National University, Daejeon, The Republic of Korea; 2. Changwon National University, Changwon, The Republic of Korea*

**CU-05**. **Characteristic Analysis and Optimal Design for Efficiency Improvement of Wound Field Synchronous Machine with Grain-Oriented Electrical Steel.** *K. Yu*[1], W. Jung[1], M. Nguyen[1], S. Eom[1], H. Ban[1], K. Shin[2] and J. Choi[1] *1. Chungnam National University, Daejeon, The Republic of Korea; 2. Changwon National University, Changwon, The Republic of Korea*

**CU-08**. **Rotor Design Process of Ultra-High-Speed Permanent Magnet Synchronous Motor Considering Rotor Interference Fit Tolerance.** *J. Kim*[1] and D. Kim[2] *1. Mechanical Engineering, Yeungnam University, Gyeongsan, The Republic of Korea; 2. Automotive Engineering, Honam University, Gwangju, The Republic of Korea*

WEDNESDAY MORNING 9:00

EXHIBIT HALL

## Session CV
## ELECTRICAL MACHINES AND POWER ELECTRONICS IV (Poster Session)

Christopher H. T. Lee, Chair
Nanyang Technological University, Singapore, Singapore

**CV-01**. **Design of Magnetization Yoke to Reduce the Number of Double Spoke Type PMSM Magnetization Using I-Core.** *D. Choi*[1], D. Nam[1], Y. Lee[1], N. Jo[1] and W. Kim[2] *1. Next Generation Smart Energy System Convergence, Gachon University, Seongnam, The Republic of Korea; 2. Electrical Engineering, Gachon University, Seongnam, The Republic of Korea*

**CV-02**. **A study on Performance Improvement of Axial Flux Motor Through Halbach Array and Same Direction Skew.** M. Hong[2], W. Kim[1], N. Jo[1], *J. Kim*[1] and S. Ko[1] *1. Electrical Engineerering, Gachon University, Seongnam, The Republic of Korea; 2. Electrical Engineerering, Hangyang University, Seoul, The Republic of Korea*

**CV-03**. **Study on axial flux motor using pcb stator for collaborative robot joint electric motor using Halbach array and slit structure.** M. Hong[1], N. Jo[1], H. Kim[1], *J. Kim*[1] and W. Kim[1] *1. Electrical Engineerering, Hanyang University, Seoul, The Republic of Korea*

**CV-05**. **Modal Analysis of Electromagnetic Vibrations in Switched Reluctance Machines.** O. Naderi Samani[1], S. Taghipour Boroujeni[1] and *N. Takorabet[2] 1. Engineering Dep., Shahrekord University, Shahrekord, The Islamic Republic of Iran; 2. GREEN, Université de Lorraine, Nancy, France*

**CV-06**. **A Study on the Analysis of Reluctance Torque Based on Rotor I-Core Thickness in Double Spoke Type PMSM.** N. Jo[1], D. Nam[1], *Y. Lee[1]*, M. Hong[2] and W. Kim[1] *1. Gachon University, Gyeonggi-do, The Republic of Korea; 2. Hanyang University, Seoul, The Republic of Korea*

**CV-07**. **A Study on the Design of Axial Flux Motor for Increased Power Density Compared to Radial Flux Motor.** M. Youn[1], J. Kim[1], *Y. Song[1]*, Y. Lee[1] and W. Kim[1] *1. Gachon University, Seongnam, The Republic of Korea*

WEDNESDAY
AFTERNOON
2:00

CELESTIN D

## Session DA
# MAGNETIC BRAIN STIMULATION AND IMAGING

Nian Sun, Chair
Northeastern University, Boston, MA, United States

**2:00**

**DA-01**. **Multi-Magnetic Material Coils and Prediction of Stimulation Strength Using Machine Learning in Transcranial Magnetic Stimulation.** ***(Invited)*** *R.L. Hadimani[1,2] 1. Department of Mechanical and Nuclear Engineering, Virginia Commonwealth University, Richmond, VA, United States; 2. Department of Electrical and Computer Engineering, Iowa State University, Richmond, VA, United States*

**2:36**

**DA-02**. **Enabling a Wireless Non-invasive Two-Way Brain-Machine Interface with Magnetoelectric Nanoparticles.** ***(Invited)*** P. Liang[3], E. Zhang[1], S. Chen[4], M. Abdel-Mottaleb[5], V. Andre[5], M. Shotbolt[5], J. Tian[1], A. Scott-Vandeusen[5], E. Zhu[5] and *S. Khizroev[1,2] 1. Electrical and Computer Engineering, University of Miami, Coral Gables, FL, United States; 2. Biochemistry and Molecular Biology, University of Miami, Miami, FL, United States; 3. Cellular Nanomed, Irvine, CA, United States; 4. Chemical, Environmental and Materials Engineering, University of Miami, Coral Gables, FL, United States; 5. Biomedical Engineering, University of Miami, Coral Gables, FL, United States*

**3:12**

**DA-03**. **Cellular Mechanisms of Transcranial Magnetic Stimulation in Cerebellar Cortex.** ***(Invited)*** *P. Sundaram[1] 1. Radiology, MGH/Martinos Center, Boston, MA, United States*

**3:48**

**Break**

**4:15**

**DA-04**. **Engineering Magnetic Particles for Positive MRI Contrast.** ***(Invited)*** *S. Oberdick*[4,2], S. Dodd[1], G. Erich[2], A. Hunter[3], K. Jordanova[9,2], K. Keenan[2], A. Koretsky[1], J. Lundstrom[4,2], O.T. Mefford[3], G. Parigi[5,6,7], M. Poorman[8] and G. Zabow[2] *1. LFMI, NINDS, NIH, Bethesda, MD, United States; 2. NIST, Boulder, CO, United States; 3. Dept. of Mat. Sci. and Eng., Clemson University, Clemson, SC, United States; 4. Dept. of Physics, University of Colorado, Boulder, Boulder, CO, United States; 5. CERM, University of Florence, Sesto Fiorentino, Italy; 6. Dept. of Chem. "Ugo Schiff", University of Florence, Sesto Fiorentino, Italy; 7. CIRMMP, Sesto Fiorentino, Italy; 8. Hyperfine, Inc., Guilford, CT, United States; 9. Radiology, Stanford University, Palo Alto, CA, United States*

**4:51**

**DA-05**. **MRI and Safety - Focusing on High Static Magnetic Fields.** ***(Invited)*** *S. Yamaguchi-Sekino*[1] *1. National Institute of Information and Communications Technology (NICT), Koganei, Japan*

WEDNESDAY AFTERNOON 2:00

CELESTIN E

## Session DB
# ADVANCED MAGNETIC MATERIALS & MANUFACTURING FOR FUTURE ELECTRIC MOTORS AND POWER ELECTRONICS

Yacine Amara, Co-Chair
Université Le Havre Normandie, Le Havre, France
Masahiro Yamaguchi, Co-Chair
Tohoku University, Sendai, Japan
Johannes Paulides, Co-Chair
Advanced Electromagnetics Group, Waalwijk, Netherlands

**2:00**

**DB-01**. **Design Freedoms and Challenges in Additively Manufacturing Electrical Machines.** ***(Invited)*** *A. Kallaste*[1] *1. Electrical Power Engineering and Mechatronics, Tallinn University of Technology, Tallinn, Estonia*

**2:36**

**DB-02**. **High Power Density Motor Equipped with Additively Manufactured Windings.** ***(Invited)*** *A. El-Refaie*[1] *1. Marquette University, Milwaukee, WI, United States*

**3:12**

**DB-03**. **Novel Applications of Additive Manufacturing for Improved Electrical Machine Design and Performance.** ***(Invited)*** M. Tsai[1], *P. Huang*[1], T. Chang[2] *1. Mechanical Engineering, National Cheng Kung University, Tainan, Taiwan. 2. Electric Motor Technology Research Center, National Cheng Kung University, Tainan, Taiwan*

**3:48**

**Break**

**4:15**

**DB-04**. **Novel approaches of nanocrystalline alloys with large saturation magnetization for next-generation power-electronics applications.** ***(Invited)*** *S. Okamoto*[1], A. Urata[2], H. Oikawa[2], S. Hiramoto[1], N. Ono[1], R. Gautam[3], H. Sepehri-Amin[3], T. Ohkubo[3] and T. Ogasawara[4] *1. Tohoku University, Sendai, Japan; 2. Tokin Corp., Shiroishi, Japan; 3. NIMS, Tsukuba, Japan; 4. AIST, Tsukuba, Japan*

**4:51**

**DB-05**. **Metrology for Steel Laminations and Power Electronics Magnetic Cores: Loss Measurement Techniques and Uncertainties from DC to the Microwave Regime.** ***(Invited)*** *M. Pasquale*[1], C. Beatrice[1], E. Ferrara[1], N. Banu[1], F. Fiorillo[1], C. Ragusa[2] and L. Solimene[2] *1. Advanced Materials Metrology and Life Sciences, INRIM, Torino, Italy; 2. Department of Energy, Politecnico di Torino, Torino, Italy*

WEDNESDAY AFTERNOON 2:00

CELESTIN A

## Session DC
## 2D SPINTRONICS AND TOPOLOGICAL MATERIALS III

Zhenchao Wen, Chair
National Institute for Materials Science (NIMS), Tsukuba, Japan

**DC-01**. **Withdrawn**

**2:00**

**DC-02**. **Quantum Transport in Sputtered Topological Semimetal α-Sn Thin Films.** *V. Kalappattil*[1], C. Liu[1], M. Mehraeen[2], R. Li[2], Z. Chen[3], S. Zhang[2], K. Liu[3] and M. Wu[1] *1. Department of Physics, Northeastern University, Boston, MA, United States; 2. Department of Physics, Case Western Reserve University, Cleveland, OH, United States; 3. Department of Physics, Georgetown University, Washington, DC, United States*

**2:12**

**DC-03**. **Probing Intrinsic Magnetization Dynamics of the $Y_3Fe_5O_{12}$/$Bi_2Te_3$ Interface at Low Temperature.** *A. Will-Cole*[1,2], V. Lauter[3], A.J. Grutter[4], C. Dubs[5], J.L. Hart[6], D.A. Lidsky[1], M. Lindner[5], T. Reimann[5], N. Bhattacharjee[2], T. Lu[1], P. Sharma[1], N.R. Valdez[1], C.J. Pearce[1], T.C. Monson[1], J. Cha[6], D. Heiman[2] and N.X. Sun[2] *1. Sandia National Laboratories, Albuquerque, NM, United States; 2. Northeastern University, Boston, MA, United States; 3. Oak Ridge National Laboratory, Oak Ridge, TN, United States; 4. National Institute of Standards and Technology, Gaithersburg, MD, United States; 5. Innovent, Jena, Germany; 6. Cornell University, Ithaca, NY, United States*

**DC-04**. **Withdrawn**

**2:24**

**DC-05**. **Electronic Structure and Magnetism of $Fe_3GaTe_2$.** ***(Invited)*** *J. Lee*[1,2,3] *1. Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, CA, United States; 2. Max Planck POSTECH, Pohang, The Republic of Korea; 3. Department of Physics, UC Berkeley, Berkeley, CA, United States*

**3:00**

**DC-06**. **Emergent Spin Textures and Magnetoresistive Anomalies in Doped $Fe_3GeTe_2$: Unraveling Complexities in 2D Ferromagnets.** *R. Roy Chowdhury*[1], H. Srikanth[1], R. Singh[2] and M. Phan[1] *1. Department of Physics, University of South Florida, Tampa, FL, United States; 2. Department of Physics, Indian Institute of Science Education and Research Bhopal, Bhopal, India*

**DC-07**. **Withdrawn**

**3:12**

**DC-08**. **Exciton-Activated Giant Phonon Magnetic Moment in Monolayer $MoS_2$.** *H. Mustafa*[3], G. Ye[1], C. Nnokwe[1], M. Fang[2], S. Chaudhary[6], D. Smirnov[4], J. Yan[5], K. Law[3], M. Mahjouri-Samani[3], K. Wu[1], E. Yang[2], G.A. Fiete[6], R. He[1] and W. Jin[3] *1. Texas Tech University, Lubbock, TX, United States; 2. Stevens Institute of Technology, Hoboken, NJ, United States; 3. Auburn University, Auburn, AL, United States; 4. National High Magnetic Field Laboratory, Tallahassee, FL, United States; 5. Towson University, Towson, MD, United States; 6. Northeastern University, Boston, MA, United States*

**3:24**

**DC-09**. **Intrinsic Ferromagnetism in Liquid Phase Exfoliated 2D van der Waals $CrCl_3$.** F.A. Silva[5,6,2], H. Chang[2], *L.A. Hernandez*[2], J.H. Warner[3], J.R. Fernandes[4], S.G. Santos[1,7], F.D. Magalhães[5,6], A.M. Pinto[5,6,1] and J.C. Incorvia[2] *1. Instituto de Investigação e Inovação em Saúde, Universidade do Porto, Porto, Portugal; 2. Electrical and Computer Engineering, University of Texas at Austin, Austin, TX, United States; 3. Mechanical Engineering, University of Texas at Austin, Austin, TX, United States; 4. Centro de Química Vila Real, Departamento de Física, Universidade de Trás-os-Montes e Alto Douro, Vila Real, Portugal; 5. Laboratory for Process Engineering, Environment, Biotechnology and Energy, Universidade do Porto, Porto, Portugal; 6. Associate Laboratory in Chemical Engineering, Universidade do Porto, Porto, Portugal; 7. Instituto de Engenharia Biomédica, Universidade do Porto, Porto, Portugal*

**3:26**

**Break**

**4:15**

**DC-11**. **Gate-tunable ferromagnetic transport properties in monolayer graphene/$Fe_3GeTe_2$ heterostructures.** *M. Aoki*[1], V. Zatko[1], T. Guillet[1], M. Shiraishi[2,4], J. Sierra[1] and S.O. Valenzuela[1,3] *1. Catalan Institute of Nanoscience and Nanotechnology, Barcelona, Spain; 2. Electronic Science and Engineering, Kyoto University, Kyoto, Japan; 3. Catalan Institution for Research and Advanced Studies, Barcelona, Spain; 4. CSRN, Kyoto University, Kyoto, Japan*

**4:27**

**DC-12**. **Kondo Effect in CVD-Grown Large Area Continuous 2D $VSe_2$ Thin Film.** *V. Samanta*[1] and S. Chandran[1] *1. Physics, Indian Institution of Technology Madras, Chennai, India*

WEDNESDAY AFTERNOON 2:00

CELESTIN B

## Session DD
## DOMAIN WALLS AND SKYRMIONS II

Christopher Marrows, Chair
University of Leeds, Leeds, United Kingdom

**2:00**

**DD-01**. **Highly efficient current-driven magnetic octupole domain-wall motion in noncollinear antiferromagnets.** ***(Invited)*** *Y. Otani*[1,2,3] *1. ISSP, University of Tokyo, Kashiwa, Japan; 2. CEMS, RIKEN, Wako, Japan; 3. Trans-Scale Quantum Science Institute, University of Tokyo, Tokyo, Japan*

**2:36**

**DD-02**. **Numerical calculations of collective octupole dynamics in noncollinear antiferromagnets.** *M. Yoo*[1] and A. Hoffmann[1] *1. University of Illinois at Urbana-Champaign, Urbana, IL, United States*

**2:48**

**DD-03**. **Direct Evidence for Magnetic Bloch Point Quadrupoles Constituting Hybrid Topological Strings.** *F.S. Yasin*[1,2], J. Masell[3,2], Y. Takahashi[4], T. Akashi[4], N. Baba[5], K. Karube[2], D. Shindo[2], T. Arima[2,6], Y. Taguchi[2], Y. Tokura[2,7,8], T. Tanigaki[4] and X. Yu[2] *1. Center for Nanophase Materials Sciences, Oak Ridge National Laboratory, Oak Ridge, TN, United States; 2. Center for Emergent Matter Science, RIKEN, Wako, Japan; 3. Institute of Theoretical Solid State Physics, Karlsruhe Institute of Technology (KIT), Karlsruhe, Germany; 4. Research and Development Group, Hitachi Ltd., Hatoyama, Japan; 5. Research Institute for Science and Technology, Kogakuin University, Hachioji, Japan; 6. Department of Advanced Materials Science, University of Tokyo, Tokyo, Japan; 7. Department of Applied Physics, University of Tokyo, Tokyo, Japan; 8. Tokyo College, University of Tokyo, Tokyo, Japan*

**3:00**

**DD-04**. **Spin Textures and Magnetization Dynamics in Cylindrical Nanowires.** *L. Perez*[1,2], L. Gómez-Cruz[2], L. Álvaro-Gómez[1], S. Ruiz Gómez[3], C. Fernandez Gonzalez[3], L. Aballe[3], E. Pereiro[3], N. Mille[4], R. Belkhou[4], C. Thirion[5], D. Gusakova[6], A. Masseboeuf[6] and O. Fruchart[6] *1. Física de Materiales, Universidad Complutense de Madrid, Madrid, Spain; 2. Fundación IMDEA Nanociencia, Madrid, Spain; 3. Alba Synchrotron, Cerdanyola del Valles, Spain; 4. Synchrotron SOLEIL, Gif-sur-Yvette, France; 5. Univ. Grenoble Alpes, CNRS, Institut Neel, Grenoble, France; 6. SPINTEC, Grenoble, France*

**3:12**

**DD-05**. **Complex dynamics of Bloch point domain walls in cylindrical magnetic nanowires.** *O. Chubykalo-Fesenko*[1], E. Saugar[1], F. Tejo[2] and K. Gusliyenko[3] *1. Instituto de Ciencia de Materiales de Madrid, CSIC, Madrid, Spain; 2. Universidad Central de Chile, Santiago de Chile, Chile; 3. Universidad del Pais Vasco, San Sebastian, Spain*

**3:24**

**DD-06**. **Energy Landscape and Pinning Fields of Bloch-Point Domain Walls in Curved Nanowires.** *C. Abert*[1], S. Ruiz-Gomez[2,3], P. Morales Fernandey[2], S. Koraltan[1], L. Danesi[1], A. Hierro-Rodriguez[5], A. Fernández-Pacheco[4], C. Donnelly[2] and D. Suess[1] *1. University of Vienna, Vienna, Austria; 2. Max Planck Institute for Chemical Physics of Solids, Dresden, Germany; 3. ALBA Synchrotron Light Source, Barcelona, Spain; 4. TU Wien, Vienna, Austria; 5. Universidad de Oviedo, Oviedo, Spain*

**3:36**

**DD-07**. **Current-induced domain wall dynamics for Fe-based amorphous microwires.** E. Calle[1], M. Vázquez[2] and *R. Perez Del Real*[2] *1. Universidad Autónoma de Madrid, Madrid, Spain; 2. Institute of Materials Science of Madrid, Madrid, Spain*

**3:48**

**Break**

**4:15**

**DD-08**. **Helimagnet-Based Spintronics: Control and Detection of Magnetic Chirality.** ***(Invited)*** *H. Masuda*[1] *1. Institute for Materials Research, Tohoku University, Sendai, Japan*

**4:51**

**DD-09**. **Decoupling the influences of chiral damping and Dzyaloshinskii-Moriya interaction in chiral magnetic domain walls.** *C.A. Akosa*[1,2,3], G. Tatara[2], A. Manchon[4] and M. Mochizuki[1] *1. Applied Physics, Waseda University, Tokyo, Japan; 2. CEMS, RIKEN, Wako, Japan; 3. Theoretical & Applied Physics, AUST, Abuja, Nigeria; 4. CNRS, CINaM, Aix-Marseille Université, Marseille, France*

**5:03**

**DD-10**. **X-ray Scattering Studies on the Phase Transitions of the Nematic Magnetic Helical Phase in Amorphous FeGe.** *Z. Tumbleson*[4,1], S.A. Morley[1], E. Hollingworth[2], A. Singh[1], T. Bayaraa[1], N. Burdet[3], A. Us-Saleheen[1], M. McCarter[1], D.W. Raftrey[4,1], R. Pandolfi[1], V. Esposito[3], G. Dakovski[3], F. Decker[3], A. Reid[3], T. Assefa[3], P. Fischer[1,4], S. Griffin[1], S. Kevan[1], F. Hellman[2,1], J.J. Turner[3] and S. Roy[1,4] *1. Lawrence Berkeley National Laboratory, Berkeley, CA, United States; 2. University of California, Berkeley, Berkeley, CA, United States; 3. SLAC National Accelerator Laboratory, Menlo Park, CA, United States; 4. University of California, Santa Cruz, Santa Cruz, CA, United States*

**DD-11**. **Withdrawn**

WEDNESDAY AFTERNOON 2:00

CELESTIN C

## Session DE
## SPINTRONIC DEVICES I: MRAM, SENSOR AND ENERGY EFFICIENT COMPUTING

Deyuan Lyu, Chair
University of Minnesota, Minneapolis, MN, United States

**2:00**

**DE-01**. **Magnetics for the next-computing era.** ***(Invited)*** *K. Lee*[1] *1. Samsung Electronics, Yongin-si, The Republic of Korea*

**2:36**

**DE-02**. **Exploring $Ge_xSn_yTe$ for Energy-Efficient Computing Devices Using Ferroelectric Rashba Semiconductors.** *F. Fagiani*[1], L. Nessi[1], G. Gandini[1], S. Cecchi[2], F. Delodovici[4], G. Vinai[3], I. Vobornik[3], K. Rohit[5], A. Rubano[5], M. Fiebig[6], S. Picozzi[4], M. Cantoni[1], R. Bertacco[1] and C. Rinaldi[1] *1. Physics, Politecnico Milano, Milano, Italy; 2. Università Bicocca, Milano, Italy; 3. CNR-IOM, Trieste, Italy; 4. CNR-SPIN, Chieti, Italy; 5. Università Federico II, Napoli, Italy; 6. ETH Zürich, Zurigo, Switzerland*

**2:48**

**DE-03**. **Temperature dependent spin dynamics in LSMO/Pt bilayer.** *B. Sahoo*[1,2], A. K[3], K. Matthews[2], S. Petit-Watelot[3], J. Rojas-Sanchez[3], A. Frano[2], S. Das[2] and E. Fullerton[1,2] *1. Center for Memory and Recording Research, University of California, San Diego, San Diego, CA, United States; 2. Physics, University of California, San Diego, San Diego, CA, United States; 3. Physics, Institut Jean Lamour Université Lorraine - CNRS (UMR 7198) Campus Artem, Nancy Cedex, France*

**DE-04**. **Withdrawn**

**3:00**

**DE-05**. **Non-Local Spin Valve Optimization *via* Wide-Range Interfacial Resistance Tuning: Toward Spin Accumulation Sensors.** B. Kaiser[1], J. Ramberger[1], M. Norum[1], N. Nandakumaran[1], J. Dewey[1] and *C. Leighton*[1] *1. University of Minnesota, Minneapolis, MN, United States*

**3:12**

**DE-06**. **Magnetic tunnel junction implementations of unconventional computing.** *D. Rodrigues*[1], E. Raimondo[2,3], R. Tomasello[1], M. Carpentieri[1] and G. Finocchio[3] *1. Department of Electrical and Information Engineering, Politecnico di Bari, Bari, Italy; 2. Istituto Nazionale di Geofisica e Vulcanologia, Roma, Italy; 3. Department of Mathematical and Computer Sciences, Physical Sciences and Earth Sciences, University of Messina, Messina, Italy*

**3:24**

**DE-07**. **Spin-Orbit Torque Magnetic Tunnel Junctions at Cryogenic Temperatures.** *K. Senapati*[1], A. Fassatoui[1], L. Vila[1], A. Kandazoglou[1], G. Gaudin[1], S. Rao[2], S. Couet[2] and K. Garello[1] *1. SPINTEC, Grenoble, France; 2. Interuniversitair Micro-Elektronica Centrum, Leuven, Belgium*

**3:36**

**Break**

**4:15**

**DE-08**. **Spin transmission through NiO in Pt/NiO/NM/Py heterostructure.** *B. Sahoo*[1,2], C. Safranski[2], G. Hu[2], J. Liang[2], M. Robbins[2], P. Hashemi[2] and J.Z. Sun[2] *1. Physics, University of California, San Diego, San Diego, CA, United States; 2. IBM T.J. Watson Research Center, Yorktown Heights, NY, United States*

**4:27**

**DE-09**. **Strong antiferromagnetic interlayer exchange coupling caused by small amounts of Re addition in synthetic AF system with Ir-Re spacer.** *Y. Saito*[1], T. Roy[2], S. Ikeda[1,2,3], M. Shirai[2,3], H. Honjo[1], H. Inoue[1] and T. Endoh[1,2,4] *1. Center for Innovative Integrated Electronic Systems, Tohoku University, Sendai, Japan; 2. Center for Science and Innovation in Spintronics, Tohoku University, Sendai, Japan; 3. Research Institute of Electrical Communication, Tohoku University, Sendai, Japan; 4. Department of Electrical Engineering, Graduate School of Engineering, Tohoku University, Sendai, Japan*

**4:39**

**DE-10**. **Thermal Effects on Damping Determination of Perpendicular MRAM Devices by Spin-Torque Ferromagnetic Resonance.** *H.J. Richter*[1], R.V. Chopdekar[1], G. Mihajlović[1], J. Gibbons[1], N. Davila[1], M.K. Grobis[1] and T. Santos[1] *1. Research, Western Digital, San Jose, CA, United States*

**4:51**

**DE-11**. **Nonlinear amplification of microwave signals in spin-torque oscillators.** K. Zhu[1], *M. Carpentieri*[4], L. Zhang[1], B. Fang[1], J. Cai[1], R.V. Verba[2], A. Giordano[3], V. Puliafito[4], B. Zhang[1], G. Finocchio[5] and Z. Zeng[1] *1. Suzhou Institute of Nano-Tech and Nano-Bionics, Nanofabrication Facility, Chinese Academy of Sciences, Suzhou, China; 2. Institute of Magnetism, Kyiv, Ukraine; 3. Engineering, University of Messina, Messina, Italy; 4. Electrical and Information Engineering, Politecnico di Bari, Bari, Italy; 5. Mathematical and Computer Sciences, Physical Sciences and Earth Sciences, University of Messina, Messina, Italy*

**5:03**

**DE-12**. **Field-free deterministic spin-orbit torque switching in all-2D van der Waals heterostructures at room temperature.** *L. Pandey*[1], B. Zhao[1], P. Rout[1], H. Bangar[1], R. Ngaloy[1], M. Abdel-Hafiez[2], H. Chang[3] and S.P. Dash[1,4] *1. Department of Microtechnology and Nanoscience, Chalmers University of Technology, Göteborg, Sweden; 2. Department of Applied Physics and Astronomy, University of Sharjah, Sharjah, United Arab Emirates; 3. School of Materials Science and Engineering, Huazhong University of Science and Technology, Hubei, China; 4. Graphene Centre, Chalmers University of Technology, Göteborg, Sweden*

**5:15**

**DE-13**. **Magnetic domain wall type Spin-Memristor for neuromorphic computing.** *T. Gushi*[1], S. Yamada[1], I. Shinto[1], T. Shibata[1] and S. Tomoyuki[1] *1. Advanced Products Development Center, Technology & Intellectual Property HQ, TDK corporation, Ichikawa, Japan*

## Session DF
# MAGNETOCALORIC MATERIALS AND REFRIGERATION

Manh-Huong Phan, Chair
University of South Florida, Tampa, FL, United States

**2:00**

**DF-01**. **Hysteresis, Reversibility, and Partial Transformations in Magnetocaloric Materials: a Combined Analysis Using TFORC and Thermography.** ***(Invited)*** *V. Franco*[1], J. Revuelta-Losada[1], A.N. Khan[1], L.M. Moreno-Ramírez[1] and J. Law[1] *1. University of Seville, Seville, Spain*

**2:36**

**DF-02**. **Understanding the microscopic origin of the relation between magnetoelasticity and magnetic damping constant in $Fe_{4x}Co_{4-4x}N$.** *I. Kurniawan*[1], K. Ito[2], T. Seki[2,3], K. Masuda[1] and Y. Miura[1,4] *1. National Institute for Materials Science, Tsukuba, Japan; 2. Institute for Materials Research, Tohoku University, Sendai, Japan; 3. Center for Science and Innovation in Spintronics, Tohoku University, Sendai, Japan; 4. Kyoto Institute of Technology, Kyoto, Japan*

**2:48**

**DF-03**. **Magnetocaloric effect in the full hydrogen liquefaction range in $Gd_3Ni_6XY$.** I. Aseguinolaza[1], A. Herrero[1], A. Garcia-Adeva[1], E. Apiñaniz[1], A. Garshev[2,3], A. Morozkin[2] and *A. Oleaga*[1] *1. University of the Basque Country, Bilbao, Spain; 2. Department of Chemistry, Moscow State University, Moscow, Russian Federation; 3. Faculty of Materials Science, Moscow State University, Moscow, Russian Federation*

**3:00**

**DF-04**. **FEMCE - A 3D Finite Element Simulation Tool for Magnetic Refrigerants.** *R. Kiefe*[1] and J. Amaral[1] *1. Physics, University of Aveiro, CICECO, Aveiro, Portugal*

**3:12**

**DF-05**. **Direct Measurement of the Rotative Magnetocaloric Effect of Anisotropic Magnetic Materials.** *O.L. Bernard*[1,2,3], P. Fournier[1,2,3] and M. Balli[4] *1. Physic, Université de Sherbrooke, Sherbrooke, QC, Canada; 2. Institut Quantique, Sherbrooke, QC, Canada; 3. Regroupement Québécois sur les Matériaux de Pointe, Sherbrooke, QC, Canada; 4. Physic, Ecole Supérieure d'Ingénierie des Energies, International University of Rabat, Rabat, Morocco*

**3:24**

**DF-06**. **Enhancing Magnetocaloric Properties of Ni-Mn-In by Sn Doping.** *S. Aksoy Esinoglu*[1] and M. Acet[2] *1. Physics Engineering Department, Istanbul Technical University, Istanbul, Turkey; 2. Faculty of Physics, Duisburg-Essen University, Duisburg, Germany*

**3:36**

**DF-07**. **Prospects and Challenges: Magnetic-field-assisted Direct Ink Writing of Magnetocaloric Heat Exchange Structures.** V. Sharma[1], K. Bhandari[1], H. Zhao[1] and *R. Barua*[1] *1. Mechanical and Nuclear Engineering, Virginia Commonwealth University, Richmond, VA, United States*

**3:48**

**Break**

**4:15**

**DF-08**. **Extending the revolutionary high entropy design concept to tune the critical crossover point of magnetocaloric materials.** *J. Law*[1], Z. Tian[2,3], L.M. Moreno-Ramírez[1], V. Franco[1], F. Hu[2,3] and B. Shen[2,3,4] *1. University of Seville, Seville, Spain; 2. Beijing National Laboratory for Condensed Matter Physics & State Key Laboratory of Magnetism, Institute of Physics, Chinese Academy of Sciences, Beijing, China; 3. School of Physical Sciences, University of Chinese Academy of Sciences, Beijing, China; 4. Ningbo Institute of Materials Technology & Engineering, Chinese Academy of Sciences, Zhejiang, China*

**4:27**

**DF-09**. **Field induced change in the behavior of magnetic transition in $Eu_2In$.** *A. Kumar*[1], A. Biswas[1] and Y. Mudryk[1] *1. Material Science Division, Ames National Laboratory, USA, Ames, IA, United States*

**4:39**

**DF-10**. **Transition from Ferromagnetic to Noncollinear to Paramagnetic State with Increasing Ru Concentration in FeRu Films.** *J. Lisik*[1], M. Rojas[1], S. Myrtle[1], D.H. Ryan[2], R. Hübner[3], P. Omelchenko[1], C. Abert[4], A. Ducevic[4], D. Suess[4], I. Soldatov[5], R. Schaefer[5], J. Seyd[6], M. Albrecht[6] and E. Girt[1] *1. Department of Physics, Simon Fraser University, Burnaby, BC, Canada; 2. Physics Department and Centre for the Physics of Materials, McGill University, Montreal, QC, Canada; 3. Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 4. Physics of Functional Materials, University of Vienna, Vienna, Austria; 5. Leibniz Institute for Solid State and Materials Research Dresden, Dresden, Germany; 6. Institute of Physics, University of Augsburg, Augsburg, Germany*

**4:51**

**DF-11**. **Magnetic Field-Induced Thermal Behavior and Sedimentation of Strontium Ferrite-PDMS Composites for Actuator Applications.** *M. Islam*[1], M. Kashem[2], W. Li[2] and W. Geerts[1,3] *1. MSEC, Texas State University, San Marcos, TX, United States; 2. Chemical Engineering, Texas Tech University, Lubbock, TX, United States; 3. Physics, Texas State University, San Marcos, TX, United States*

**5:03**

**DF-12**. **Direct determination of carrier parameters in indium tin oxide nanocrystals using concepts from magnetoplasmonics.** A. Gabbani[1,2], E. Della Latta[1], X. Li[3], M. Kociak[3], M. Geppi[1], S. Borsacchi[4] and *F. Pineider*[1,2] *1. Department of Chemistry and Industrial Chemistry, University of Pisa, Pisa, Italy; 2. Department of Physics and Astronomy, University of Florence, Sesto Fiorentino (FI), Italy; 3. Laboratorie de Physique des Solides, University of Paris-Saclay, Orsay, France; 4. ICCOM, CNR, Pisa, Italy*

**5:15**

**DF-13**. **Modelling of Nonlinear Magneto-Thermo-Mechanical Behaviour of Magnetostrictive Materials Subjected to Prestress and Thermal Load.** *S. Somavarapu*[1], P. Kondaiah[1] and K. Deepak[2] *1. Mahindra University, Hyderabad, India; 2. Indian Institute of Technology (BHU) Varanasi, Varanasi, India*

WEDNESDAY AFTERNOON 2:00

IMPERIAL 5CD

## Session DG
## THIN FILMS, MULTILAYERS, AND EXCHANGE BIAS SYSTEMS I

Sarah Watzman, Chair
University of Cincinnati, Cincinnati, OH, United States

**2:00**

**DG-01**. **Magnetotransport properties of epitaxial films and Hall bar devices of $Sr_3Ru_2O_7$.** P. Ngabonziza[1,2], A. Sharma[1], A. Scheid[3], *S. Sajeev*[1], P. A. van Aken[3] and J. Mannhart[3] *1. Physics and Astronomy, Louisiana State University, Baton Rouge, LA, United States; 2. Physics, University of Johannesburg, Auckland Park, South Africa; 3. Max Planck Institute for Solid State Research, Stuttgart, Germany*

**2:12**

**DG-02**. **Fast spin precession in ferrimagnetic $Mn_4N$ thin films with perpendicular magnetic anisotropy.** *S. Granville*[1,2] and Y. Zhang[1] *1. Robinson Research Institute, Victoria University of Wellington, Wellington, New Zealand; 2. MacDiarmid Institute for Advanced Materials and Nanotechnology, Wellington, New Zealand*

**2:24**

**DG-03**. **Experimental realization of the recently predicted magnetic antiperovskite $Co_3PdN$.** *S. Bauers*[1] *1. National Renewable Energy Laboratory, Golden, CO, United States*

**2:36**

**DG-04**. **Interfacial Alloying Induced Magnetic Proximity Effect in Platinum/Dysprosium Iron Garnet Heterostructures.** *M.J. Gross*[1], J. Herrero-Martín[2], S. Valencia[3], A.J. Grutter[4], J. Borchers[4], Y. Choi[5], G. Fabbris[5], A. Kossak[6], A. Kaczmarek[6], S. Kundu[7], S. Ghosh[7], A. Mykhoyan[7], A. Wittmann[8] and C.A. Ross[6] *1. Electrical Engineering and Computer Science, Massachusetts Institute of Technology, Cambridge, MA, United States; 2. ALBA Synchrotron Light Source, Barcelona, Spain; 3. Helmholtz-Zentrum Berlin für Materialien und Energie, Berlin, Germany; 4. NIST Center for Neuron Research, National Institute of Standards and Technology, Gaithersburg, MD, United States; 5. Advanced Photon Source, Argonne National Laboratory, Argonne, IL, United States; 6. Materials Science and Engineering, Massachusetts Institute of Techonology, Cambridge, MA, United States; 7. Chemical Engineering and Materials Science, University of Minnesota, Twin Cities, MN, United States; 8. Physics, Johannes Gutenberg University Mainz, Mainz, Germany*

**2:48**

**DG-05**. **Co/Gd-based Synthetic Ferrimagnets with PMA for Magneto-Photonic Integration: Growth, Magnetostatics and Modeling.** *T.J. Kools*[1], J. Hintermayr[1], B. Koopmans[1] and R. Lavrijsen[1] *1. Applied Physics, Eindhoven University of Techology, Eindhoven, Netherlands*

**3:00**

**DG-06**. **Skyrmions in Biased Ferromagnetic and Antiferromagnetic Coupled Multilayers.** *E. Darwin*[1], R. Tomasello[2], M. Carpentieri[2], G. Finocchio[3] and H.J. Hug[1,4] *1. Empa, Zurich, Switzerland; 2. Politecnico di Bari, Bari, Italy; 3. University of Messina, Messina, Italy; 4. University of Basel, Basel, Switzerland*

**3:12**

**DG-08**. **Effect of oxygen pressure and layer thickness on the magnetic properties of iron garnet superlattices.** *T.P. Grossmark*[1], A.C. Kaczmarek[1], B. Khurana[1] and C.A. Ross[1] *1. The Department of Materials Science and Engineering, The Massachusetts Institute of Technology, Cambridge, MA, United States*

**3:24**

**DG-09**. **Enhancement of Magnetic Stability in Antiferromagnetic CoO Films byAdsorption of Organic Molecules.** *I. Bergenti*[1], L. Gnoli[1], C. Del Conte[5], M. Benini[1], K. Lin[2], G. Fratesi[3], S. Achilli[3], E. Molteni[3], V. Dediu[1] and M. Cinchetti[4] *1. CNR-ISMN, Bologna, Italy; 2. National Chung Hsing University, Taichung, Taiwan; 3. University of Milan, Milan, Italy; 4. TU Dortmund, Dortmund, Germany; 5. University of Bologna, Bologna, Italy*

**3:36**

**DG-10**. **Angular-Dependent Magnetic Properties in $V_2O_3$/Ni Hybrid Heterostructures.** *K. Ignatova*[1] and U. Arnalds[1] *1. The Institute of Physical Sciences, Physics Division, University of Iceland, Reykjavík, Iceland*

**3:48**

**Break**

**4:15**

**DG-11**. **Complex Exchange Bias driven by Natural Oxide Layers in $CrPS_4/Fe_3GeTe_2$ Antiferromagnetic/Ferromagnetic van der Waals Heterostructures.** *A. Puthirath Balan*[1], A. Kumar[1], T. Scholz[2], Z. Lin[3], A. Shahee[1], S. Fu[4], T. Denneulin[5], J. Vas[5], A. Kovács[5], R.E. Dunin-Borkowski[5], H. Wang[4], J. Yang[3], B. Lotsch[2], U. Nowak[6] and M. Kläui[1,7] *1. Institute of Physics, Johannes Gutenberg University Mainz, Mainz, Germany; 2. Max Planck Institute for Solid State Research, Stuttgart, Germany; 3. School of Physics, Peking University, Beijing, China; 4. Max Planck Institute for Polymer Research Mainz, Mainz, Germany; 5. Ernst Ruska-Centre for Microscopy and Spectroscopy with Electrons and Peter Grünberg Institute, Forschungszentrum Jülich, Julich, Germany; 6. Department of Physics, University of Konstanz, Konstanz, Germany; 7. Centre for Quantum Spintronics, Department of Physics, Norwegian University of Science and Technology, Trondheim, Norway*

**4:27**

**DG-12**. **Understanding All-Optical Exchange Bias Reversal by Phase Space Exploration.** *F. van Riel*[1], S. Vercruysse[1], B. Koopmans[1] and D. Leitao[1] *1. Applied Physics, Eindhoven University of Technology, Eindhoven, Netherlands*

**4:39**

**DG-13**. **Magneto-Ionically Tuning the Magnetization and Exchange Bias in all-solid-state CoMnN Heterostructures.** *N. López-Pintó*[1], C. Jensen[2,3], Z. Chen[2], Z. Tan[1], Z. Ma[1], M. Liedke[4], M. Butterling[4], A. Wagner[4], J. Herrero-Martín[6], E. Menéndez[1], J. Nogués[5,7], K. Liu[2] and J. Sort[1,7] *1. Fisica de materials II, Universitat Autonoma de Barcelona, Barcelona, Spain; 2. Georgetown University, Washington, DC, United States; 3. NIST center for neutron research, Gaithesburg, MD, United States; 4. Helmholtz-Zentrum Dresden, Rossendorf, Germany; 5. Institut Catala de Nanociencia i Nanotecnologia (ICN2), Barcelona, Spain; 6. ALBA synchrotron, Barcelona, Spain; 7. ICREA, Barcelona, Spain*

**4:51**

**DG-14**. **Flexible Exchange-Biased Films with Superior Strain Stability.** *H. Yang*[1], X. Bao[1], Y.l. Xie[1] and R. Li[1] *1. Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, Ningbo, China*

**5:03**

**DG-15**. **An phase of elongated magnetic bubbles by imprinting a magnetic vortex on the $FeGeTe_2$ (FGT) stripe phase.** *A.T. N'Diaye*[1], T. Wang[2], A. Scholl[1], X. Huang[2], H. Zhang[2], X. Zhang[3], C. Hwang[4], R. Ramesh[5], M. Crommie[2] and Z.Q. Qiu[2] *1. Advanced Light Source, Lawrence Berkeley National Lab, Berkeley, CA, United States; 2. UC Berkeley, Berkeley, CA, United States; 3. King Abdullah Univ of Sci & Tech (KAUST), Thuwal, Saudi Arabia; 4. Quantum Technology Institute, Korea Reserach Institute of Standards and Science, Daejeon, The Republic of Korea; 5. Rice University, Houston, TX, United States*

## Session DP
# SOFT MAGNETIC MATERIALS II (Poster Session)

Jiahao Han, Chair
Tohoku University, Sendai, Japan

**DP-01**. **Analysis and Design of Current Transformers for Low-Frequency Transmission Systems Using Hybrid Magnetic Materials.** M. Xu[1], Z. Li[1], S. Lu[1], T. Huang[1], *G. Ma*[2,3], H. Zhou[2] and J. Yuan[2] *1. State Grid Jiangsu Electric Power Co., Ltd. Marketing Service Center, Nanjing, China; 2. Electrical Engineering and Automation, Wuhan University, Wuhan, China; 3. Department of Electrical and Electronic Engineering, The Hong Kong Polytechnic University, Hong Kong, China*

**DP-02**. **The varying magnetic properties of different doping concentration of MnO doped $C_4$AF.** *L. Huang*[1], A. Baral[2], C. Pesce[3], N. Morley[1] and T. Hanein[2] *1. University of Sheffield, Sheffield, United Kingdom; 2. University of Leeds, Leeds, United Kingdom; 3. earth4Earth, Sheffield, United Kingdom*

**DP-03**. **Research on Vibration Characteristics and Suppression Measure of Saturation Core Fault Current Limiter Based on Nanocrystalline Materials.** *J. Yuan*[1,2], Y. Liu[1,2], Y. Sun[3], X. Li[1,2] and H. Zhou[1,2] *1. State Key Laboratory of Power Grid Environmental Protection, Wuhan University, Wuhan, China; 2. School of Electrical Engineering and Automation, Wuhan University, Wuahn, China; 3. State Grid Hubei Electric Power Co., LTD. Wuhan Power Supply Company, Wuhan, China*

**DP-04**. **AC electrical property and generation of extra eddy current loss in Mn-Zn ferrites in the high frequency range.** *Y. Ying*[1] and Z. Li[1] *1. Zhejiang University of Technology, Ha, China*

**DP-05**. **Measurement and Analysis of Magnetostriction of Nanocrystalline Alloy Laminations under Medium-frequency Excitation.** *C. Zhang*[1], H. Zhang[1], Y. Li[1] and T. Chen[1] *1. State Key Laboratory of Reliability and Intelligence of Electrical Equipment, Hebei University of Technology, Tianjin, China*

Now VP17-09

**DP-06**. **Band-structure and ferromagnetism of the GaMnAsP epitaxial layers.** *N. Tataryn*[1], O. Yastrubchak[1], S. Mamykin[1], V. Romanyuk[1], O. Kondratenko[1], B.A. Assaf[2], J. Furdyna[2], X. Liu[2], G. Schönhense[3], H. Elmers[3], K. Medjanik[3], R. Serha[4], K. Levchenko[4], M. Sawicki[5] and K. Gas[5] *1. V. E. Lashkaryov Institute of Semiconductor Physics, National Academy of Sciences of Ukraine, Kyiv, Ukraine; 2. Department of Physics and Astronomy, University of Notre Dame, Notre Dame, IN, United States; 3. Institut für Physik, Johannes Gutenberg-Universität, Mainz, Germany; 4. Faculty of Physics, Nanomagnetism and Magnonics, University of Vienna, Vienna, Austria; 5. Institute of Physics, Polish Academy of Sciences, Warsaw, Poland*

**DP-07**. **Domain Wall Depinning in Rapidly Quenched Submicrometric Amorphous Wires.** *T.A. Ovari*[1], S. Corodeanu[1], G. Ababei[1], H. Chiriac[1] and N. Lupu[1] *1. National Institute of Research and Development for Technical Physics, Iasi, Romania*

**DP-08**. **Exploratory synthesis and characterization of Mn-based chiral nanomagnets, thin films and multi layers.** *J. Moore*[1] *1. School of Engineering, University of Central Oklahoma, Edmond, OK, United States*

WEDNESDAY AFTERNOON 2:30

EXHIBIT HALL

## Session DQ
## MAGNONICS III (Poster Session)

Vincent Vlaminck, Chair
IMT Atlantique, Nantes, France

**DQ-01**. **Dipole-exchange spin waves in van der Waals Néel-type antiferromagnetic films and nanoribbons.** *B. Hussain*[1] and M.G. Cottam[2] *1. University of Michigan, Dearborn, MI, United States; 2. University of Western Ontario, London, ON, Canada*

**DQ-02**. **Spin-Wave Dispersion in a Skyrmion Chain.** K. Zulfiqar[1,2,5], *S.J. Holt*[1,5], M. Lang[1,5], S.A. Pathak[1,5], E. Vinas Bostroem[3,5] and H. Fangohr[1,4,5] *1. SSU-CS, Max Planck Institute for Structure and Dynamics of Matter, Hamburg, Germany; 2. University of Hamburg, Hamburg, Germany; 3. Theory, Max Planck Institute for Structure and Dynamics of Matter, Hamburg, Germany; 4. University of Southampton, Southampton, United Kingdom; 5. Center for Free-Electron Laser Science, Hamburg, Germany*

**DQ-03**. **A Modified Model Based on Boltzmann Approach for Studying Viscous Fluid Transport of Magnons.** *X. Liu*[1], Y. Li[1], C. Chen[1] and J. Zhang[1] *1. Tongji University, Shanghai, China*

**DQ-04**. **Enhanced Magnon-Magnon Coupling in Artificial Square Ice with Perpendicular Magnetic Anisotropy.** *S. Sankaran Kunnath*[1], M.K. Zelent[1], M. Moalic[1] and M. Krawczyk[1] *1. Faculty of Physics, Institute of Spintronics and Quantum Information, Adam Mickiewicz University, Poznan, Poland*

**DQ-05**. **Effect of Ru underlayer on magnetic anisotropy and magnetization reversal in CoFeB thin film structures.** *S. Sahu*[1,2] and G. Basheed[1,2] *1. Indian Reference Material, CSIR National Physical Laboratory, New Delhi, India; 2. Academy of Scientific and Innovative Research (AcSIR), Ghaziabad, India*

**DQ-06**. **Hybrid Spin-Photon Systems: Exploring the Purcell Effect.** *S. Verma*[1], A. Maurya[1], R. Singh[1] and B. Bhoi[1] *1. Department of Physics, Indian Institute of Technology (BHU) Varanasi, India, Varanasi, India*

**DQ-07**. **Rotational Dependence of Photon-Magnon Coupling in a Planar ELCR-YIG System.** *A. Maurya*[1], S. Verma[1], R. Singh[1] and B. Bhoi[1] *1. Department of Physics, Indian Institute if Technology (BHU) Varanasi, India, Varanasi, India*

**DQ-08**. **Magnon-Polaron Excitations in Olivine-Type Silicates.** *A.B. Niraula*[1], Q. Huang[1], Y. Cheng[3], G. Granroth[3], H. Zhou[2] and X. Bai[1] *1. Physics and Astronomy, Louisiana State University, Baton Rouge, LA, United States; 2. Physics and Astronomy, University at Tennessee, Knoxville, TN, United States; 3. Neutron Scattering Division, Oakridge National Laboratory, Oak Ridge, TN, United States*

WEDNESDAY AFTERNOON 2:30

EXHIBIT HALL

## Session DR
## MAGNETIZATION DYNAMICS & MATERIALS WITH COUPLED MAGNETIC PHENOMENA II (Poster Session)

Jinho Lim, Chair
University of Illinois Urbana-Champaign, Urbana, IL, United States

**DR-01**. **Strain-induced annihilation of dipolar skyrmions in uniaxial ferromagnet Fe-Sn.** *M. Charilaou*[1] *1. Physics, University of Louisiana at Lafayette, Lafayette, LA, United States*

**DR-02**. **Highly Tunable of Electronic States near Chirality-reversed Planar Defect with Magnetic Interstitial Atomic Layer in Magnetic Weyl Semimetals.** *E. Thareja*[1], J.D. Gayles[1] and I. Vekhter[2] *1. Department of Physics, University of South Florida, Tampa, FL, United States; 2. Department of Physics and Astronomy, Louisiana State University, Baton Rouge, LA, United States*

**DR-04**. **Geometrically Tunable Spin Superfluidity and a Spin Pumping–Induced Magnetoresistance Enabled by Spontaneous Symmetry Breaking in Easy-Plane Magnets.** *M.D. Kitcher*[1] and G. Beach[1] *1. Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA, United States*

**DR-05**. **Quantum Landauer Erasure using Magnetic Tunneling Junctions.** *C. Wang*[1], X. Li[2] and J. Hong[3] *1. School of Sciences, Hubei Institute of Technology, Wuhan, China; 2. Huazhong University of Science and Technology, Wuhan, China; 3. UC Berkeley, Berkeley, CA, United States*

**DR-06**. **An Ultrasensitive Molecular Detector for Direct Sensing of Spin Currents at Room Temperature.** T. Feggeler[1,2], R. Meckenstock[3], T. Strusch[3], M.V. Efremova[4], M. Farle[3] and *U. Wiedwald*[3] *1. Department of Physics, University of California, Berkeley, CA, United States; 2. Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, CA, United States; 3. Faculty of Physics, University of Duisburg-Essen, Duisburg, Germany; 4. Department of Applied Physics, Eindhoven University of Technology, Eindhoven, Netherlands*

**DR-07**. **Sputter Deposited Magnetostrictive $Fe_{(100-x)}Al_x$ Alloy on Flexible Substrate.** P. Kumar[1,4,3], R. Kumar[1], S. .[1], *V. Sharma*[2], M.K. Khanna[1] and B.K. Kuanr[3] *1. Department of Electronic Science, University of Delhi, New Delhi, India; 2. Department of Physics, Northeastern University, Boston, MA, United States; 3. SCNS, Jawaharlal Nehru university, New Delhi, India; 4. Physics, Motilal Nehru College, University of Delhi, New Delhi, India*

**DR-08**. **The Effect of Cu Doping on the Magnetic and Magnetocaloric Properties of $Al_{1.2}Si_{0.15}Fe_{2-x}Cu_xB_2$.** *S. Rahman*[1], J.R. DeFeo[2], H.A. Adedo[1], V. Yenugonda[2], A.K. Pathak[2] and M. Khan[1] *1. Department of Physics, Miami University, Oxford, OH 45056, USA, Oxford, OH, United States; 2. Department of Physics, SUNY Buffalo State University, Buffalo, NY 14222, USA, Buffalo, NY, United States*

WEDNESDAY AFTERNOON 2:30

EXHIBIT HALL

## Session DS
## MAGNETOELECTRIC MATERIALS AND PHENOMENA II (Poster Session)

Lucas Caretta, Co-Chair
Brown University, Providence, RI, United States
Kai Litzius, Co-Chair
University of Augsberg, Augsberg, Germany

**DS-01**. **Investigating Physical Properties and Evolution of Griffiths Phase in $Tb_2Ni_{1-x}Co_xMnO_6$ Double Perovskites.** *A. Raghu*[1] and S.D. Kaushik[1] *1. Physics, UGC DAE CSR Mumbai Centre, Mumbai, India*

**DS-02**. **Tuning Magnetocaloric Effect at Constant Temperature in $Ho_{36}Co_{64-x}Al_x$ Multiphase Alloys.** *E.A. Balfour*[1], H. Fu[2], D. Ami-Erigo[1], J.S. Bayor[1] and R.L. Hadimani[3] *1. Applied Physics, C. K. Tedam University of Technology and Applied Sciences, Navrongo, Ghana; 2. School of Physics, University of Electronic Science and Technology of China, Chengdu, China; 3. Department of Mechanical and Nuclear Engineering and Department of Biomedical Engineering, Virginia Commonwealth University, Richmond, VA, United States*

**DS-03**. **Visualizing Domain Structures in Multiferroic ε-Iron Oxide Thin Films.** *D. DeTellem*[1], S. Witanachchi[1] and M. Phan[1] *1. Physics, University of South Florida, Tampa, FL, United States*

**DS-04**. **Realization of Perpendicular Magnetic Anisotropy of (001) $Mn_{1.5}Ga$ on $SiO_2$ substrate.** *N. Zahrin*[1], K. Tokunaga[1], Y. Kurokawa[1] and H. Yuasa[1] *1. Kyushu University, Fukuoka, Japan*

**DS-05**. **Exploring spin-gapless semiconducting properties of FeVTaAl and FeCrZrAl.** *C. Sadler*[1], S. Smith[2], B. Schmidt[1], P. Kharel[3], P. Shand[1] and P. Lukashev[1] *1. Physics, University of Northern Iowa, Cedar Falls, IA, United States; 2. Cedar Falls High School, Cedar Falls, IA, United States; 3. Chemistry, Biochemistry and Physics, South Dakota State University, Brookings, SD, United States*

**DS-06**. **Synthesis of Regular and Iron-Doped Lanthanum Calcium Manganese Oxide Nanoparticles for Magnetic Refrigeration.** *I.M. Smith*[1], J. Ahmed[1], P. Moberg[1] and E. Carpenter[1] *1. Chemistry, Virginia Commonwealth University, Richmond, VA, United States*

**DS-08**. **Enhancing Magnetic and Insulating Properties of $BiFeO_3$-Based Multiferroic Thin Films via B-Site Dual Substitution of Ni and Co along with Oxygen-Rich Target for Magnetic Memory Device Applications.** *S.S. Das*[1,2], Y. Suzuki[1], S. Ratha[1], G. Egawa[1] and S. Yoshimura[1] *1. Graduate School of Engineering Science, Akita University, Akita, Japan; 2. Department of Material Science, Akita University, Akita, Japan*

WEDNESDAY AFTERNOON 2:30

EXHIBIT HALL

## Session DT
## MAGNETORESISTANCE & DOMAIN WALLS (Poster Session)

Myoung-Woo Yoo, Chair
University of Illinois Urbana-Champaign, Champaign, IL, United States

**DT-01**. **Tunnel magnetoresistance up to 405% at room temperature in exchange-spin-valve CoFeB/MgO/CoFeB junctions by *in-situ* MgO annealing.** *H. Sukegawa*[1], T. Scheike[1], J. Uzuhashi[1], Z. Wen[1], S. Kasai[1], T. Ohkubo[1] and S. Mitani[1] *1. National Institute of Materials Science, Tsukuba, Japan*

**DT-02**. **Interfacial Contributions to the Anisotropic Magnetoresistance in FeRh Films Capped with Pt or $SiN_x$.** *A. Tsai*[1], E. Eremina[1], T. Wing[1], S.K. Patel[2], E. Fullerton[2] and J.C. Eckert[1] *1. Physics, Harvey Mudd College, Claremont, CA, United States; 2. CMRR, UCSD, San Diego, CA, United States*

**DT-03**. **Longitudinal and transverse conductivity measurements across the Verwey transition in $Fe_3O_4$ thin film.** *N. Bano*[1], A. Tripathy[1], H. Singh[1] and D.K. Shukla[1] *1. Physics, UGC-DAE CSR, Indore, Indore, India*

**DT-04**. **Spin-Valve-Like Magnetoresistance in MnZnSb Single Crystal.** *J. Dev*[1,2], S. Sardar[1,2], S. Singh[1] and P. Kushwaha[1] *1. CSIR-National Physical Laboratory (NPL), New Delhi, India; 2. Academy of Scientific and Innovation Research (AcSIR), Ghaziabad, India*

**DT-05**. **Magnetotransport in van der Waals ferromagnet $Fe_3GeTe_2$ bulk with current out of plane.** R. Jhang[1], N. Hai[1], *L. Tsai*[1], R. Jain[1], K. Raju[1], R. Sankar[1], J. Liang[2] and S. Lee[1] *1. Institute of Physics, Academia Sinica, Taipei, Taiwan; 2. Department of Physics, Fu Jen Catholic University, Taipei, Taiwan*

**DT-06**. **Observation of Magnetoresistance Effect in $Ni_{78}Fe_{22}/Erq_3$/FeCo Organic Spin Valves.** *R. Miyamoto*[1], M. Matsuzaka[1], M. Taniguchi[1], T. Ueda[1], C. Hashimoto[1], K. Kashima[1], K. Ando[1,2] and H. Kaiju[1,2] *1. Faculty of Science and Technology, Keio University, Yokohama, Japan; 2. Center for Spintronics Research Network, Keio University, Yokohama, Japan*

**DT-07**. **A temperature sensor based on magnetic skyrmions.** D. Kechrakos[1], *M. Lianeris*[2], D. Rodrigues[2], A. Meo[2], M. Carpentieri[2], R. Tomasello[2] and G. Finocchio[3] *1. Physics Laboratory, School of Pedagogical and Technological Education, Athens, Greece; 2. Department of Electrical and Information Engineering, Politecnico di Bari, Bari, Italy; 3. Department of Mathematical and Computer Sciences, Physical Sciences and Earth Sciences, University of Messina, Messina, Italy*

**DT-08**. **Strain-induced ultrafast magnetization dynamics in cubic magnetostrictive materials with inertial and nonlinear dissipative effects.** *S. Dolui*[1] and S. Dwivedi[1] *1. Mathematics, National Institute of Technology Andhra Pradesh, Tadepalligudem, India*

WEDNESDAY AFTERNOON 2:30

EXHIBIT HALL

## Session DU
## ELECTRONIC STRUCTURE, MAGNETISM AND FUNDAMENTAL PHYSICAL PHENOMENA (Poster Session)

Arti Kashyap, Co-Chair
Indian Institute of Technology Mandi, Mandi, India
Hari Paudyal, Co-Chair
University of Iowa, Ames, IA, United States

**DU-01**. **Withdrawn**

**DU-02**. **High-Throughput Studies of Novel Magnetism in Borides.** *Z. Zhang*[1], A. Kutepov[2], K. Belashchenko[2] and V. Antropov[1,3] *1. Iowa State University, Ames, IA, United States; 2. University of Nebraska-Lincoln, Lincoln, NE, United States; 3. Ames National Laboratory, Ames, IA, United States*

**DU-03**. **Prediction of Magnetic Order and Dimensionality in Cerium-Based Compounds Guided by Structural Characteristics and Tri-Critical Exponents.** *J.A. Torres*[1], A.S. Poulo[1], T. Lamichhane[1], J. Littleton[1] and J. Moore[1] *1. Engineering Physics, University of Central Oklahoma, Edmond, OK, United States*

**DU-04**. **High-Throughput Computational Approach to Designing Unconventional Magnets: Transition Metal Phosphates $T_2PO_5$.** Y. Jia[1], A. Alsaad[2], *R. Sabirianov*[3], A. Kutepov[4], K. Belashchenko[4], Z. Zhang[5] and V. Antropov[5] *1. UCSD, San Diego, CA, United States; 2. JUST, Irbid, Jordan; 3. UNO, Omaha, NE, United States; 4. UNL, Lincoln, NE, United States; 5. ISU, Ames, IA, United States*

**DU-05**. **Intrinsic Magnetism and Thermal Stability of Transition Metal and Rare-Earth Adatoms on $MoSe_2$ monolayer.** N. Batnyam[1], B. Odontuya[2], G. Munkhsaikhan[2] and *D. Odkhuu*[1] *1. Department of Physics, Incheon National University, Incheon, The Republic of Korea; 2. Department of Physics, Mongolian University of Science and Technology, Ulaanbaatar, Mongolia*

**DU-06**. **Models of spin-split bands in antiferromagnets.** G. Bednik[1] and *R. Sabirianov*[1] *1. Physics, University of Nebraska Omaha, Omaha, NE, United States*

**DU-07**. **Observed Frustrated Antiferromagnetism in Ni-Mn-Based Functional Heusler Alloys.** *S. Aksoy Esinoglu*[1] and M. Acet[2] *1. Physics Engineering Department, Istanbul Technical University, Istanbul, Turkey; 2. Faculty of Physics, Duisburg-Essen University, Duisburg, Germany*

**DU-08**. **Withdrawn**

WEDNESDAY AFTERNOON 2:30

EXHIBIT HALL

## Session DV
# ANALYSIS AND DESIGN FOR ELECTRICAL MACHINES
## (Poster Session)

Ants Kallaste, Co-Chair
Tallinn University of Technology, Tallinn, Estonia
Anh Huynh, Co-Chair
University of Nottingham, Nottingham, United Kingdom

**DV-01**. **Model Order Reduction of Bidirectional CLLLC Converter for Flywheel Energy Storage System.** *K. Xu*[1], Y. Zhu[1], Y. Guo[1], G. Lei[1] and J. Zhu[2] *1. School of Electrical and Data Engineering, University of Technology Sydney, Sydney, NSW, Australia; 2. School of Electrical and Information Engineering, The University of Sydney, Sydney, NSW, Australia*

**DV-02**. **Synergetic Optimization Based on Doubly Salient Pole-changing Machine for Torque Ripple Reduction.** W. Wenjie[1], S. Niu[1] and *M. Jiang*[1] *1. EEE, Hong Kong Polytechnic University, Hong Kong, Hong Kong*

**DV-03**. **Improved Analytical Technique for Electromagnetic Analysis of Axial Flux Permanent Magnet Motor Considering 3D Leakage Flux.** *J. Yang*[1], T. Kim[1], K. Shin[2] and J. Choi[1] *1. Electrical Engineering, Chungnam National University, Daejeon, The Republic of Korea; 2. Electrical Engineering, Changwon National University, Changwon, The Republic of Korea*

**DV-04**. **3D FEM Calculation of Eddy Current Losses in Clamping Structures Considering Stator End-Windings of High-Power Electrical Machines.** W.M. Mohand Oussaid[1,2], *A. Tounzi*[1], A. Benabou[1], J. Korecki[1], R. Romary[2], W. Boughanmi[3] and D. Laloy[3] *1. L2EP, Univ. Lille, Arts et Métiers Institute of Technology, Centrale Lille, Junia, ULR 2697 - L2EP, Lille, France; 2. Univ. Artois, UR 4025, Laboratoire Systèmes Électrotechniques et Environnement (LSEE), Béthune, France; 3. R&D, Jeumont Electric, Jeumont, France*

**DV-05**. **Calculation of Core and PM Losses Considering Current Harmonics and Saturation Effects Based on Exact Analytical Model.** *D. Hoang*[1], M. Nguyen[1], K. Shin[2], Y. Kim[1], A. Phung[3] and J. Choi[1] *1. Chungnam National University, Daejeon, The Republic of Korea; 2. Changwon National University, Changwon, The Republic of Korea; 3. Hanoi University of Science and Technology, Hanoi, Vietnam*

**DV-06**. **Analytical and Experimental Approaches to Predicting Magnetic Field Asymmetry and Electromagnetic Forces in Slotted Surface-Mounted Permanent Magnet Machines with Rotor Eccentricity.** Y. Kim[1], *J. Yang*[1], K. Shin[2] and J. Choi[1] *1. Chungnam National University, Daejeon, The Republic of Korea; 2. Changwon National University, Changwon, The Republic of Korea*

**DV-07**. **Novel Electromagnetic Analysis Method for a YASA Motor Based on Multi-Dimensional Hybrid FEA.** *J. Son*[1] and D. Lim[1] *1. Department of Electrical, Electronic, and Computer Engineering, University of Ulsan, Ulsan, The Republic of Korea*

**DV-08**. **A Method of Deriving Electromagnetic Characteristics of a SPMSM Based on Two-Stage Magnetostatic FEA.** *J. Lee*[1] and D. Lim[1] *1. Department of Electrical, Electronic, and Computer Engineering, University of Ulsan, Ulsan, The Republic of Korea*

WEDNESDAY
EVENING
6:45

CELESTIN D

## Session XA

# 21ST-CENTURY PERMANENT MAGNETS: HOW TO TAKE IT TO THE NEXT LEVEL? A PANEL/AUDIENCE DIALOG

Laura Lewis, Chair
Northeastern University, Boston, MA, United States

**6:45**

**XA-01**. **$Sm(Fe,Co)_{12}$-based Hard Magnetic Materials: Perspective 1.** ***(Invited)*** *G. Hadjipanayis*[1,2], C. Han[3] and C. Ni[3] *1. Department of Physics and Astronomy, University of Delaware, Newark, DE, United States; 2. Department of Chemical Engineering, Northeastern University, Boston, MA, United States; 3. Department of Materials Science and Engineering, University of Delaware, Newark, DE, United States*

**6:57**

**XA-02**. **Sm(Fe,Co)12-based and its relative magnetic materials: Perspective 2.** ***(Invited)*** *Y. Takahashi*[1] *1. NIMS, Tsukuba, Japan*

**7:09**

**XA-03**. **Progress and Prospects of Hard Hexaferrites for Permanent Magnet Applications.** ***(Invited)*** *C. de Julián Fernández*[1] *1. Institute of Materials for Electronics and Magnetism C.N.R., Parma, Italy*

**7:21**

**XA-04**. **Synthetic $L1_0$-FeNi: Achievements and Challenges.** ***(Invited)*** I.Z. Hlova[1], O. Dolotko[1], M. Abramchuk[1], A. Biswas[1] and *Y. Mudryk*[1] *1. Ames National Laboratory of the US Department of Energy, Ames, IA, United States*

**7:33**

**XA-05**. **Development of Sustainable Rare Earth-free Permanent Magnets based on MnAlC through Conventional and Advanced Manufacturing.** ***(Invited)*** *E.M. Palmero*[1], C. Muñoz Rodriguez[1], L. Feng[2], T. Mix[2], J. Rial[1], J. de Vicente[1], T. Woodcock[2] and A. Bollero[1] *1. Group of Permanent Magnets and Applications, IMDEA Nanociencia, Madrid, Spain; 2. Institute of Metallic Materials, Leibniz IFW Dresden, Dresden, Germany*

**7:45**

**XA-06**. **Computational Insight into $L1_0$ FeNi optimization.** ***(Invited)*** *J.B. Staunton*[1], C.D. Woodgate[1,2], G.A. Marchant[1] and L.H. Lewis[3,4] *1. Physics, University of Warwick, Coventry, United Kingdom; 2. Physics, University of Bristol, Bristol, United Kingdom; 3. Chemical Engineering, Northeastern University, Boston, MA, United States; 4. Mechanical and Industrial Engineering, Northeastern University, Boston, MA, United States*

**7:57**

**Discussion Panel**

THURSDAY MORNING 8:30

CELESTIN D

## Session EA
## NOVEL MAGNETIC TUNNEL JUNCTION MECHANISMS FOR MULTIFUNCTIONAL MEMORIES

Christopher Bennett, Chair
Sandia National Laboratories, Albuquerque, NM, United States

**8:30**

**EA-01**. **Complex Spintronic Synapses Exploiting Magnetoionics.** ***(Invited)*** *D. Querlioz*[1] and L. Herrera Diez[1] *1. Univ. Paris-Saclay, CNRS, Palaiseau, France*

**9:06**

**EA-02**. **Measurement-driven modeling of superparamagnetic tunnel junctions for computing applications.** ***(Invited)*** *M. Daniels*[1] *1. Physical Measurement Laboratory, National Institute of Standards and Technology (NIST), Gaithersburg, MD, United States*

**9:42**

**EA-03**. **Experimental Demonstration of Magnetic Tunnel Junction-Based Computational Random-Access Memory.** ***(Invited)*** *Y. Lv*[1], B. Zink[1], R. Bloom[1], H. Cilasun[1], P. Khanal[2], S. Resch[1], Z. Chowdhury[1], A. Habiboglu[2], W. Wang[2], S. Sapatnekar[1], U. Karpuzcu[1] and J. Wang[1] *1. Department of Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN, United States; 2. Department of Physics, University of Arizona, Tucson, AZ, United States*

**10:18**

**Break**

**10:45**

**EA-04**. **Nanomagnetic and Skyrmion Devices: Hardware AI and Quantum Control.** ***(Invited)*** *J. Atulasimha*[1] *1. Mechanical and Nuclear Engineering; Electrical and Computer Engineering; Physics, Virginia Commonwealth University, Richmond, VA, United States*

**11:21**

**EA-05**. **Advances in Antiferromagnetic Tunnel Junctions.** ***(Invited)*** *S. Arpaci*[1,2] *1. Department of Electrical and Computer Engineering, Northwestern University, Evanston, IL, United States; 2. Applied Physics Program, Northwestern University, Evanston, IL, United States*

THURSDAY MORNING 8:30

CELESTIN E

## Session EB
# SPIN-ORBIT TORQUES AND SPIN DYNAMICS IN 2D SYSTEMS

Simranjeet Singh, Chair
Carnegie Mellon University, Pittsburgh, PA, United States

**8:30**

**EB-01**. **Lossless Spin-Orbit Torque in layered Antiferromagnetic Topological Insulators.** ***(Invited)*** *R. Cheng*[1,2,3] and J. Tang[2] *1. Electrical and Computer Engineering, University of California Riverside, Riverside, CA, United States; 2. Physics and Astronomy, University of California Riverside, Riverside, CA, United States; 3. Materials Science and Engineering, University of California Riverside, Riverside, CA, United States*

**9:06**

**EB-02**. **Real-Space Investigation of the Stability, Nucleation and Sub-nanosecond Dynamics of Chiral Topological Spin Textures.** ***(Invited)*** *K. Litzius[1] 1. University of Augsburg, Augsburg, Germany*

**9:42**

**EB-03**. **Resonant optical detection of 2D spin textures.** ***(Invited)*** *X. Zhang[1] 1. University of Florida, Gainesville, FL, United States*

**10:18**

**Break**

**10:45**

**EB-04**. **Quantum Noise Spectroscopy of Critical Dynamics in Two-dimensional Magnets.** ***(Invited)*** *S. Chatterjee[1],* F. Machado[2], M. Ziffer[3], N. Yao[2], E. Demler[4], E. Davis[5] and A. Pasupathy[3] *1. Physics, Carnegie Mellon University, Pittsburgh, PA, United States; 2. Harvard University, Cambridge, MA, United States; 3. Columbia University, New York City, NY, United States; 4. ETH Zurich, Zurich, Switzerland; 5. New York University, New York City, NY, United States*

**11:21**

**EB-05**. **Quantum spintronics with graphene-based magnetic heterostructures.** ***(Invited)*** *T. Ghiasi[1] 1. Harvard University, Cambridge, MA, United States*

THURSDAY MORNING 8:30

CELESTIN A

## Session EC
## MAGNETORESISTANCE, SPIN CALORITRONICS, AND DAMPING

William Peria, Chair
National Institute of Standards and Technology, Boulder, CO, United States

**8:30**

**EC-01**. **Enhancement of tunnel magnetoresistance in fully perpendicular MnGa-based magnetic tunnel junctions with metastable bcc CoMnFe interlayer.** *D. Kumar[1],* N. Kamata[2,1], K. Hyeokjin[2,1] and S. Mizukami[1,3] *1. WPI Advanced Institute for Materials Research, Tohoku University, Sendai 980-8577, Japan, Sendai, Japan; 2. Department of Applied Physics, Tohoku University, Sendai 980-8579, Japan, Sendai, Japan; 3. Center for Science and Innovation in Spintronics, Tohoku University, Sendai 980-8577, Japan, Sendai, Japan*

**8:42**

**EC-02**. **Tunnel Magnetoresistance in Fully Epitaxial CoPt/MgO/CoPt(111) Perpendicular Magnetic Tunnel Junctions.** *J. Song*[1,2], T. Scheike[1], C. He[1], Z. Wen[1], T. Ohkubo[1], K. Kim[3], H. Sukegawa[1] and S. Mitani[1,2] *1. National Institute for Materials Science, Tsukuba, Japan; 2. Graduate School of Science and Technology, University of Tsukuba, Tsukuba, Japan; 3. Samsung Advanced Institute of Technology, Suwon, The Republic of Korea*

**8:54**

**EC-03**. **Tunnel magnetoresistance enhancement by ultrathin MgO insertions in Fe/$MgGa_2O_4$/Fe(001) magnetic tunnel junctions.** *R.R. Sihombing*[1], T. Scheike[1], Z. Wen[1], J. Uzuhashi[1], T. Ohkubo[1], S. Mitani[1] and H. Sukegawa[1] *1. CMSM, National Institute of Materials Science, Tsukuba, Japan*

**9:06**

**EC-04**. **Theory for the TMR oscillation as a function of the barrier thickness.** *K. Masuda*[1], T. Scheike[1], H. Sukegawa[1], Y. Kozuka[1], S. Mitani[1] and Y. Miura[1,2] *1. National Institute for Materials Science, Tsukuba, Japan; 2. Kyoto Institute of Technology, Kyoto, Japan*

**9:18**

**EC-05**. **Observed Perpendicular Magnetic Anisotropy in $CoFe_2O_4$/MgO/$ZnFe_2O_4$ Magnetic Tunnel Junction: X-ray Magnetic Circular Dichroism Study.** R. Charak[1], *S. Gautam*[2], S. Garg [2] P. Thakur[3], N. Goyal[4], Y. Kim[5] and K. Chae[6] *1. Energy Research Centre, Panjab University, Chandigarh, India; 2. Dr. SSB Univ Inst Chem Engg & Tech, Panjab University, Chandigarh, India; 3. Beamline Division, Diamond Light Source Ltd., Didcot Oxfordshire, United Kingdom; 4. Department of Physics, Panjab University, Chandigarh, India; 5. Pohang Accelerator Lab, POSTECH, Pohang, The Republic of Korea; 6. Advanced Analysis & Data Center, Korea Institute of Science and Technology, Seoul, The Republic of Korea*

**9:30**

**EC-06**. **Spin-selective transport in chiral molecular junctions on semiconductors.** *Y. Adhikari*[1], T. Liu[2], H. Wang[3], Z. Hua[1], H. Liu[1], P. Schlottmann[1], H. Gao[1], P. Weiss[2], B. Yan[4], J. Zhao[3] and P. Xiong[1] *1. Department of Physics, Florida State University, Tallahassee, FL, United States; 2. Department of Chemistry and Biochemistry, University of California, Los Angeles, Los Angeles, CA, United States; 3. State Key Laboratory of Superlattices and Microstructures, Institute of Semiconductors, Chinese Academy of Sciences, Beijing, China; 4. Department of Condensed Matter Physics, Weizmann Institute of Science, Rehovot, Israel*

**9:42**

**EC-07**. **Colossal anisotropic absorption of spin currents induced by chirality.** *R. Sun*[1], Z. Wang[2], B.P. Bloom[3], A.H. Comstock[1], C. Yang[2], A. McConnell[1], C. Clever[3], M. Molitoris[3], D. Lamont[4], Z. Cheng[5], Z. Yuan[5,7], W. Zhang[6], A. Hoffmann[8], J. Liu[2], D.H. Waldeck[3] and D. Sun[1] *1. Physics, North Carolina State University, Raleigh, NC, United States; 2. Department of Mechanical and Aerospace Engineering, North Carolina State University, Raleigh, NC, United States; 3. Department of Chemistry, University of Pittsburgh, Pittsburgh, PA, United States; 4. Petersen Institute of Nanoscience and Engineering, University of Pittsburgh, Pittsburgh, PA, United States; 5. Institute of Physics, CAS, Beijing, China; 6. Department of Physics and Astronomy, University of North Carolina at Chapel Hill, Chapel Hill, NC, United States; 7. Department of Physics, Beijing Normal University, Beijing, China; 8. Department of Materials Science & Engineering and Materials Research Laboratory, University of Illinois at Urbana-Champaign, Urbana, IL, United States*

**9:54**

**EC-08**. **Observations of Non-Local Spin-Valve Signal and Hanle Signal in Perpendicularly Magnetized Mn/Co/n-GaAs Junctions via All Electrical Methods.** *M. Ogawa*[1], K. Nara[1], M. Yamanouchi[1] and T. Uemura[1] *1. Grad. School of Information Science and Technology, Hokkaido University, Sapporo, Japan*

**10:06**

**EC-09**. **Low spin-flip probability of the Kondo scattering in Cu channels with dilute Fe impurities.** *Y. Ji*[1] and X. Shen[1] *1. University of Delaware, Newark, DE, United States*

**10:18**

**Break**

**10:45**

**EC-11**. **Influence of oxidic and metallic interfaces and spacers on the magnetic damping of Permalloy thin films.** *V. Ney*[1], K. Lenz[2], R. Hübner[2], F. Ganss[2], R. Salikhov[2], O. Hellwig[2], J. Lindner[2] and A. Ney[1] *1. Solid State Physics Devision, Johannes Kepler University Linz, Linz, Austria; 2. Helmholtz Zentrum Dresden Rossendorf, Dresden, Germany*

**10:57**

**EC-12**. **Observation of the Transverse Thomson Effect.** *A. Takahagi*[1], T. Hirai[2], A. Alasli[1], S.J. Park[2], H. Nagano[1] and K. Uchida[2,3] *1. Department of Mechanical Systems Engineering, Nagoya University, Nagoya, Japan; 2. National Institute for Materials Science, Tsukuba, Japan; 3. Department of Advanced Materials Science, The University of Tokyo, Kashiwa, Japan*

**11:09**

**EC-13**. **Temperature gradient-driven motion of domains in a chiral magnetic metal multilayer.** L. Huang[1,2], L. Kailas[1], S. Connell[1], G. Burnell[1] and *C. Marrows*[1] *1. School of Physics and Astronomy, University of Leeds, Leeds, United Kingdom; 2. School of Material Science, University of Sheffield, Sheffield, United Kingdom*

**11:21**

**EC-14**. **Spin caloritronics in topological and nonunitary superconductors.** T. Matsushita[2], T. Mizushima[3], Y. Masaki[4], S. Fujimoto[3] and *I. Vekhter*[1] *1. Department of Physics and Astronomy, Louisiana State University, Baton Rouge, LA, United States; 2. Department of Physics and Yukawa Institute, Kyoto University, Kyoto, Japan; 3. Department of Materials Engineering Science, Osaka University, Osaka, Japan; 4. Department of Applied Physics, Tohoku University, Sendai, Japan*

**11:33**

**EC-15**. **Nernst Effect in Bismuth at Different Crystal Orientations.** *A. Sola*[1], E.S. Olivetti[1] and V. Basso[1] *1. INRIM, Torino, Italy*

THURSDAY MORNING 8:30

CELESTIN B

## Session ED
## SKYRMIONS

Claas Abert, Chair
University of Vienna, Vienna, Austria

**8:30**

**ED-01**. **Experimental Visualizations of Three-Dimensional Skyrmion Topological Transition and Stabilization Pathways.** ***(Invited)*** *M. Henderson*[1] *1. Neutron Scattering Division, Oak Ridge National Laboratory, Oak Ridge, TN, United States*

**9:06**

**ED-02**. **Skyrmion, stripe domain, and sublattice skyrmion spin textures in synthetic antiferromagnetic multilayers.** C. Barker[1,2], R. Aboljadayel[1], R. Peremadathil-Pradeep[3], K. Fallon[4], Z. Tumbleson[5], S.A. Morley[6], S. McVitie[4], H.J. Hug[3] and *C. Marrows*[1] *1. School of Physics and Astronomy, University of Leeds, Leeds, United Kingdom; 2. National Physical Laboratory, Teddington, United Kingdom; 3. EMPA, Dübendorf, Switzerland; 4. SUPA, School of Physics and Astronomy, University of Glasgow, Glasgow, United Kingdom; 5. University of California Santa Cruz, Santa Cruz, CA, United States; 6. Advanced Light Source, Lawrence Berkley National Laboratory, Berkeley, CA, United States*

**9:18**

**ED-03**. **Topological spin-torque diode effect in skyrmion-based magnetic tunnel junctions.** *R. Tomasello*[1], B. Fang[2], M. Carpentieri[1], E. Darwin[3], W. Jiang[4], X. Zhang[5], G. Finocchio[6] and Z. Zeng[2] *1. Politecnico di Bari, Bari, Italy; 2. Nanofabrication Facility, Suzhou Institute of Nano-Tech and Nano-Bionics, Chinese Academy of Sciences, Suzhou, China; 3. Swiss Federal Laboratories for Materials Science and Technology, EMPA, Dubendorf, Switzerland; 4. State Key Laboratory of Low-Dimensional Quantum Physics and Department of Physics, Tsinghua University, Beijing, China; 5. Physical Science and Engineering Division, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia; 6. University of Messina, Messina, Italy*

**9:30**

**ED-05**. **Realizing Quantitative Quasi-Particle Modeling of Skyrmion Dynamics in Arbitrary Potentials.** *M.A. Brems*[1], T. Sparmann[1], S.M. Fröhlich[1], J. Rothörl[1], F. Kammerbauer[1], E.M. Jefremovas[1], O. Farago[2], M. Kläui[1] and P. Virnau[1] *1. Institute of Physics, Johannes Gutenberg University Mainz, Mainz, Germany; 2. Biomedical Engineering Department, Ben Gurion University of the Negev, Be'er Sheva, Israel*

**9:42**

**ED-06**. **Slow Ordering Kinetics of Magnetic Skyrmions.** N. Liyanage[1], N. Tang[1], R. Dally[2], L. Quigley[1], C.C. Buchanan[1], G. Shu[3], N. Butch[2], K. Krycka[2], M. Bleuel[2], J. Borchers[2], L. DeBeer-Schmitt[4] and *D.A. Gilbert*[1] *1. University of Tennessee, Knoxville, TN, United States; 2. National Institute of Standards and Technology, Gaithersburg, MD, United States; 3. National Taiwan University, Taipei, Taiwan; 4. Oak Ridge National Laboratory, Oak Ridge, TN, United States*

**9:54**

**ED-07**. **Curvature-induced enhancement of thermal stability of skyrmions.** A.G. Silva-Junior[1], J.M. Fonseca[1], J.I. Costilla[1], M.M. Amaral[1], *A. Riveros*[2] and V. Carvalho[1] *1. Departamento de Física, Universidad Federal de Visosa, Visosa, Brazil; 2. Escuela de Ingeniería, Universidad Central de Chile, Santiago, Chile*

**10:06**

**ED-09**. **Topological Melting of a 2D Skyrmion Lattice.** R. Gruber[1], M.A. Brems[1], F. Kammerbauer[1], J. Rothörl[1], O. Farago[2], P. Virnau[1] and *M. Kläui*[1,3] *1. Physics, Johannes Gutenberg University Mainz, Mainz, Germany; 2. Biology, Ben Gurion University of the Negev, Beer Sheva, Israel; 3. Center for Quantum Spintronics, NTNU, Trondheim, Norway*

**10:18**

**Break**

**10:45**

**ED-08**. **Experimental observation of current-driven antiskyrmion sliding in stripe domains. *(Invited)*** *Y. Zhang*[1] *1. Chinese Academy of Science, Institute of Physics, Beijing, China*

**11:21**

**ED-10**. **Multidimensional Soliton Lattices in Iron-Gadolinium Thin Films.** *C.C. Buchanan*[1], N. Tang[1], N. Liyanage[2], S. Montoya[3], E. Fullerton[3], D.A. Gilbert[1,2] and L. DeBeer-Schmitt[4] *1. Materials Science and Engineering, University of Tennessee, Knoxville, TN, United States; 2. Physics and Astronomy, University of Tennessee, Knoxville, TN, United States; 3. Center for Memory and Recording Research, University of California San Diego, La Jolla, CA, United States; 4. Neutron Scattering Division, Oak Ridge National Laboratory, Oak Ridge, TN, United States*

**11:33**

**ED-11**. **Propagation and interaction of skyrmions in antiferromagnets.** *S. Komineas*[1,2] and G. Theodorou[1,2]
*1. Mathematics and Applied Mathematics, University of Crete, Heraklion, Greece; 2. Foundation for Research and Technology, Heraklion, Greece*

THURSDAY MORNING 8:30

CELESTIN C

## Session EE
# SPINTRONIC DEVICES II: ANTIFERROMAGNETISM, VOLTAGE-CONTROLLED EFFECTS, DOMAIN WALL LOGIC AND PROBABILISTIC SWITCHING

Fei Xue, Chair
University of Alabama at Birmingham, Birmingham, AL, United States

**8:30**

**EE-01**. **Toggle SOT-MRAM Architecture with Self-Terminating Write Operation.** *E.C. Usih*[1], N. Hassan[1], A.J. Edwards[1], F. García Sánchez[2], P. Khalili[3] and J.S. Friedman[1] *1. Electrical and Computer Engineering, The University of Texas at Dallas, Richardson, TX, United States; 2. Departamento de Fisica Aplicada, Universidad de Salamanca, Salamanca, Spain; 3. Electrical and Computer Engineering, Northwestern University, Evanston, IL, United States*

**EE-02**. **Withdrawn**

**8:42**

**EE-03**. **Precise quantification of ferromagnetic exchange in thin films via Brillouin light scattering.** *J.J. Wisser*[1], M. Tanksalvala[1], J.S. Harms[2], M. Kiechle[1], W.K. Peria[1], R.A. Duine[3], J.M. Shaw[1] and H.T. Nembach[1,4] *1. NIST, Boulder, CO, United States; 2. University of Konstanz, Konstanz, Germany; 3. Utrecht University, Utrecht, Netherlands; 4. University of Colorado, Boulder, CO, United States*

**8:54**

**EE-04**. **Error-Free and Current-Driven Synthetic Antiferromagnetic Domain Wall Memory Enabled by Channel Meandering.** *P. Zhang*[1,3], W. Haensch[1,3], C. Phatak[1,2] and S. Guha[1,3]
*1. Materials Science Division, Argonne National Laboratory, Lemont, IL, United States; 2. Materials Science and Engineering, Northwestern University, Evanston, IL, United States; 3. Pritzker School of Molecular Engineering, University of Chicago, Chicago, IL, United States*

**9:06**

**EE-05**. **Effects of Temperature on the Performance of STT-MRAM Devices with Different Thicknesses.** S. Mangadahalli Siddaramu[1], M. Hindenberg[1], M. Wagner-Reetz[1], J. Müller[2] and *J. Chatterjee*[1] *1. Fraunhofer Institute for Photonic Microsystems, CNT, Dresden, Germany; 2. GlobalFoundries Fab1 LLC and Company KG, Dresden, Germany*

**EE-06**. **Withdrawn**

**9:18**

**EE-07**. **Ultrafast Coupled Domain Wall Motion in $Mn_2Au$-Permalloy.** S. Jenkins[1], *T. Wagner*[2*], O. Gomonay[2] and K. Everschor-Sitte[1] *1. Faculty of Physics and Center for Nanointegration Duisburg-Essen (CENIDE), University of Duisburg-Essen, Duisburg, Germany; 2. Institute of Physics, Johannes Gutenberg University Mainz, Mainz, Germany*

**9:30**

**EE-08**. **Energy-Efficient Manipulation of Stochastic Switching Behavior by Voltage Controlled Exchange Coupling in Magnetic Tunnel Junctions.** *J. Qi*[1], B. Zink[1], O. Benally[1], D. Zhang[1], Y. Lv[1], D. Lyu[1] and J. Wang[1] *1. University of Minnesota, Minneapolis, MN, United States*

**9:42**

**EE-09**. **Numerical analysis of vortex spin torque oscillator with an additional free layer.** *K. Horizumi*[1], T. Chiba[2,3] and T. Komine[1] *1. Graduate School of Science and Engineering, Ibaraki University, Hitachi, Japan; 2. Department of Applied Physics, Graduate School of Engineering, Tohoku University, Sendai, Japan; 3. Frontier Research Institute for Interdisciplinary Sciences(FRIS), Tohoku University, Sendai, Japan*

**EE-10**. **Withdrawn**

**9:54**

**EE-11**. **Voltage-Gated Spin-Orbit Torque for Selective Data Writing in IrMn-Based Perpendicular Magnetic Tunnel Junction Arrays.** *Z. Liu*[1], W. Li[1], S. Peng[1], J. Lu[1], J. Liu[1], X. Li[1], S. Lu[1], Y. Otani[2] and W. Zhao[1] *1. Fert Beijing Institute, School of Integrated Circuit Science and Engineering, Beihang University, Beijing, China; 2. Institute for Solid State Physics, University of Tokyo, Tokyo, Japan*

**10:06**

**EE-12**. **Towards an Ising Machine Simulator based on Spintronic Oscillator Digital Twins.** *C. Chopin*[1], A. Hakam[1], M. Ibarra Gomez[1], L.D. Buda-Prejbeanu[1], S. de Wergifosse[2], F. Abreu Araujo[2], E. Aubouin[3], L. Hutin[3], F. Badets[3], P. Talatchian[1] and U. Ebels[1] *1. Univ. Grenoble Alpes, CEA, CNRS, Grenoble-INP, SPINTEC, Grenoble, France; 2. Institute of Condensed Matter and Nanosciences, Université Catholique de Louvain, Louvain-la-Neuve, Belgium; 3. Univ. Grenoble Alpes, CEA, LETI, Grenoble, France*

**10:18**

**Break**

**EE-14**. **Large spin orbit torque induced by high temperature annealed BiSb topological insulator on oxidized Si substrates.** *H. Ho*[1], W. Li[1], S. Takahashi[2], Y. Hirayama[2], Y. Kato[2] and H.N. Pham[1] *1. Electrical and Electric Engineering, Tokyo Institute of Technology, Meguro, Japan; 2. Samsung Japan Corp., Yokohama, Japan*

Now VP23-10

**10:45**

**EE-15**. **Magnetic and Transport Properties of Altermagnetic Candidate GdAlSi.** *J. Shi*[1], N. Fokkens[1] and F. Xue[1] *1. Physics, University of Alabama at Birmingham, Birmingham, AL, United States*

**10:57**

**EE-13**. **Investigation and design of Magnetic Tunnel Junction Molecular Spintronic Devices based Solar Cells via Monte Carlo Simulation.** *O. Kirkland*[1] and P. Tyagi[1] *1. University of the District of Columbia, Washington, DC, United States*

THURSDAY MORNING 8:30

IMPERIAL 5AB

## Session EF
# SOFT AND HARD MAGNETS

Xiaoyu (Criss) Zhang, Co-Chair
Northeastern University, Boston, MA, United States
Ravi Gautam, Co-Chair
National Institute for Materials Science (NIMS), Tsukuba, Japan

**8:30**

**EF-01**. **High-temperature phase transition during hydrogen disproportionation of Nd-Fe-B alloys.** G. Bacchetta[1], F. Orlandini Keller[1], C. Flament[1], L. Magnier[1], *S. Luca*[1], J. Garandet[1] and C. Rado[1] *1. Univ. Grenoble Alpes, CEA LITEN, Grenoble, France*

**8:42**

**EF-02**. **Controlling High Dense Particle Settling for 3D Printing of Functional Objects by Vat Photopolymerization.** C.E. Frank[1], *E.M. Palmero*[1], C.M. Montero[1] and A. Bollero[1] *1. Group of Permanent Magnets and Applications, IMDEA Nanociencia, Madrid, Spain*

**8:54**

**EF-03**. **Magnetic properties of RE-$Co_5$ intermetallic compounds.** *V. Antropov*[1], Z. Zhang[1] and L. Pourovskii[2] *1. Ames National Laboratory, Ames, IA, United States; 2. CPHT, CNRS, École Polytechnique, Institut Polytechnique de Paris, Paris, France*

**EF-04**. **Withdrawn**

**9:06**

**EF-05**. **A material processing prospective on exchange-spring permanent magnets.** A.S. Poulo[1], J.A. Torres[1], J. Littleton[1], J. Moore[1] and *T. Lamichhane*[1] *1. University of Central Oklahoma, Edmond, OK, United States*

**9:18**

**EF-06**. **Electrically Switchable Magnetic Elastomer.** *O. Sodomka*[1] and F. Mach[1] *1. Department of Electrical and Computational Engineering, University of West Bohemia in Pilsen, Pilsen, Czechia*

**9:30**

**EF-07**. **Influence of Cationic Distribution on the Magnetic and Electromagnetic Properties of Substituted Barium Hexaferrite within X-band (8.2 GHz-12.4 GHz).** *K. Rana*[1], M. Tomar[1,2] and A. Thakur[3] *1. Physics, Electronic Materials and Device Laboratory, New Delhi, Delhi, India; 2. Physics, Miranda College, Delhi, India; 3. Applied Physics, Amity University, Gurugram, India*

**9:42**

**EF-08**. **Nonreciprocity of surface acoustic waves coupled to spin waves propagating in a ferromagnetic bilayer having non-collinear magnetizations of layers.** L. Ushii[1], *A.N. Slavin*[2], V. Tyberkevych[2] and R.V. Verba[1] *1. Institute of Magnetism, Kyiv, Ukraine; 2. Physics, Oakland University, Rochester, MI, United States*

**9:54**

**EF-09**. **Garnet Microcavity Using Ce:YIG and GGG Showing Perpendicular Magnetic Anisotropy.** *T. Goto*[1], Y. Yoshihara[1], T. Koguchi[1], T. Watanabe[2], K. Mori[1], H. Miyashita[1], C.A. Ross[3] and K. Ishiyama[1] *1. Tohoku University, Sendai, Japan; 2. Shin-Etsu Chemical, Annaka, Japan; 3. Massachusetts Institute of Technology, Canbridge, MA, United States*

**10:06**

**Break**

**10:45**

**EF-10**. **FeGa Thin Film Coupled to a Network of Photoresponsive Liquid Crystals: Control of Magnetic Properties by Light Irradiation.** G. Barrera[1], F. Celegato[1], D. Martella[2,4], M. Coisson[1], C. Parmeggiani[2,3], N. Fuochi[2,4], D. Wiersma[2,3] and *P. Tiberto[1] 1. Advance Materials and Life Sciences, INRIM, Torino, Italy; 2. European Laboratory for Non Linear Spectroscopy (LENS), Sesto Fiorentino (FI), Italy; 3. Physics and Astronomy Department, University of Florance, Sesto Fiorentino, Italy; 4. Chemistry "Ugo Schiff" Department, University of Florence, Firenze, Italy*

**10:57**

**EF-11**. **Anomalous Optical Properties of Single-Molecule Magnet (SMM) Modified Magnetic Tunnel Junction (MTJ) at Room Temperature.** J.E. Hernandez[1], J. Martinez-Lillo[2] and *P. Tyagi[1] 1. University of the District of Columbia, Washington, DC, United States; 2. Universitat de València, Valencia, Spain*

**11:09**

**EF-12**. **Hybrid magnon-phonon cavity realized in a magnetoelastic heterostructure.** *C. Tang*[1,2], H. Goyal[1,2], D. Sasaki[3], Y. Xiong[4], M. Mahjouri-Samani[1], M. Adams[1], Y. Takamura[3], W. Zhang[4] and W. Jin[2,1] *1. Department of Electrical and Computer Engineering, Auburn University, Auburn, AL, United States; 2. Department of Physics, Auburn University, Auburn, AL, United States; 3. Department of Materials Science and Engineering, University of California, Davis, Davis, CA, United States; 4. Department of Physics and Astronomy, University of North Carolina at Chapel Hill, Chapel Hill, NC, United States*

**11:21**

**EF-13**. **Magnetoplasmonic Nanocolumnar Films Fabricated by Sputtering.** M. Garrido-Segovia[1,2], E. Navarro[2,3], A. Espinosa[4] and *J. García-Martín[1] 1. Instituto de Micro y Nanotecnología, CSIC, Tres Cantos, Spain; 2. Depto. Física de Materiales, UCM, Madrid, Spain; 3. Instituto de Magnetismo Aplicado, Las Rozas, Spain; 4. Instituto de Ciencia de Materiales de Madrid, CSIC, Madrid, Spain*

**11:33**

**EF-15**. **Effect of Rare-Earth Doping on Magnetic Softness and Magnetization Dynamics of Fe-Ga Films.** *S. Ajia*[1], R. Nishina[1], T. Miyazaki[2], S. Muroga[1] and Y. Endo[1,3] *1. Department of Electrical Engineering, Tohoku University, Sendai, Japan; 2. School of Engineering, Tohoku University, Sendai, Japan; 3. CSIS, Tohoku University, Sendai, Japan*

## Session EG
# MAGNETIC CRYSTALLINE ALLOYS

Nicoleta Lupu, Chair
National Institute of R&D for Technical Physics, Iasi, Romania

**8:30**

**EG-01**. **Interplay Between Magnetism and Short-Range Order in Medium- and High-Entropy Alloys: CrCoNi, CrFeCoNi, and CrMnFeCoNi.** *C.D. Woodgate*[1,2], L.H. Lewis[3,4] and J.B. Staunton[1] *1. Department of Physics, University of Warwick, Coventry, United Kingdom; 2. H. H. Wills Physics Laboratory, University of Bristol, Bristol, United Kingdom; 3. Department of Chemical Engineering, Northeastern University, Boston, MA, United States; 4. Department of Mechanical and Industrial Engineering, Northeastern University, Boston, MA, United States*

**8:42**

**EG-02**. **Relationship between chemical bonding state, magnetostrictive coefficient, and Gilbert damping coefficient in Fe-Al-N alloy system.** *K. Imamura*[1], T. Sato[1], S. Isogami[2], N.H. Oono[1] and M. Ohtake[1] *1. Faculty of Engineering, Yokohama National University, Yokohama, Japan; 2. Research Center for Magnetic and Spintronic Materials, National Institute for Materials Science, Tsukuba, Japan*

**8:54**

**EG-03**. **Synthesis and Magnetic Properties of Fe-Co-N-based Magnetic Materials.** *T. Tabata*[1], Y. Asari[1], M. Noujima[1] and S. Terada[1] *1. Research & Development Group, Hitachi Ltd., Hitachi, Japan*

**9:06**

**EG-04**. **Anisotropy of Losses in Non-Segmented Assemblies of Grain-Oriented Steel with Circular Easy Axis Distribution.** *S. Dobák*[1], J. Fuzer[1], I. Petryshynets[2], P. Kollár[1] and F. Kováč[2] *1. Institute of Physics, Faculty of Science, P. J. Safarik University in Kosice, Kosice, Slovakia; 2. Institute of Materials Research, Slovak Academy of Sciences, Kosice, Slovakia*

**9:18**

**EG-05**. **Enhanced permeability of high-frequency $Nd_2Fe_{17}N_3$ magnetic powder with a reduced surface iron oxide layer by inert gas annealing.** *J. Akamatsu*[1], S. Abe[1] and N. Imaoka[1] *1. Magnet Material Development Dept., Nichia Corporation, Anan, Japan*

**9:30**

**EG-06**. **Statistical modeling of soft magnetic composites' permeability.** *F. Mazaleyrat*[1] *1. SATIE CNRS, ENS Paris-Saclay, Gif-sur-Yvette, France*

**9:42**

**EG-07**. **The Impact of the Physical, Electrical and Magnetic Properties of Ferromagnetic Materials on their Excess Loss.** *S. Jacobs*[1] and J. Rens[2] *1. ArcelorMittal Global R&D, Zwijnaarde, Belgium; 2. ArcelorMittal Global R&D Gent, Zwijnaarde, Belgium*

**9:54**

**EG-08**. **Development of Co-rich glass-coated microwires with high GMI effect.** A. Gonzalez Villegas[1,2], P. Corte-Leon[1,2,4], V. Zhukova[1,2], J. Blanco[2,3] and *A. Zhukov*[1,2,3] *1. Department Polymers and Advanced Materials, University of Basque Country, San Sebastian, Spain; 2. Department Applied Physics, University of Basque Country, San Sebastian, Spain; 3. Ikerbasque, Bilbao, Spain; 4. Department of Materials Science & Metallurgy, University of Cambridge, Cambridge, United Kingdom*

**10:06**

**EG-09**. **Magnetic, structural, and transport properties of Heusler alloy $Cr_2FeSn$.** *G. Karthik*[1] and R. Kuppan[1] *1. Department of Nuclear Physics, University of Madras, Chennai, India*

**10:18**

**Break**

**10:45**

**EG-10**. **Effects of Isothermal Aging on the Magnetic Properties of Non-Oriented Electrical Steels: Interpretation Based on the Iron Loss Separation Approach.** *L. Saleh*[1], O. Messal[1], A. Benabou[1] and M. Dumont[2] *1. Electrical Engineering and Power Electronics Laboratory, University of Lille, Lille, France; 2. Mechanics, Surfaces and Materials Processing (MSMP), Ecole Nationale Supérieure d'Arts et Métiers, Lille, France*

**10:57**

**EG-11**. **Permeability enhancement and eddy current suppression of the bioinspired nacre structural soft magnetic composites for high frequency application.** *W. Li*[1], W. Xiang[1], H. Cai[1], Y. Ying[1] and S. Che[1] *1. Zhejiang University of Technology, Hangz, China*

**11:09**

**EG-13**. **Quaternary magnetic semiconductors for photonic and spintronic applications.** *O. Yastrubchak*[2], N. Tataryn[1], S. Mamykin[1], V. Romanyuk[1], O. Kondratenko[1], O. Kolomys[2], L. Borkovska[3], L. Khomenkova[3], J. Furdyna[4], B.A. Assaf[4], X. Liu[4] and Y. Ichiyanagi[5] *1. Department of Kinetic Phenomena and Polaritonics, V. E. Lashkaryov Institute of Semiconductor Physics, National Academy of Sciences of Ukraine, Kyiv, Ukraine; 2. Optical Submicron Spectroscopy Lab, V. E. Lashkaryov Institute of Semiconductor Physics, National Academy of Sciences of Ukraine, Kyiv, Ukraine; 3. Department of Sensor Systems, V. E. Lashkaryov Institute of Semiconductor Physics, National Academy of Sciences of Ukraine, Kyiv, Ukraine; 4. Department of Physics and Astronomy, University of Notre Dame, Notre Dame, IN, United States; 5. Department of Physics, Graduate School of Engineering Science, Yokohama National University, Yokohama, Japan*

**11:21**

**EG-14**. **Theoretical and experimental investigation of half-metallic properties in $V_2CoAl$.** P. Kharel[1], C. Brown[1], B. Schmidt[2], C. Sadler[2], S. Diallo[2], M. Anas[1], P. Shand[2] and *P. Lukashev*[2] *1. Chemistry, Biochemistry and Physics, South Dakota State University, Brookings, SD, United States; 2. Physics, University of Northern Iowa, Cedar Falls, IA, United States*

**11:33**

**EG-15**. **Ultra-stable Weyl topology in association with magnetic textures in shandite compound $Co_3Sn_2S_{(2-x)}Se_x$.** *D. Le*[1], B. Konushbaev[1], G.M. Pantano[1], Y. Mokrousov[3,2], M. Phan[1] and J.D. Gayles[1] *1. Department of Physics, University of South Florida, Tampa, FL, United States; 2. Institute of Physics, Johannes Gutenberg University Mainz, Mainz, Germany; 3. Peter Grünberg Institut and Institute for Advanced Simulation, Forschungszentrum Jülich and JARA, Jülich, Germany*

THURSDAY MORNING 9:00

EXHIBIT HALL

## Session EP
## HARD MAGNETS III
## (Poster Session)

Xin Tang, Chair
National Institute for Materials Science (NIMS), Tsukuba, Japan

**EP-01**. **Aluminum praseodymium doped M type ferrite for replacing rare earth magnets in EVS motor applications.** *D. Sharma*[1], A. Dogra[2] and M. Singh[1] *1. Physics, Himachal Pradesh University, Shimla, India; 2. Physics, CSIR NPL, Delhi, India*

**EP-02**. **Facile synthesis and magnetic characterization of FeNi magnetic alloys.** *P. Agoeyevu*[1], M. Jiang[2] and E. Carpenter[1] *1. Chemistry, Virginia Commonwealth University, Richmond, VA, United States; 2. Department of Chemical and Life Science Engineering, Virginia Commonwealth University, Richmond, VA, United States*

**EP-03**. **Theoretical Estimate of Thermal Stability Range of $\alpha''$–$Fe_{16}N_2$ Within the Iron Nitride Binary Phase Diagram.** *P. Stoeckl*[1] and J. Wang[2,1] *1. Physics, University of Minnesota, Minneapolis, MN, United States; 2. Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN, United States*

**EP-05**. **Sm-Fe-N Bulk Magnets Prepared by Hot Pressing Using Zn-Coated Magnetic Powder by Electrodeposition.** *S. Che*[1], D. Shi[1] and J. Zheng[1] *1. Research Center of Magnetic and Electronic Materials, Zhejiang University of Technology, Huzhou, China*

**EP-06**. **Understanding Structure-Composition-Property Relations in Manganese Zinc Nitride Antiperovkites.** *C.E. Regier*[2], S. O'Donnell[1], S. Mahatara[1], R.W. Smaha[1], S. Lany[1] and J.R. Neilson[2,3] *1. National Renewable Energy Lab (NREL), Golden, CO, United States; 2. Chemisty, Colorado State University, Fort Collins, CO, United States; 3. Materials Science, Colorado State University, Fort Collins, CO, United States*

**EP-07**. **Unusually High Coercivity of Sputtered $Fe_{16}N_2$ Thin Films.** *E. Gokce-Polat*[1,3], B. Wolf[1], A. DeRuiter[2], W. Echtenkamp[1], H. Kim[4] and J. Wang[1] *1. Department of Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN, United States; 2. Department of Chemical Engineering and Materials Science, University of Minnesota, Minneapolis, MN, United States; 3. Department of Engineering Physics, Istanbul Medeniyet University, Istanbul, Turkey; 4. Hyundai Motor Company, Uiwang-Si, The Republic of Korea*

**EP-08**. **Rare-earth free permanent magnet – triple-doped iron phosphide ($Fe_2P$).** O. Narantogtokh[1], T. Namsrai[1], S. Dorj[1,2], J. Narmandakh[2], K. Baatartsogt[2], U. Enkhnaran[2], S. Deleg[2], O. Tumentsereg[3], *O. Dorj*[3] and O. Khorgolkhuu[4] *1. Department of Physics, National University of Mongolia, Ulaanbaatar, Mongolia; 2. Functional Material Laboratory, Institute of Physics and Technology, Mongolian Academy of Sciences, Ulaanbaatar, Mongolia; 3. Department of Physics, Incheon National University, Incheon, The Republic of Korea; 4. National Institute for Computational Sciences, Oak Ridge, TN, United States*

THURSDAY MORNING 9:00

EXHIBIT HALL

## Session EQ
## MAGNONIC AND RF SENSORS (Poster Session)

Anjan Soumyanarayanan, Chair
National University of Singapore, Singapore, Singapore

**EQ-02**. **Coupled Spin Wave-Surface Acoustic Wave Interactions Supported in a Scandium-Doped Aluminum Nitride-Silicon Carbide Acoustic Platform.** *A. Will-Cole*[2], X. Du[1], J.E. Shoup[3], B. Luo[4], V. Lauter[5], A.J. Grutter[3], O. Pitcl[6], M. Miller[2], B.P. Smith[2], L. Hackett[2], Y. Deng[2], N.X. Sun[4], D.B. Gopman[3], R. Olsson[1] and M. Eichenfield[2,6] *1. University of Pennsylvania, Philadelphia, PA, United States; 2. Sandia National Laboratories, Albuquerque, NM, United States; 3. National Institute of Standards and Technology, Gaithersburg, MD, United States; 4. Northeastern University, Boston, MA, United States; 5. Oak Ridge National Laboratory, Oak Ridge, TN, United States; 6. University of Arizona, Tucson, AZ, United States*

**EQ-04**. **Multilayer Garnet Integrated Tunable Resonators.** *N. Gagnon*[1], H. Baldino[2], Z. Franz[1], D. Evans[1], D. Hedlund[1] and P. Kulik[1] *1. Electrical and Computer Engineering, University of Central Florida, Orlando, FL, United States; 2. Material Science and Engineering, University of Central Florida, Orlando, FL, United States*

**EQ-05**. **Giant Non-Reciprocity Driven by Strong Magnon-Phonon Coupling in Low-Loss Fundamental Mode Surface Acoustic Wave Magnetoacoustic RF Devices.** *B. Luo*[1], A. Winkler[2], H. Schmidt[2], Y. Liu[1], B. Davaji[1] and N.X. Sun[1] *1. Electrical and Computer Engineering, Northeastern University, Boston, MA, United States; 2. SAWLab Saxony, Dresden, Germany*

**EQ-06**. **Comprehensive investigation of magnetoimpedance on micromachined soft magnetic material.** *H. Kikuchi*[1] and Z. Wang[1] *1. Iwate University, Morioka, Japan*

**EQ-07**. **Modeling Magnetic Field in Racetrack-Core Fluxgates at High Excitation Frequency.** *J. Maier*[1], P. Ripka[1] and M. Mirzaei[1] *1. Department of Measurement, Czech Technical University in Prague, Prague, Czechia*

**EQ-08**. **MR-scanner Independent Three-dimensional Magnetic Field Mapping System of RF Coil with Phantom Loading.** M. Takahashi[1], *A. Kuwahata*[1], M. Fushimi[2], M. Sekino[2] and S. Yabukami[1] *1. Tohoku University, Sendai, Japan; 2. The University of Tokyo, Tokyo, Japan*

THURSDAY MORNING 9:00

EXHIBIT HALL

## Session ER
## SPINTRONIC DEVICES III: CPP-GMR, SOT-MRAM AND SPIN-TORQUE OSCILLATORS (Poster Session)

Ravi Kumar Bandapelli, Chair
Carnegie Mellon University, Pittsburgh, PA, United States

**ER-01**. **Magnetoresistance Effect Based on Spin-Selective Transport in Nano-Devices Using Chiral Molecules.** *M. Matsuzaka*[1], R. Miyamoto[1], K. Kashima[1], T. Ueda[1], K. Terai[1], T. Yamamoto[1], K. Sambe[2], T. Akutagawa[2] and H. Kaiju[1,3] *1. Faculty of Science and Technology, Keio University, Yokohama, Japan; 2. Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Sendai, Japan; 3. Center for Spintronics Research Network, Keio University, Yokohama, Japan*

**ER-02**. **Spin Transfer Torque assisted Field-Free Spin Orbit Torque Switching in CPP-GMR with Antiferromagnetically Coupled Perpendicularly Magnetized Co/Pd Memory Layer.** *D. Pan*[1], D. Oshima[1], B. Zhu[1] and T. Kato[1] *1. Electronics, Nagoya University, Nagoya, Japan*

**ER-03**. **Spin-torque diode effect driven by magnetization phase-transitions: a theoretical analysis.** *M. Lianeris*[1], A. Meo[1], M. Carpentieri[1], R. Tomasello[1] and G. Finocchio[2] *1. Department of Electrical and Information Engineering, Polytechnic University of Bari, Bari, Italy; 2. Department of Mathematical and Computer Sciences, Physical Sciences and Earth Sciences, University of Messina, Messina, Italy*

**ER-04**. **BEOL-compatible, 5 ns-fast, single pulse field-free switching 50 nm AFM(PtMn)-TopSOT-MRAM.** *C. Lin*[2,1], K. Li[1], J. Shieh[1], Y. Chen[1], C. Hsu[1], W. Chen[1,3], C. Shen[1], T. Hou[1], J. Sun[1,4], D. Tang[5], C. Hsin[3] and C. Lai[2,6] *1. Taiwan Semiconductor Research Institute, Hsinchu, Taiwan; 2. College of Semiconductor Research, National Tsing Hua University, Hsinchu, Taiwan; 3. Department of Electrical Engineering, National Taiwan University, Taipei, Taiwan; 4. Industry-Academia Innovation School, National Yang Ming Chiao Tung University, Hsinchu, Taiwan; 5. Industrial Technology Research Institute, Hsinchu, Taiwan; 6. Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan*

**ER-05**. **Swift Skyrmion as True Random Number Generator.** *A. Joy*[1,2] *1. Physics, Indian Institute of Science Bangalore, Bangalore, India; 2. NISE, Max Planck Institute for Microstructure Physics, Halle, Germany*

**ER-06**. **Coupling of Self-Generated Spin Waves and Spin Transfer Torque Driven Oscillations in Biquadratic Coupled Orthogonal Magnetization Disks.** *T. Cheng*[1], C. Liu[1], Y. Kurokawa[1] and H. Yuasa[1] *1. Graduate School and Faculty of Information Science and Electrical Engineering, Kyushu University, Fukuoka, Japan*

**ER-07**. **Imaging of dispersion relation of magnetoelastic waves in epitaxial ferromagnetic Heusler alloys using multiple-overtones surface acoustic wave.** *K. Yamanoi*[1], S. Yamada[2], K. Hamaya[2] and Y. Nozaki[1] *1. Keio University, Yokohama, Japan; 2. Osaka University, Toyonaka, Japan*

**ER-08**. **Anharmonic potential induced chaotic dynamics of spintronic oscillator.** *R. Tatsumi*[1], T. Chiba[1,2], T. Komine[3] and H. Matsueda[1,4] *1. Engineering, Tohoku University, Sendai, Japan; 2. FRIS, Sendai, Japan; 3. Engineering, Ibaraki University, Hitachi, Japan; 4. CSIS, Sendai, Japan*

THURSDAY MORNING 9:00

EXHIBIT HALL

## Session ES
## MAGNETOELECTRIC DEVICES AND APPLICATIONS (Poster Session)

Pedram Khalili, Chair
Northwestern University, Evanston, IL, United States

**ES-01**. **Demonstration of Spintronic Devices and Arrays Based on Field-Free Voltage-Gated Spin-Orbit Torque Switching.** *Z. Liu*[1], H. Zhang[1], J. Liu[1], Y. Zhang[1], W. Li[1], J. Lu[1] and S. Peng[1] *1. Fert Beijing Institute, School of Integrated Circuit Science and Engineering, Beihang University, Beijing, China*

**ES-02**. **Voltage-controlled magnetic anisotropy driven non-linear parametric resonance.** *A. Giordano*[1], A. Grimaldi[1], R. Sharma[2], E. Raimondo[4], R. Tomasello[3], M. Carpentieri[3], H. Yang[2] and G. Finocchio[1] *1. University of Messina, Messina, Italy; 2. University of Singapore, Singapore, Singapore; 3. Politecnico di Bari, Bari, Italy; 4. INGV, Messina, Italy*

**ES-03**. **Towards Cancer Theragnostics using Magnetoelectric Nanoparticles.** *V. Andre*[1], M. Abdel-Mottaleb[1], S. Chen[1], M. Shotbolt[1], S. Khizroev[1] and P. Liang[2] *1. University of Miami, Miami, FL, United States; 2. Cellular NanoMed Inc, Irvine, CA, United States*

**ES-04**. **High Data-Rate VLF Magnetoelectric Communications with Single-Side-Band Nonlinear Antenna Modulation.** *Y. Liu*[1], T. Noochan[1], B. Luo[1] and N.X. Sun[1] *1. Electrical and Computer Engineering, Northeastern University, Boston, MA, United States*

**ES-05**. **Electric Field Controlled Nanowire based Domain Wall Logic Device.** *J. Weng*[1], P. Zhang[1] and J. Hong[2] *1. School of Sciences, Hubei University of Technology, Wuhan, China; 2. UC Berkeley, Berkeley, CA, United States*

**ES-06**. **Boron Doping and Voltage Effects on Spin Reversal of Antiferromagnetic Domains in $Cr_2O_3$ Thin Films and Devices.** A. Erickson[1], S. Shah[1], A. Mahmood[1], P. Buragohain[1], I. Fescenko[2], A. Gruverman[1], C. Binek[1] and *A. Laraoui*[1] *1. University of Nebraska-Lincoln, Lincoln, NE, United States; 2. University of Latvia, Riga, Latvia*

**ES-07**. **Electric field effect on exchange coupling induced $T_c$-modulation in superconducting spin valves.** *T. Kikuta*[1], S. Komori[1], K. Imura[2] and T. Taniyama[1] *1. Department of Physics, Nagoya University, Nagoya, Japan; 2. ILAS, Nagoya University, Nagoya, Japan*

**ES-08**. **Stabilizing Topological Non-collinear Magnetoelectric Textures at Room Temperature.** *A. Ghosal*[1], S. Zhou[2], M. Ramesh[8], S. Husain[4], H. Zhang[4], C. Klewe[7], J. Mundy[6], D. Schlom[8], P. Stevenson[3], R. Ramesh[5,4] and L.M. Caretta[1] *1. School of Engineering, Brown University, Providence, RI, United States; 2. Department of Physics, Brown University, Providence, RI, United States; 3. Department of Physics, Northeastern University, Boston, MA, United States; 4. Department of Materials Science and Engineering, University of California, Berkeley, Berkeley, CA, United States; 5. Department of Materials Science and Nanoengineering, Rice University, Houston, TX, United States; 6. Department of Physics, Harvard University, Cambridge, MA, United States; 7. Lawrence Berkeley National Laboratory, Berkeley, CA, United States; 8. Department of Materials Science and Engineering, Cornell University, Ithaca, NY, United States*

## Session ET
# THIN FILMS, MULTILAYERS, AND EXCHANGE BIAS SYSTEMS II (Poster Session)

Juan Luis Palma, Chair
Universidad Central de Chile, Santiago, Chile

**ET-01**. **Structural and Magnetic Properties of $Fe_xSn_{1-x}$ Thin Films.** *C. Brennan-Rich*[1], T. Almeida[2], S. McVitie[2], S. Collins[3,4], R. Drummond-Brydson[4] and C. Marrows[1] *1. School of Physics and Astronomy, University of Leeds, Leeds, United Kingdom; 2. School of Physics and Astronomy, University of Glasgow, Glasgow, United Kingdom; 3. School of Chemistry, University of Leeds, Leeds, United Kingdom; 4. School of Chemistry and Process Engineering, University of Leeds, Leeds, United Kingdom*

**ET-02**. **Investigation of Curie Temperature and Gilbert Damping of Magnetron Sputtered $Al_{0.25}CrFeCoNi$ Thin Films.** *M. Noor*[1], T. Das Gupta[1], A. Vasdev[2,3], M. Detisch[4], L. De-Long[5], W. Gannon[5], B. Jungfleisch[6], T. Balk[1], T. Hastings[2] and P. Rottmann[1] *1. Chemical and Materials Engineering, University of Kentucky, Lexington, KY, United States; 2. Electrical and Computer Engineering, University of Kentucky, Lexington, KY, United States; 3. Materials Science Division, Argonne National Laboratory, Lemont, IL, United States; 4. Electron Microscopy Center, University of Kentucky, Lexington, KY, United States; 5. Physics & Astronomy, University of Kentucky, Lexington, KY, United States; 6. Physics and Astronomy, University of Delaware, Newark, DE, United States*

**ET-03**. **Thin film synthesis, structural analysis and magnetic properties of novel ternary transition metal nitride $MnCoN_2$.** S. Dugu[1], R.W. Smaha[1], A. Treglia[2], S. Lany[1] and *S. Bauers*[1] *1. National Renewable Energy Laboratory, Golden, CO, United States; 2. Colorado State University, Fort Collins, CO, United States*

**ET-04**. **Exchange-Bias Effects in the Hysteresis Losses of Core-Shell Nanoparticles.** *C. de Julián Fernández*[1], A. López-Ortega[2], E. Lottini[3], B. Muzzi[4], M. Albino[4] and C. Sangregorio[4] *1. Institute of Materials for Electronics and Magnetism C.N.R., Parma, Italy; 2. Departamento de Ciencias, Universidad Pública de Navarra, Pamplona, Spain; 3. INSTM- Università di Firenze, Florence, Italy; 4. Institute of Chemistry and Organometallic Compounds CNR, Florence, Italy*

**ET-05**. **Temperature Dependence of the Interlayer Exchange Coupling in Epitaxial Fe/MgO/Fe (001) Heterostructures.** *A.I. Ojo*[1], A. Ravensburg[2], M.P. Grassi[2], V. Kapaklis[2] and D.A. Arena[1] *1. Department of Physics, University of South Florida, Tampa, FL, United States; 2. Department of Physics and Astronomy, Uppsala University, Uppsala, Sweden*

**ET-06**. **Exploring FeCo-based nanogranular thin film with reduced eddy current loss.** G. Wei[1], A. Masood[1], R. Anjum[1] and *R. Sai*[1] *1. Tyndall National Institute, Cork, Ireland*

**ET-07**. **Unveiling the magnetic and optical properties of one-step grown, epitaxial $SmCrO_3$ thin films.** *M. Madaan*[1], A. Jain[2] and V. Malik[1] *1. Physics, Indian Institute of Technology Roorkee, Roorkee, India; 2. Solid State Physics Division, Bhabha Atomic Research Centre, Mumbai, India*

**ET-08**. **Focused Ion Beam Milling of Ta/Co/NiFe Magnetic Tunnel Junction based Molecular Spintronics Device.** *H. Brown*[1], E. Mutunga[1] and P. Tyagi[1] *1. University of The District of Columbia, Washington, DC, United States*

THURSDAY MORNING 9:00

EXHIBIT HALL

## Session EU
## STRUCTURED MATERIALS II (Poster Session)

Olin Mefford, Chair
Clemson University, Clemson, SC, United States

**EU-01**. **Evaluating the Heating Efficacy of Short Nanowires Produced by Improved Multilayered Template-assisted Electrodeposition.** *R. Kolisnyk*[2], A. Harpel[1], A. Afful[2] and B. Stadler[2,1] *1. Chemical Engineering and Material Science, University of Minnesota, Minneapolis, MN, United States; 2. Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN, United States*

**EU-02**. **Importance of Magnetic Anisotropy in Determining Heating and Imaging Performance of Magnetic Nanoflower Colloids.** *J. Borchers*[1], K. Krycka[1], B.B. Santos[2], E. De Lima Correa[2], A. Sharma[3], H. Carlton[3], Y. Dang[2], M.J. Donahue[4], C. Gruettner[5], R. Ivkov[3,6,7] and C. Dennis[2] *1. NIST Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, MD, United States; 2. Material Measurement Laboratory, National Institute of Standards and Technology, Gaithersburg, MD, United States; 3. Department of Radiation Oncology and Molecular Radiation Sciences, Johns Hopkins University School of Medicine, Baltimore, MD, United States; 4. Information Technology Laboratory, National Institute of Standards and Technology, Gaithersburg, MD, United States; 5. micromod Partikeltechnologie, GmbH, 18057 Rostock, Germany; 6. Department of Oncology, Sydney Kimmel Comprehensive Cancer Center, Johns Hopkins University, Baltimore, MD, United States; 7. Department of Mechanical Engineering, Johns Hopkins University, Baltimore, MD, United States*

**EU-03**. **Growth Mechanism of One-Dimensional Assemblies Consisting of Silica-Coated Magnetic Nanoparticles.** *C. Oka*[1], T. Shiojima[1], J. Sakurai[1] and S. Hata[1] *1. Department of Micro-Nano Mechanical Science and Engineering, Nagoya University, Nagoya, Japan*

**EU-04**. **High Magnetoresistance in Magnetic Polymer Nanocomposites Comprising Fe Nanoparticles and PEDOT: PSS.** *S. Liang*[1], R.A. Mendonsa[2], V.K. Chugh[2], D. Su[1], K. Wu[3] and J. Wang[1,2] *1. Chemical Engineering and Materials Science, University of Minnesota, Minneapolis, MN, United States; 2. Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN, United States; 3. Electrical and Computer Engineering, Texas Tech University, Lubbock, TX, United States*

**EU-05**. **Magnetization Dynamics in Co-$CoFe_2O_4$ Based Nanostructures: A Multimodal Characterizations Study to Understand Interparticle Interactions.** *S. Jan*[1], S. Attanayake[1], N. Schulz[1], H. Khurshid[2], M. Phan[1], D.A. Arena[1] and H. Srikanth[1] *1. Department of Physics, University of South Florida, Tampa, FL, United States; 2. Department of Applied Physics and Astronomy, University of Sharjah, Sharjah, United Arab Emirates*

**EU-06**. **Withdrawn**

**EU-07**. **Emergent Ferromagnetism and Phase Coexistence in 3D-Printed CrMnFeCoNi High Entropy Alloys.** *V. Mishra*[1], N. Mudiyanselage[1], D. DeTellem[1], M. Jin[2], S. Witanachchi[1], M. Pham[2] and M. Phan[1] *1. Physics, University of South Florida, Tampa, FL, United States; 2. Department of Materials, Imperial College London, London, United Kingdom*

**EU-08**. **Static magnetic field modulates spinodal decomposition in Cu-Ni-Fe system.** *X. Zhang*[1,2], C. Woodgate[3], G. Hadjipanayis[1,4], J.B. Staunton[3] and L.H. Lewis[1,2,5] *1. Chemical Engineering, Northeastern University, Boston, MA, United States; 2. Mechanical and Industrial Engineering, Northeastern University, Boston, MA, United States; 3. Physics, University of Warwick, Coventry, United Kingdom; 4. Physics and Astronomy, University of Delaware, Newark, DE, United States; 5. Physics, Northeastern University, Boston, MA, United States*

THURSDAY MORNING 9:00

EXHIBIT HALL

## Session EV
## MACHINES OPTIMIZATION, MAGNETIC LOSS, AND THERMAL MODELING II (Poster Session)

Po-Wei Huang, Chair
National Cheng Kung University, Tainan, Taiwan

**EV-01**. **Investigation on the Steel Sheet Subdivision and Orientation Potentials of the Stator Core of an Axial Flux Machine.** *S. Weigel*[1], A. Schaefer[1] and N. Parspour[1] *1. Institute of Electrical Energy Conversion, University of Stuttgart, Stuttgart, Germany*

**EV-02**. Now VP2-13 **Vibration Analysis of Permanent Magnet Synchronous Motors Considering Magneto-Thermal Coupling and Structural Deformation.** *H. Cao*[1,4], D. Zeng[2], Y. Li[3], Z. Sun[4], X. Wang[1,4] and C. Jiang[1,4] *1. College of Energy, Xiamen University, Xiamen, China; 2. Harbin Engineering University, Harbin, China; 3. Four Academies and Four Departments of Aerospace Science and Industry, Beijing, China; 4. Innovation Laboratory for Sciences and Technologies of Energy Materials of Fujian Province (IKKEM), Xiamen, China*

**EV-03**. Now VP2-12 **BH curve normalization method for semi-infinity silicon steel sheets model based on vector magnetic circuit theory.** W. Qin[1], *X. Ma*[1], M. Cheng[1], Z. Wu[1] and X. Zhu[2] *1. Southeast University, Nanjing, China; 2. North China Electric Power University, Baoding, China*

**EV-04**. **Optimal Design of a Six-Phase Motor for Large Ships to Reduce Cogging Torque and Torque Ripple.** *D. Choi*[1], H. Han[1], H. Kim[1], S. Jeon[1] and W. Kim[2] *1. Next Generation Smart Energy System Convergence, Gachon University, Seongnam, The Republic of Korea; 2. Electrical Engineering, Gachon University, Seongnam, The Republic of Korea*

**EV-05**. **A Study on the Support Structure for the Improvement of Counter Torque Strength of Urban Small Wind Power Generator with Block Coil.** H. Kim[1], M. Hong[2], *S. Ko*[1], D. Jung[3] and W. Kim[4] *1. Next Generation Energy System Convergence, Gachon University, Seongnam, The Republic of Korea; 2. Electrical Engineering, Hanyang Unversity, Seongdong-gu, The Republic of Korea; 3. Department of Electrical and New Materials Engineering, Andong National University, Andong-si, The Republic of Korea; 4. Electrical Engineering, Gachon University, Seongnam, The Republic of Korea*

**EV-06**. **Density-Based Rotor Topology Optimization of High-Power Density Wound-Field Flux-Switching Machine for Traction Applications.** *M. Fereydoonian*[1] and W. Lee[1] *1. Elmore Family School of Electrical and Computer Engineering, Purdue University, West Lafayette, IN, United States*

**EV-07**. **Efficient and Versatile Anhysteretic Magnetization Models for Soft Magnetic Materials in FEA and Circuit Simulations.** *A. Schaefer*[1], S. Weigel[1] and N. Parspour[1] *1. Institute of Electrical Energy Conversion (iew), University of Stuttgart, Stuttgart, Germany*

**EV-08**. **Design and analysis of a novel watch speaker using top magnets structure for a thinner smart watch.** *Y. Oh*[1], Y. Jung[1], K. Park[1], Z. Jiang[1] and S. Hwang[1] *1. Mechanical Engineering, Pusan National University, Pusan, The Republic of Korea*

## Session FP
# HARD MAGNETS IV
# (Poster Session)

Jiasheng Zhang, Chair
National Institute for Materials Science (NIMS), Tsukuba, Japan

**FP-01**. **Strong dependence of exchange coupling on soft phase magnetization in hard/soft nanocomposites.** C. Pahwa[1] and *P. Sharma[1] 1. School of Basic & Applied Sciences, IILM University, Greater Noida, India*

**FP-02**. **Coercivity enhancement in heavy rare earth free Nd-Fe-B magnet by grain boundary diffusion.** *S. Singh*[1,2], A. Diraviam[2], R. Dasary M[2], A. Haldar[1] and M. Muthuvel[2] *1. Department of Physics, Indian Institute of Technology, Hyderabad, India; 2. Defence Metallurgical Research Laboratory, Kanchanbagh, Hyderabad, India*

**FP-03**. **Spark Plasma Sintered Manganese Substituted Strontium M-type Nanohexaferrite.** *A. Sassi*[1,2], A. Pasko[1], S. Amara[4], C. Florica[5], V. Yenugonda[2], G. Setti[4], F. Mazaleyrat[1] and A. Pathak[2,3] *1. SATIE, CNRS, Université Paris-Saclay, ENS Paris-Saclay, Gif-sur-Yvette, France; 2. Department of Physics, SUNY Buffalo State, Buffalo, NY, United States; 3. One Research Circle, GE Aerospace Research, Niskayuna, NY, United States; 4. Computer, Electrical and Mathematical Sciences and Engineering, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia; 5. Nanofabrication Core Lab, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia*

**FP-04**. **The HDDR Process – A Novel Approach for Obtaining Sintered Nanostructured $Nd_2Fe_{14}B$-, $SmCo_5$- and $Sm_2Co_{17}$-Based Magnets.** *I. Bulyk*[1,2,3], M. Yang[1,3,4], B. Yang[1,3,4], R. Liu[1,3,4], H. Wang[1,3], I. Boruch[2] and O. Kononiuk[2] *1. Jiangxi Province Key Laboratory of Magnetic Metallic Materials and Devices, Jiangxi University of Science and Technology, Ganzhou, China; 2. Karpenko Physico-Mechanical Institute of National Academy of Sciences of Ukraine, Lviv, Ukraine; 3. National Rare Earth Functional Materials Innovation Center, Ganzhou, China; 4. Ganjiang Innovation Academy, Chinese Academy of Science, Ganzhou, China*

**FP-05**. **Evaluating the disordering kinetics of tetrataenite, employing integrated magnetic and metallurgical perspectives.** *X. Zhang*[1,2], E. Dos Santos[3], J. Gattacceca[4] and L.H. Lewis[1,2,5] *1. Chemical Engineering, Northeastern University, Boston, MA, United States; 2. Mechanical and Industrial Engineering, Northeastern University, Boston, MA, United States; 3. Instituto de Ciência e Tecnologia, Universidade Federal dos Vales do Jequitinhonha e Mucuri (UFVJM), Diamantina, Brazil; 4. Centre de Recherche et d'Enseignement des Géosciences de l'Environnement (CEREGE), Aix-en-Provence, France; 5. Physics, Northeastern University, Boston, MA, United States*

**FP-06**. **Effect of Mn Substitution on Coercivity of $SrFe_{8-x}Mn_xAl_4O_{19}$ Nanoparticles.** *P. Joshi*[1], H. Abbas[1], T. Karki[1], J. Mohapatra[1] and P. Liu[1] *1. Department of Physics, University of Texas at Arlington, Arlington, TX, United States*

**FP-07**. **Thermodynamics of materials synthesis under applied magnetic fields.** *A. Rauf*[1] and W. Sun[1] *1. Materials Science and Engineering, University of Michigan, Ann Arbor, MI, United States*

**FP-08**. **Computational search of alpha″-$Fe_{16}N_2$ inspired nitrides for novel permanent magnets.** A. Rauf[1] and *W. Sun*[1] *1. Materials Science and Engineering, University of Michigan, Ann Arbor, MI, United States*

THURSDAY
AFTERNOON
1:00

EXHIBIT HALL

## Session FQ
## MAGNETIC DEVICES FOR SENSING AND RECORDING & THIN FILMS, MULTILAYERS, AND EXCHANGE BIAS SYSTEMS III (Poster Session)

Zhenchao Wen, Chair
National Institute for Materials Science (NIMS), Tsukuba, Japan

**FQ-01**. **Development of Flexible Sendust Composite Sheets with Enhanced Magnetic Permeability for Microwave Absorbers and Antennas.** *M.P. Whalen*[1], D.T. Plouff[2], N.B. Shevchenko[3], M. Mirotznik[4] and J.Q. Xiao[2] *1. Quantum Science and Engineering Program, University of Delaware, Newark, DE, United States; 2. Department of Physics and Astronomy, University of Delaware, Newark, DE, United States; 3. Center for Composite Materials, University of Delaware, Newark, DE, United States; 4. Department of Electrical and Computer Engineering, University of Delaware, Newark, DE, United States*

**FQ-02**. **Innovative assessment of carburized steel hardness profiles using low-frequency magnetic incremental permeability.** H. Lberni[1], *B. Ducharne*[2], H. Petitpré[1], J. Mogniotte[3], Y. Tene Deffo[4], F. Zhang[1] and C. Gallais[5] *1. CETIM, Senlis, France; 2. Tohoku University, Sendai, Japan; 3. INSA Lyon, Villeurbanne, France; 4. University of Buea, Buea, Cameroon; 5. Safran Transmission Systems, Collombes, France*

**FQ-03**. **Flexible Polymer/Ferrite Composites for Millimeter Wave Applications.** *B.M. Mears*[1], G. Macedo[1], V.S. Peytchev[1] and D. Arnold[1] *1. Electrical and Computer Engineering, University of Florida, Gainesville, FL, United States*

**FQ-04**. **Development of a tri-axis concentric fluxgate magnetometer with high orthogonality and high linearity.** T. Nguyen[1], J. Jeng[1] and *L. Bui*[1,2] *1. Department of Mechanical Engineering, National Kaohsiung University of Science and Technology, Kaohsiung, Taiwan; 2. Faculty of Mechanical Engineering, Hung Yen University of Technology and Education, Hung Yen, Vietnam*

**FQ-06**. **Combined and Separated Signal Processing Techniques for Dual Layer Bit-Patterned Magnetic Recording.** N. Rueangnetr[1], S. Greaves[2] and *C. Warisarn*[1] *1. College of Advanced Manufacturing Innovation, King Mongkut's Institute of Technology, Bangkok, Thailand; 2. Research Institute of Electrical Communication (RIEC), Tohoku University, Sendai, Japan*

**FQ-07**. **Development of highly conductive $SrMoO_3$ epitaxial thin films for advanced spintronic applications.** *M. Roy Chowdhury*[1,2], C. He[2], K. Tang[2], H. Koizumi[2], Z. Wen[2], S. Thota[1], H. Sukegawa[2] and S. Mitani[2] *1. Physics, Indian Institute of Technology Guwahati, Guwahati, India; 2. National Institute for Materials Science, Tsukuba, Japan*

**FQ-08**. **Massive replacement of Cu in FePt-Carbon ultra-thin buffer layer for $K_u$ enhancement of FePt granular films.** *K. Tham*[1], D. Miyazaki[1] and S. Saito[2] *1. Material Company, TANAKA KIKINZOKU KOGYO K. K., Tsukuba, Japan; 2. Electronic Engineering, Graduate School of Engineering, Tohoku University, Sendai, Japan*

THURSDAY AFTERNOON 1:00 — EXHIBIT HALL

## Session FR
## SPINTRONIC DEVICES IV: STT/SOT MRAMS AND SWITCHING DYNAMICS (Poster Session)

Sachin Krishnia, Chair
Johannes Gutenberg University Mainz, Mainz, Germany

**FR-01**. **Magnetization States and Switching Dynamics of Noncollinear Spin-Torque Devices.** *A. Terko*[1], G. Lertzman Lepofsky[1], P. Flauger[2], D. Suess[2], E. Girt[1] and C. Abert[2] *1. Department of Physics, Simon Fraser University, Burnaby, BC, Canada; 2. Faculty of Physics, University of Vienna, Vienna, Austria*

**FR-02**. **Energy Landscape of Noncollinear Exchange Coupled Magnetic Multilayers.** *G. Lertzman Lepofsky*[1], A. Terko[1], S. Koraltan[2], D. Suess[2], E. Girt[1] and C. Abert[2] *1. Department of Physics, Simon Fraser University, Burnaby, BC, Canada; 2. Faculty of Physics, University of Vienna, Vienna, Austria*

**FR-03**. **Anomalous Hall Resistance in Ta/$Co_{40}Fe_{40}B_{20}$/MgO/Ta for Constructing Physical Unclonable Function.** *D. Divyanshu*[1], M. Tang[1], A.H. Lone[1], S. Amara[1] and G. Setti[1] *1. CEMSE (Integrated Intelligent Systems (I2S)), King Abdullah University of Science and Technology, Thuwal, Saudi Arabia*

**FR-04**. **Fabrication of high aspect ratio magnetic dot array with honeycomb structure.** *Y. You*[1], K. Yamanoi[1] and Y. Nozaki[1] *1. Department of Physics, Keio University, Yokohama, Japan*

**FR-05**. **Coherent Spin-Orbit Torque Magnetization Switching of Ring-Shaped MTJ for High-Density SOT-MRAM.** *M. Yoshikawa*[1], M. Koike[1], N. Umetsu[1], T. Li[1] and M. Quinsat[1] *1. Frontier Technology R&D Institute, Kioxia Corporation, Yokohama, Japan*

**FR-06**. **Understanding stability and behavior of Magnetic Tunnel Junction (MTJ) using Electron Spin Resonance (ESR).** *J.E. Hernandez*[1], P. Tyagi[1], B.N. Mengesha[1] and A. Feutmba[1] *1. University of the District of Columbia, Washington, DC, United States*

**FR-07**. **Correlation between the top electrode size and the spin orientations in T-shaped Magnetic Tunnel Junction Based Molecular Spintronic Devices (MTJMDS).** *J.E. Hernandez*[1], P. Tyagi[1], H. Brown[1] and B. Sankhi[1] *1. University of the District of Columbia, Washington, DC, United States*

**FR-08**. **Influence of Ferromagnetic Interlayer Exchange Coupling on Current-Induced Magnetization Switching and Dzyaloshinskii-Moriya Interaction in Co/Pt/Co Multilayer System.** *K. Grochot*[1], P. Ogrodnik[2], J. Mojsiejuk[1], P. Mazalski[3], U. Guzowska[3], W. Skowronski[1] and T. Stobiecki[1] *1. Institute of Electronics, AGH University of Krakow, Kraków, Poland; 2. Faculty of Physics, Warsaw University of Technology, Warsaw, Poland; 3. Faculty of Physics, University of Bialystok, Bialystok, Poland*

THURSDAY AFTERNOON 1:00 EXHIBIT HALL

## Session FS
## SPINTRONIC NEURAL COMPUTING (Poster Session)

Helena Reichlova, Co-Chair
Institute of Physics of the Czech Academy of Sciences, Praha, Czechia
Davi Rodrigues, Co-Chair
Politecnico di Bari, Bari, Italy

**FS-02**. **All-Magnonic Neurons Based on Chiral Magnonic Resonators.** K. Fripp[1], A. Shytov[1] and *V. Kruglyak*[1] *1. University fo Exeter, Exeter, United Kingdom*

**FS-03**. **Computing with Magnetic Tunnel Junction Based Sigmoidal Activation Functions.** *Y. Bao*[1], S. Yang[1], Z. Yao[1] and H. Yang[1] *1. Department of Electrical and Computer Engineering, National University of Singapore, Singapore, Singapore*

**FS-04**. **Development of zero-field skyrmionic devices.** W. Griggs[1], I. Charalampidis[1], V. Pavlidis[1] and *C. Moutafis*[1] *1. University of Manchester, Manchester, United Kingdom*

**FS-05**. **Restricted Boltzmann Machine for Modeling Complex Physical Systems: A Case Study in Artificial Spin Ice.** *R.B. Popy*[1], M. Hamdi[1] and R.L. Stamps[1] *1. Physics and Astronomy, University of Manitoba, Winnipeg, MB, Canada*

**FS-06**. **Domain Wall and Skyrmion Devices-based Spiking Neural Networks.** *A.H. Lone*[1], D.N. Rahimi[1], M. Tang[1], D. Divyanshu[1], S. Amara[1] and G. Setti[1] *1. CEMSE (Integrated Intelligent Systems (I2S)), King Abdullah University of Science and Technology, KAUST, Thuwal, Saudi Arabia*

**FS-07**. **On-Chip Learning of UNet Architecture Using Spintronic Devices for Image Segmentation.** V. Vadde[1], B. Muralidharan[1] and *A. Sharma*[2] *1. Department of Electrical Engineering, Indian Institute of Technology Bombay, Mumbai, India; 2. Department of Electrical Engineering, Indian Institute of Technology Ropar, Rupnagar, India*

**FS-08**. **Ultrafast Skyrmions for Neuromorphic Computation.** *A. Joy*[1,2], S. Satheesh[1] and P. Anil Kumar[1] *1. Physics, Indian Institute of Science Bangalore, Bangalore, India; 2. NISE, Max Planck Institute for Microstructure Physics, Halle, Germany*

THURSDAY AFTERNOON 1:00

EXHIBIT HALL

## Session FT
## THIN FILMS, MULTILAYERS, AND EXCHANGE BIAS SYSTEMS IV
## (Poster Session)

Anna Giordano, Chair
University of Messina, Messina, Italy

**FT-01**. **Chiral Magnonic Crystals Induced by Periodically Tailoring Interfacial Dzyaloshinskii-Moriya Interaction.** F. Wei[1], Y. Zhou[1], *W. Zhang*[2] and S. Kang[1] *1. Shandong University, Jinan, China; 2. Weifang University, Weifang, China*

**FT-02**. **Magnetic and Transport Properties of $LaSrMnRuO_6$ Double Perovskite Thin Films.** *A. Kumar*[1,2], D. Palai[3], D. Samal[3] and P. Santhosh[1,2] *1. Department of Physics, IIT Madras, Chennai, India; 2. Functional Oxide Research Group, IIT Madras, Chennai, India; 3. Department of Physics, Institute of Physics, Bhubaneswar, India*

**FT-03**. **Hydrogen-Mediated Spin-Orbit Torque and Voltage-Controlled Magnetic Anisotropy in $[Tb/Co]_3$/PtTb Structures.** B. Chen[1], *C. Lin*[2] and C. Lai[1] *1. Material Science and Enigneering, National Tsing Hua University, Hsinchu, Taiwan; 2. College of Semiconductor Research, National Tsing Hua University, HsinChu, Taiwan*

**FT-04**. **Conductivity-like Gilbert damping for iron-rich Fe-Si thin films at low temperature.** *Y. Jiang*[1], T. Miyazaki[2], S. Ajia[1], S. Muroga[1] and Y. Endo[1,3] *1. Department of Electrical Engineering, Graduate School of Engineering, Tohoku University, Sendai, Japan; 2. Faculty of Engineering, Tohoku University, Sendai, Japan; 3. Center for Science and Innovation in Spintronics (CSIS), Tohoku University, Sendai, Japan*

**FT-05**. **Evidence of bilinear coupling in IrMn/Co/Cu/NiFe spin valves.** *B.R. de Castro*[1], M.G. Silva[1], A.C. Krohling[1], L.H. de Andrade[1] and M. Martins[1] *1. Centro de Desenvolvimento da Tecnologia Nuclear, Belo Horizonte, Brazil*

**FT-07**. **Anomalous Temperature Dependence of Magnetic Damping in $La_{0.5}Sr_{0.5}MnO_3$ Thin Films.** *R. Arakawa*[1], T. Onogi[1], S. Komori[1] and T. Taniyama[1] *1. Physics, Nagoya University, Nagoya, Japan*

**FT-08**. **Exploring Interfacial Effects in Transition Metal Dichalcogenide / Ferrimagnetic Alloy Heterostructure.** *L. Ramos*[1], D.A. Arena[1], A.I. Ojo[1], Y. Wadumesthri[1] and H. Rodríguez Gutiérrez[1] *1. Physics, University of South Florida, Tampa, FL, United States*

THURSDAY AFTERNOON 1:00

EXHIBIT HALL

## Session FU
## MICROSCOPY, IMAGING, AND MAGNETIC CHARACTERIZATION I (Poster Session)

Sophie Morley, Chair
Lawrence Berkeley National Laboratory, Berkeley, CA, United States

**FU-01**. **Modular Cryogenic Piezoelectric Scanner for Scanning SQUID Microscopy.** *J. Bedard*[1], J.D. Franklin[1], Z. Ritchey[1], M. Roshdy[3], O.R. Bilal[3,4], M. Jain[1,2,4] and I. Sochnikov[1,2,4] *1. Department of Physics, University of Connecticut, Storrs, CT, United States; 2. Department of Material Science & Engineering, University of Connecticut, Storrs, CT, United States; 3. School of Mechanical, Aerospace, and Manufacturing Engineering, University of Connecticut, Storrs, CT, United States; 4. Institute of Material Science, University of Connecticut, Storrs, CT, United States*

**FU-03**. **Nondestructive Ferromagnetic Resonance as a Tool to Evaluate Quality in Samples with Perpendicular Magnetic Anisotropy.** *A. Harpel*[1], M. Anas[2], A. Wege[2], R. Franklin[2] and B. Stadler[2,1] *1. Chemical Engineering and Materials Science, University of Minnesota, Minneapolis, MN, United States; 2. Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN, United States*

**FU-04**. **Estimation of Rebar Corrosion Level using Magnetic Sensor Array with Convolutional Neural Network.** *Y. Ogata*[1,2], T. Yanagida[1], B. Kakinuma[1] and K. Kobayashi[2] *1. Advantest Laboratories Ltd., Sendai, Japan; 2. Graduate School of Science and Engineering, Iwate University, Morioka, Japan*

**FU-05**. **In-situ correlative facility for advanced magnetic materials.** *S. Ruiz Gómez*[1], A. Arché[1], W. Khaliq[1], A. Garcia de Herreros[1], N. Bagués[1] and L. Aballe[1] *1. ALBA Synchrotron, Barcelona, Spain*

**FU-06**. **Withdrawn**

**FU-07**. **Characterization of Magnetic Core-Shell Nanoparticles in Carbon Matrices.** V. Pena Perez[1], C.R. Gonzalez[1], E. Villegas[1], J. Baughman[1], F. Iglesias[1], A. Khodagulyan[1], O. Bernal[1] and *A.N. Kocharian*[1] *1. Department of Physics and Astronomy, California State University Los Angeles, Los Angeles, CA, United States*

THURSDAY AFTERNOON 1:00

EXHIBIT HALL

## Session FV
## MAGNETIC ASPECTS RELATED TO ELECTROMECHANICAL CONVERSION, TRANSFORMERS AND INDUCTORS (Poster Session)

Johannes Paulides, Chair
Advanced Electromagnetics Group, Waalwijk, Netherlands

**FV-01**. **Influence of Particle Size and Fabrication Conditions on Magnetic Properties of Dust Cores Composed of Iron Powders.** *Y. Kodama*[1], S. Ajia[1], T. Miyazaki[2], S. Muroga[1] and Y. Endo[1,3] *1. Graduate School of Engineering, Tohoku University, Sendai, Japan; 2. Faculty of Engineering, Tohoku University, Sendai, Japan; 3. Center for Science and Innovation in Spintronics, Tohoku University, Sendai, Japan*

**FV-02**. **Development of dual-spring linear resonant actuator for improved haptic performance.** *K. Park*[1], Z. Jiang[1], Y. Oh[1], Y. Jung[1] and S. Hwang[1] *1. Mechanical Engineering, Pusan National University, Pusan, The Republic of Korea*

**FV-03**. **Loss estimation for toroidal cores composed by electrolytic iron powder based on machine learning.** *S. Muroga*[1], S. Ajia[1], Y. Kodama[1], S. Matsumoto[2] and Y. Endo[1,3] *1. Graduate School of Engineering, Tohoku University, Sendai, Japan; 2. School of Engineering, Tohoku University, Sendai, Japan; 3. Center for Science and Innovation in Spintronics, Tohoku University, Sendai, Japan*

**FV-06**. **Novel Zero-Sequence Current Excited Double-Sided Vernier Reluctance Linear Machine with High-Order - Harmonic Toroidal Winding.** Z. Li[1], *F. Ni*[1] and S. Niu[1] *1. Department of Electrical and Electronic Engineering, The Hong Kong Polytechnic University, Hong Kong, Hong Kong*

**FV-07**. **Novel Transverse-Flux Tubular Linear Reluctance Machine with Dynamic DC-Saturation-Relieving Function.** Z. Li[1], *F. Ni*[1] and S. Niu[1] *1. Department of Electrical and Electronic Engineering, The Hong Kong Polytechnic University, Hong Kong, Hong Kong*

**FV-08**. **Fundamental Study of Factors Leading to Performance Variations in Cancellation Coil Systems for Wireless Power Transfer.** *M. Yokosawa*[1], F. Sato[1], S. Miyahara[1], H. Matsuki[2], K. Inada[3], T. Abe[3] and S. Sasaki[4] *1. Tohoku Gakuin University, Sendai, Japan; 2. Tohoku University, Sendai, Japan; 3. NITTOKU, Saitama, Japan; 4. Hikaridenshi, Osaki, Japan*

THURSDAY AFTERNOON 1:30

CELESTIN D

## Session FA
# IMAGING NANOSCALE MAGNETIZATION DYNAMICS AND SPIN FLUCTUATIONS

Peter Fischer, Co-Chair
Lawrence Berkeley National Laboratory, Berkeley, CA, United States
Sujoy Roy, Co-Chair
Lawrence Berkeley National Laboratory, Berkeley, CA, United States

**1:30**

**FA-01**. **Time-Resolved Magnetic Imaging Using Electrons and Extreme-Ultraviolet Photons.** ***(Invited)*** *C. Ropers*[1,2] *1. Ultrafast Dynamics, MPI-NAT, Göttingen, Germany; 2. University of Göttingen, Göttingen, Germany*

**2:06**

**FA-02**. **Neutrons and Skyrmions: Unraveling the Spin-tastic Mysteries of Magnetic Materials.** ***(Invited)*** *L. DeBeer-Schmitt*[1] *1. Neutron Science Division, Oak Ridge National Laboratory, Oak Ridge, TN, United States*

**2:42**

**FA-03**. **Time resolved scanning Kerr microscopy: a flexible probe of magnetization dynamics for challenging sample environments.** ***(Invited)*** *R. Hicken*[1] *1. Physics and Astronomy, University of Exeter, Exeter, United Kingdom*

## Session FB
## 2025 IEEE CLEDO BRUNETTI AWARD SYMPOSIUM

Giovanni Finocchio, Chair
University of Messina, Messina, Italy

**1:30**

**FB-01**. **Development of Embedded Spin-Transfer-Torque MRAM.** ***(Invited)*** *D. Worledge*[1], G. Hu[1], S. Brown[1], C.P. D'Emic[1], M.G. Gottwald[1], P. Hashemi[1], J.Z. Sun[1] and P.L. Trouilloud[1] *1. IBM-Samsung MRAM Alliance, Yorktown Heights, NY, United States*

**2:06**

**FB-02**. **From Niche to Mainstream: MRAM Innovations and Application Expansion.** ***(Invited)*** *G. Koh*[1] *1. Sungkyunkwan Uiniversity, Suwon, The Republic of Korea*

**2:42**

**FB-03**. **Spin-Transfer-Torque MRAM for Last-Level Cache Applications.** ***(Invited)*** *G. Hu*[1], C. Safranski[1], M.G. Gottwald[1], P.L. Trouilloud[1], L. Rehm[1], G. Kim[1], S. Brown[1], J. Bruley[1], C.P. D'Emic[1], C. Lavoie[1], J. Liang[1], M. Robbins[1], J.Z. Sun[1], P. Hashemi[1] and D. Worledge[1] *1. IBM T J Watson Research Center, Yorktown Heights, NY, United States*



## Session FC
## UNCONVENTIONAL COMPUTING WITH MAGNETISM AND MAGNETIC MATERIALS

Miguel Romera, Chair
Universidad Complutense de Madrid, Madrid, Spain

**1:30**

**FC-01**. **Physics and engineering of stochastic magnetic tunnel junction for probabilistic computer.** ***(Invited)*** *S. Fukami*[1] *1. Tohoku University, Sendai, Japan*

**2:06**

**FC-02**. **Probability fluctuations in fast true random number generators based on perpendicular magnetic tunnel junctions.** *A. Sidi El Valli*[1], M. Tsao[1] and A.D. Kent[1] *1. New York University, New York, NY, United States*

**2:18**

**FC-03**. **Quantized Neural Networks using MRAM-based Stochastic Computing Units.** *S. Sabyasachi*[1], W. Al Misba[1], Y. Shao[2], P. Khalili[2] and J. Atulasimha[1] *1. Department of Mechanical & Nuclear Engineering, Virginia Commonwealth University, Richmond, VA, United States; 2. Department of Electrical and Computer Engineering, Northwestern University, Evanston, IL, United States*

**2:30**

**FC-04**. **Identifying Angular Dependent States in Superparamagnetic Artificial Spin Ice with Tunnel Magnetoresistance.** *C. Sullivan*[1], H. Chen[2], B. Fang[3], X. Zhang[3] and S. Majetich[2] *1. Materials Science and Engineering, Carnegie Mellon University, Pittsburgh, PA, United States; 2. Physics, Carnegie Mellon University, Pittsburgh, PA, United States; 3. Materials Science and Engineering, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia*

**2:42**

**FC-05**. **Deterministic and stochastic SOT-driven switching in Pt/Co bilayers by DMI modulation.** *R.I. Salinas*[1] and C. Lai[1] *1. Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan*

**2:54**

**FC-06**. **Experimental implementation of a programmable Ising Machine using vortex-based Spin-Torque Nano-Oscillators.** *A. Hakam*[1], L. Martins[1], L. Hutin[2], F. Badets[2], L. Benetti[3], A. Jenkins[3], R. Ferreira[3], P. Talatchian[1] and U. Ebels[1] *1. Univ. Grenoble Alpes, CEA, CNRS, Grenoble INP, SPINTEC, 38000, Grenoble, France; 2. Université Grenoble Alpes, CEA, LETI, 38000, Grenoble, France; 3. International Iberian Nanotechnology Laboratory (INL), 4715-31, Braga, Portugal*

**3:06**

**FC-07**. **Solving Combinatorial Optimization Problems through Stochastic Landau-Lifshitz-Gilbert Dynamical Systems.** *D. Chen*[1], A.D. Kent[1], D. Sels[1,2] and F. Morone[1] *1. Physics, New York University, New York, NY, United States; 2. Center for Computational Quantum Physics, Flatiron Institute, New York, NY, United States*

**3:18**

**FC-09**. **Optimization of a GPU-accelerated Ising Machine for the solution of very large problems based on the synchronization of oscillators.** L. Mazza[1], M. Carpentieri[1], G. Finocchio[2] and *V. Puliafito*[1] *1. Politecnico di Bari, Bari, Italy; 2. University of Messina, Messina, Italy*

**3:30**

**FC-10**. **Effect of device-to-device variation in spintronic probabilistic ising machines.** *E. Raimondo*[1,2], E. Garzòn[3], Y. Shao[4], A. Grimaldi[2], S. Chiappini[1], R. Tomasello[5], N. Davila[6], J. Katine[6], M. Carpentieri[5], M. Chiappini[1], M. Lanuzza[3], P. Khalili[4] and G. Finocchio[2] *1. Istituto Nazionale di Geofisica e Vulcanologia, Rome, Italy; 2. University of Messina, Messina, Italy; 3. University of Calabria, Rende, Italy; 4. Northwestern University, Evanston, IL, United States; 5. Politecnico di Bari, Bari, Italy; 6. Western Digital, San Jose, CA, United States*

**3:42**

**FC-11**. **A Time- and Energy-Efficient Ising Machine Based on Voltage-Controlled Magneto-Resistive Devices.** Z. Tong[1], Y. Hou[1], Y. Jiang[1], Z. Xiao[1], X. Wu[1], A. Lee[2], D. Wu[2] and *Q. Shao*[1,3] *1. Department of Electronic and Computer Engineering, The Hong Kong University of Science and Technology, Clear Water Bay, Hong Kong; 2. InstonTech, Suzhou, China; 3. Department of Physics, The Hong Kong University of Science and Technology, Clear Water Bay, Hong Kong*

THURSDAY AFTERNOON 1:30

CELESTIN B

## Session FD
## MAGNONICS IV: FUNDAMENTAL MAGNONIC PROPERTIES AND INTERACTIONS

Edoardo Albisetti, Co-Chair
Politecnico di Milano, Milano, Italy

Philipp Pirro, Co-Chair
RPTU Kaiserslautern-Landau, Kaiserslautern, Germany

**1:30**

**FD-01**. **Spin Nutation Driven Non-Resonantly in Ferromagnets.** *J. Schlegel*[1], A. De[2], A. Lentfert[2], L. Scheuer[2], B. Stadtmüller[2], P. Pirro[2], G. von Freymann[3], M. Aeschlimann[2] and U. Nowak[1] *1. Department of Physics, University of Konstanz, Konstanz, Germany; 2. OPTIMAS, RPTU Kaiserslautern-Landau, Kaiserslautern, Germany; 3. Fraunhofer ITWM, Kaiserslautern, Germany*

**1:42**

**FD-02**. **Non-bosonic damping of spin waves at elevated temperatures in van der Waals ferromagnetic films.** *M.G. Cottam*[1] and B. Hussain[2] *1. University of Western Ontario, London, ON, Canada; 2. University of Michigan, Dearborn, MI, United States*

**1:54**

**FD-03**. **Study of Spin-Wave Transport Properties in Thin Thulium Iron Garnet Films Grown on GGG and sGGG Substrates.** R. Timalsina[1], B. Giri[1], H. Wang[1], A. Erickson[1], S. Sarin[1], S. Lamichhane[1], S. Liou[1], J. Shield[1], X. Xu[1] and *A. Laraoui*[1] *1. University of Nebraska-Lincoln, Lincoln, NE, United States*

**FD-04**. **Unveiling the Origins of Strong Magnetostriction in Cobalt Ferrite Using Neutron Scattering.** *G. Kaur*[2], H. Lane[1], C. Stock[2] and P. Gehring[3] *1. Physics and Astronomy, St Andrews, Edinburgh, United Kingdom; 2. Physics and Astronomy, The University of Edinburgh, Edinburgh, United Kingdom; 3. National Institute of Standards and Technology, Gaithersburg, MD, United States*

Now VP12-10

**2:06**

**FD-05**. **Magnetoelastic Coupling between Surface Acoustic Waves and Backward Volume Spin Waves.** *N. Homrocky*[1], C. Trevillian[1], A.N. Slavin[1] and V. Tyberkevych[1] *1. Oakland University, Rochester, MI, United States*

**2:18**

**FD-06**. **Backward Volume Spin Waves in Graded Magnonic Media.** K. Fripp[1] and *V. Kruglyak*[1] *1. University of Exeter, Exeter, United Kingdom*

**2:30**

**FD-07**. **Spin wave band structure in ferromagnetic waveguides with a sinusoidal magnetization distribution.** P. Micaletti[1], A. Roxburgh[2], M. Marzolla[3], E. Iacocca[2] and *F. Montoncello*[1] *1. Department of Physics and Earth Sciences, University of Ferrara, Ferrara, Italy; 2. Department of Physics, University of Colorado at Colorado Springs, Colorado Springs, CO, United States; 3. Department of Information Science and Engineering, University of Bologna, Bologna, Italy*

**2:42**

**FD-08**. **Mode Crossing in Interface-coupled TmIG/CoFeB Bilayers with Perpendicular Magnetization.** W. Al Misba[1], J.E. Shoup[2], M.J. Gross[3], K. Hayashi[4], C.A. Ross[4], J. Atulasimha[1] and *D.B. Gopman*[2] *1. Department of Mechanical and Nuclear Engineering, Virginia Commonwealth University, Richmond, VA, United States; 2. Materials Science and Engineering Division, National Institute of Standards and Technology, Gaithersburg, MD, United States; 3. Department of Electrical Engineering and Computer Science, Massachusetts Institute of Technology, Cambridge, MA, United States; 4. Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA, United States*

**2:54**

**FD-09**. **Creation of Bose-Einstein condensate of magnons in antiferromagnet using rapid cooling.** P. Artemchuk[1], V. Tyberkevych[1] and *A.N. Slavin*[1] *1. Department of Physics, Oakland University, Rochester, MI, United States*

**3:06**

**FD-10**. **Exotic antiferromagnetic magnons on a Möbius strip: Topology-induced symmetry breaking.** *K. Deng*[1] and R. Cheng[1,2,3] *1. Electrical and Computer Engineering, University of California Riverside, Riverside, CA, United States; 2. Physics and Astronomy, University of California Riverside, Riverside, CA, United States; 3. Materials Science and Engineering, University of California Riverside, Riverside, CA, United States*

**3:18**

**FD-13**. **Thickness crossover from two- to three-dimensional magnon transport properties.** *C.M. Webb*[1] and S. Zhang[1] *1. Physics, University of Arizona, Tucson, AZ, United States*

THURSDAY AFTERNOON 1:30

CELESTIN C

## Session FE
# BIOMEDICAL THERAPIES, DIAGNOSIS AND NANOMEDICINE

Kai Wu, Chair
Texas Tech University, Lubbock, TX, United States

**1:30**

**FE-01**. **Magnetoplasmonic Nanocapsules as Wirelessly Controlled Nanotherapies.** ***(Invited)*** *J. Nogués*[1,2], A. Lafuente[1], A. Flucksman[3], A. Gómez Roca[1], J. Sort[4,2], C. Nogues[4], O. Benny[3] and B. Sepulveda[5] *1. Catalan Institute of Nanoscience and Nanotechnology (ICN2), Bellaterra, Spain; 2. ICREA, Barcelona, Spain; 3. Institute for Drug Research, The Hebrew University of Jerusalem, Jerusalem, Israel; 4. Universitat Autonoma de Barcelona, Bellaterra, Spain; 5. Instituto de Microelectronica de Barcelona (IMB-CNM, CSIC), Bellaterra, Spain*

**2:06**

**FE-02**. **Analyzing the magnetic properties of iron oxide nanorods for biomedical applications.** *S.S. Laha*[1], E. Odion[1] and O.T. Mefford[1] *1. Materials Science and Engineering, Clemson University, Clemson, SC, United States*

**2:18**

**FE-03**. **Highly Uniform Star-shaped Multifunctional Magnetic-plasmonic Au-$Fe_3O_4$ Nano-heterostructures.** B. Muzzi[1], M. Albino[1,2], E. Balica[2], A. Omelyanchik[3], A. Gabbani[4,1], A. Laurenzana[5], F. Pineider[4] and *C. Sangregorio*[1,2] *1. ICCOM-CNR, Sesto Fiorentino (FI), Italy; 2. Dept. of Chemistry U.Schiff, Univ. of Florence, Sesto Fiorentino (FI), Italy; 3. Dept. of Chemistry and Industrial Chemistry, Univ. of Genova, Genova, Italy; 4. Dept. of Chemistry and Industrial Chemistry, Univ. of Pisa, Pisa, Italy; 5. Dept. of Experimental and Clinical Biomedical Sciences, Univ. of Florence, Florence, Italy*

**FE-04**. **Withdrawn**

**2:30**

**FE-05**. **Enhanced Imaging Capabilities of a Single-Sided Magnetic Particle Imaging Scanner for Large Phantoms.** *C. McDonough*[1], M. Jurj[1] and A. Tonyushkin[1] *1. Physics, Oakland University, Rochester, MI, United States*

**2:42**

**FE-06**. **Magnetic position determination with giant-magnetoresistance and moving field-free point in catheter.** *L. Paquet*[1,2,3], A. Solignac[4], K. Tse Ve Koon[1], M. Ohta[3,5], N. Tsuruoka[6], Y. Haga[5,6], C. Fermon[4], M. Pannetier-Lecoeur[4] and B. Ducharne[2,7] *1. CREATIS, Université Lyon 1, CNRS UMR5220, INSERM U1206, INSA-Lyon, Lyon, France; 2. ELyTMaX, IRL3757, Univ Lyon, INSA-Lyon, CEntrale Lyon, Université Claude Bernard Lyon 1, Tohoku University, Sendai, Japan; 3. Institute of Fluid Science, Tohoku University, Sendai, Japan; 4. SPEC, CEA, CNRS, Université Paris-Saclay, CEA-Saclay, Gif-Sur-Yvette, France; 5. Graduate School of Biomedical Engineering, Tohoku University, Sendai, Japan; 6. Graduate School of Engineering, Tohoku University, Sendai, Japan; 7. Université de Lyon, INSA-Lyon, LGEF EA682, Lyon, France*

**2:54**

**FE-07**. **Novel Smart Implants for Brain Aneurysms.** *P. Velvaluri*[1], B. Luo[1], E. Spetzler[2], E. Mackensen[2], J. McCord[2], E. Quandt[2], D. Meyners[2] and N.X. Sun[1] *1. Northeastern University, Boston, MA, United States; 2. Kiel University, Kiel, Germany*

**3:06**

**FE-08**. **Advanced Magnetoelectric Neuromodulation: Remote control over multiple channels.** *E. Zhang*[1], V. Pustovalov[1], H. Ye[1], S. Sevim[1], B. Nelson[1] and S. Pané[1] *1. MAVT, ETH Zurich, Zurich, Switzerland*

**3:18**

**FE-09**. **Development of a Portable Cell-on-Chip Platform Using Advanced Magnetophoresis Technology.** *B. Lim*[1], Y. Kang[2] and C. Kim[2] *1. Department of Smartsensor Engineering, Andong National University, Andong, The Republic of Korea; 2. Department of Physics and Chemistry, DGIST, Deagu, The Republic of Korea*

**3:30**

**FE-10**. **Designing Magnetic Pathways for Precise Microrobot Navigation and Bio-applications.** *Y. Kang*[1], A. Ali[1], H. Kim[2], B. Lim[3] and C. Kim[1] *1. DGIST, Daegu, The Republic of Korea; 2. National Nanofab Center, Daejon, The Republic of Korea; 3. Andong University, Andong, The Republic of Korea*

**3:42**

**FE-11**. **Prediction of resting motor threshold using machine learning on multimodal data in transcranial magnetic stimulation.** *M. Garcia*[1,2], M. Tashli[3], C.M. Harris[3,4], J. Coleman[1], A. Jamil[1,2], L. Manning-Franke[4], B. Wade[1,2] and R.L. Hadimani[3,5] *1. Psychiatry, Massachusetts General Hospital, Boston, MA, United States; 2. Harvard Medical School, Boston, MA, United States; 3. Mechanical and Nuclear Engineering, Virginia Commonwealth University, Richmond, VA, United States; 4. Physical Medicine and Rehabilitation, Virginia Commonwealth University, Richmond, VA, United States; 5. Electrical and Computer Engineering, Iowa State University, Ames, IA, United States*

THURSDAY AFTERNOON 1:30

IMPERIAL 5AB

## Session FF
# SOFT MAGNETIC MATERIALS III

Arkady Zhukov, Chair
Basque Foundation for Science, San Sebastian, Spain

**1:30**

**FF-01**. **High-Frequency Core Loss Reduction in Fe-Based Soft Magnetic Ribbons: A Microstructural Approach.** ***(Invited)*** *R. Gautam*[1], S. Hiramoto[2], H. Mamiya[1], T. Ogasawara[3], S. Okamoto[2], T. Ohkubo[1] and H. Sepehri-Amin[1] *1. National Institute for Materials Science, Tsukuba, Japan; 2. Tohoku University, Sendai, Japan; 3. National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan*

**FF-02**. Now VP19-10 **Soft magnetic composites casted from ferrites and construction binders with lowest core loss for high-efficient wireless charging.** *M. Esguerra*[1], I.R. Ellithy[1] and R. Radhakrishnan[1] *1. Magment GmbH, Munich, Germany*

**FF-03**. **Withdrawn**

**2:06**

**FF-04**. **Superior Stability and Enhanced Heating Performance in Mn- and Zn-Substituted Ferrite-Based Fluids for Magnetic Hyperthermia with Improved Biocompatibility.** *P. Kumar*[1,2,3], A. Singh[2,4], S. Pathak[4] and R. Pant[5] *1. Department of Physics, RMIT University, Melbourne, VIC, Australia; 2. Indian Reference Materials Divisions, CSIR NPL, New Dehli, Delhi, India; 3. Indian Reference Materials Divisions, ACSIR, Delhi, India; 4. Department of Physics, IIT JAMMU, JAMMU, India; 5. Department of Material Sciences and Engineering, Seoul National University, Seoul, The Democratic People's Republic of Korea*

**2:18**

**FF-05**. **Minnealloy: An Ultra-High Saturation Magnetization Soft Ferromagnet.** *A.S. Padgett*[1], J. Wang[2], S.R. Bishop[1], W. Echtenkamp[2], P.F. Weck[1], L.J. Treadwell[1], J.D. Boissiere[1], C.R. Riley[1] and D.R. Lowry[1] *1. Sandia National Laboratories, Albuquerque, NM, United States; 2. Department of Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN, United States*

**2:30**

**FF-06**. **Stability and Evolution of Induced Anisotropies in Nanocrystalline Soft Magnetic Alloys for Extreme Temperature Application.** *T. Paplham*[1], A. Leary[2] and P. Ohodnicki[1,3,4] *1. Mechanical Engineering and Materials Science, University of Pittsburgh, Pittsburgh, PA, United States; 2. NASA Glenn Research Center, Cleveland, OH, United States; 3. Electrical and Computer Engineering, University of Pittsburgh, Pittsburgh, PA, United States; 4. Physics and Astronomy, University of Pittsburgh, Pittsburgh, PA, United States*

**2:42**

**FF-07**. **$Fe_3CoC$ nanocrystals with high magnetization.** *H. Abbas*[1], P. Joshi[1], T. Karki[1], J. Mohapatra[1] and P. Liu[1] *1. Physics, University of Texas at Arlington, Arlington, TX, United States*

**2:54**

**FF-08**. **Advanced Magnetic Anisotropy Engineering in Soft Magnetic Co-Based Amorphous Wires for Enhanced Performance.** H. Chiriac[1], M. Lostun[1], S. Corodeanu[1], T.A. Ovari[1] and *N. Lupu*[1] *1. National Institute of Research and Development for Technical Physics, Iasi, Romania*

**3:06**

**FF-09**. **Fabricating and characterizing soft ferromagnetic Fe-CN (Minnealloy) ribbons for use in efficient high frequency transformer cores.** *W. Echtenkamp*[1], A.S. Padgett[2], S. House[2], S.R. Bishop[2], D.R. Lowry[2] and J. Wang[1] *1. Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN, United States; 2. Sandia National Laboratories, Albuquerque, NM, United States*

**3:18**

**FF-10**. **Analysis of iron loss and complex permeability using Cole-Cole diagram for Fe-based nanocrystalline core.** *Y. Tomita*[1], T. Iriyama[1] and H. Takabayashi[1] *1. Corporate Research & Development center, Daido Steel. co., ltd., Nagoya, Japan*

## Session FG
# VAN DER WAALS MATERIALS

Ethan Ahn, Chair
George Mason University, Fairfax, VA, United States

**1:30**

**FG-01**. **Gate tunable spin transport in a two-dimensional semiconductor.** ***(Invited)*** *A. Avsar[1,2,3] 1. Materials Science and Engineering, National University of Singapore, Singapore, Singapore; 2. Department of Physics, National University of Singapore, Singapore, Singapore; 3. Center for Advanced 2D Materials, National University of Singapore, Singapore, Singapore*

**2:06**

**FG-02**. **Anomalous Hall Effect in $Cr_2Te_3$/Pt Heterostructures.** *C. Huai*[1], M. Bian[1], K. He[2], A. Mucchietto[3], E. Kirstein[3], R. Sabirianov[4], S. Crooker[3], J. Bird[2] and H. Zeng[1] *1. Physics, University at Buffalo, Buffalo, NY, United States; 2. Electrical Engineering, University at Buffalo, Buffalo, NY, United States; 3. National High Magnetic Field Laboratory, Los Alamos National Lab, Los Alamos, NM, United States; 4. Department of Physics, University of Nebraska-Omaha, Omaha, NE, United States*

**2:18**

**FG-04**. **Spin- and orbital-charge conversion at the surface states of $Bi_{1-x}Sb_x$ topological insulator.** *A. Pezo*[1], J. George[1] and H. Jaffrès[1] *1. Laboratoire Albert Fert, Essone, France*

**2:30**

**FG-05**. **Twist-angle tunable spin texture in $WSe_2$/graphene van der Waals heterostructures.** ***(Invited)*** *F. Casanova[1,2] 1. CIC nanoGUNE, San Sebastian, Spain; 2. IKERBASQUE, Bilbao, Spain*

**3:06**

**FG-06**. **Quantized transport in one-dimensional nanowire-graphene spin injectors.** D. Burrow[1], J. Toscano-Figueroa[1], V. Guarochico Moreira[1], K. Omari[1], I. Grigorieva[1], T. Thomson[1] and *I. Vera Marun*[1] *1. The University of Manchester, Manchester, United Kingdom*

**3:18**

**FG-07**. **Unidirectional Magnetoresistance in Heterostructures of Weyl Semimetal and Ferromagnetic Insulator.** *R. Bandapelli*[1], I. Kao[1], J. Tang[2], S. Xu[3], Q. Ma[2], J. Katoch[1] and S. Singh[1] *1. Physics, Carnegie Mellon University, Pittsburgh, PA, United States; 2. Physics, Bostan College, Chestnut Hill, MA, United States; 3. Department of Chemistry and Chemical Biology, Harvard University, CAMBRIDGE, MA, United States*

**3:30**

**FG-08**. **Unidirectional magnetoresistance in van der Waals antiferromagnet.** *L. Jia*[1], Z. Zheng[1] and J. Chen[1] *1. National University of Singapore, Singapore, Singapore*

**3:42**

**FG-09**. **Magnonic Otto thermal machine.** *N. Vidal-Silva*[1], F. Peña[2], R. Troncoso[3] and P. Vargas[2] *1. Universidad de La Frontera, Temuco, Chile; 2. Universidad Técnica Federico Santa María, Valparaiso, Chile; 3. Universidad Adolfo Ibañez, Santiago, Chile*

THURSDAY AFTERNOON 4:30 — CELESTIN D&E

## IEEE AWARDS CEREMONY

Adekunle Adeyeye, Co-Chair
Durham University, Durham, United Kingdom
Ron Goldfarb, Co-Chair
National Institute of Standards & Technology, Boulder, CO, United States

THURSDAY EVENING 5:30 — CELESTIN D&E

## PLENARY SESSION

Mark Stiles, Chair
NIST, Gaithersburg, MD, United States

**Innovation of Magnetics in Data Storage and Magnetoresistance: Past, Present, and Future.**
*Yoichiro Tanaka*[1] *1. Tohoku University*

FRIDAY MORNING 8:30 — CELESTIN D

### Session GA

## ADVANCED MATERIALS AND DEVICES FOR ENERGY HARVESTING AND CONVERSION

Mario Carpentieri, Chair
Politecnico di Bari, Bari, Italy

**GA-01**. **Nonlinear Spintronics: Unveiling Quantum Rectenna for Sensing and Energy Applications.** ***(Invited)*** *D. Kumar*[1,2], R. Sharma[3,2] and H. Yang[2] *1. Physics, Netaji Subhas University of Technology, New Delhi, India; 2. Electrical and Computer Engineering, National University of Singapore, Singapore, Singapore; 3. Electrical Engineering, Indian Institute of Technology Ropar, Rupnagar, India*

Now VP13-09

**8:30**

**GA-02**. **High-Performance Thermomagnetic Generator Controlled by a Magnetocaloric Switch.** ***(Invited)*** *H. Zhang*[1], X. Liu[1], H. Chen[1], K. Qiao[1], Z. Yu[1], L. Xie[1], R. Ramanujan[2], F. Hu[3], K. Chu[4] and Y. Long[1] *1. School of Materials Science and Engineering, University of Science and Technology Beijing, Beijing, China; 2. School of Materials Science and Engineering, Nanyang Technological University, Singapore, Singapore; 3. Institute of Physics, Chinese Academy of Sciences, Beijing, China; 4. School of Materials Science and Engineering, Lanzhou Jiaotong University, Lanzhou, China*

**9:06**

**GA-03**. **Design and Optimization of Small Electromagnetic Harvesters for Vibrational Energy Scavenging.** ***(Invited)*** *C. Gomez-Polo*[1,2], I. Royo-Silvestre[1,2], D. Gandia[1,2], E. Garaio[1,2] and J. Beato-Lopez[1,2] *1. Departamento de Ciencias, Universidad Pública de Navarra, Pamplona, Spain; 2. Institute for Advanced Materials and Mathematics (INAMAT2), Universidad Pública de Navarra, Pamplona, Spain*

**9:46**

**GA-04**. **Recent Advances in Enabling Soft Magnetics Technology for WBG and UWBG Power Electronics Applications.** ***(Invited)*** *P. Ohodnicki*[1], T. Paplham[1], S. Mullurkara[1], L. Wewer[1], Y. Wang[1], B. Bhandari[1], C. Zheng[1], B. Grainger[1] and M. Ghosh[1] *1. University of Pittsburgh, Pittsburgh, PA, United States*

**10:18**

**Break**

**10:45**

**GA-05**. **Novel functional magnetic materials from high-throughput studies.** ***(Invited)*** *H.C. Herper*[1], A. Vishina[1], M. Marathe[2] and O. Eriksson[1] *1. Physics and Astronomy, Uppsala University, Uppsala, Sweden; 2. KTH, Stockholm, Sweden*

**11:21**

**Panel Discussion**

FRIDAY MORNING 8:30

CELESTIN E

## Session GB
# NEW CHALLENGES IN NANOMAGNETISM FROM TOPOLOGY TO THE THIRD DIMENSION

Riccardo Tomasello, Chair
Politecnico di Bari, Bari, Italy

**8:30**

**GB-01**. **Scientific and technological challenge and opportunities with 3-dim nanomagnetism.** ***(Invited)*** *P. Fischer*[1,2] *1. LBNL, Berkeley, CA, United States; 2. UC Santa Cruz, Santa Cruz, CA, United States*

**9:06**

**GB-02**. **Tailoring the energy landscape of a Bloch point singularity in a 3D nanostructure.** ***(Invited)*** *S. Ruiz Gómez*[1,2], C. Abert[3], P. Morales Fernandey[2], C. Fernandez Gonzalez[1,2], S. Koraltan[3], L. Danesi[3], D. Suess[3], M. Foerster[1], M. Angel[1], A. Mandziak[4], D. Wilgocka-Slezak[4,5], P. Nita[4,5], M. Koenig[2], A. Hierro-Rodriguez[6], A. Fernandez-Pacheco[7] and C. Donnelly[2] *1. ALBA Synchrotron, Madrid, Spain; 2. Max Planck Institute for Chemical Physics of Solids, Dresden, Germany; 3. Faculty of Physics, University of Vienna, Vienna, Austria; 4. SOLARIS Synchrotron light Sources, Krakow, Poland; 5. Jerzy Haber Institute of Catalysis and Surface Chemistry, Krakow, Poland; 6. Universidad de Oviedo, Oviedo, Spain; 7. Institute of Applied Physics, Vienna, Austria*

**9:42**

**GB-03**. **All-Electrical Control of Magnetic Skyrmions via Interlayer Exchange Coupling.** ***(Invited)*** *A. Soumyanarayanan*[1,2] *1. Physics, National University of Singapore, Singapore, Singapore; 2. Institute of Materials Research and Engineeering, Agency for Science, Technology and Research, Singapore, Singapore*

**10:18**

**Break**

**10:45**

**GB-04**. **Skyrmions in synthetic antiferromagnets and their fast current induced dynamics.** ***(Invited)*** *O. Boulle*[1] *1. Spintec, Grenoble, France*

**11:21**

**GB-05**. **Hopfions in Magnetic Crystals.** ***(Invited)*** N. Kiselev[1] and *F. Rybakov*[2] *1. Peter Grüngerg Institute, Forschungszentrum Jülich, Jülich, Germany; 2. Uppsala University, Uppsala, Sweden*

FRIDAY MORNING 8:30

CELESTIN A

## Session GC
# NEUROMORPHIC AND RESERVOIR COMPUTING

Martina Kiechle, Chair
National Institute of Standards and Technology, Boulder, CO, United States

**8:30**

**GC-01**. **Reliable Edge Neuromorphic Systems Based on Multi-Level SOT Spintronic Devices.** ***(Invited)*** *L. Anghel*[1] *1. SPINTEC, Grenoble, France*

**9:06**

**GC-02**. **Analog Magnetic Tunnel Junctions with Antiferromagnet/ Ferromagnet Stack Controlled by Spin-Orbit Torque for Neuromorphic Computing.** *A. Lagarrigue*[1], K. Vihanga De Zoysa[1], S. Varaganti[1], S. Kanai[1], S. Moriya[1], S. Sato[1], Y. Horio[1], H. Ohno[1] and S. Fukami[1] *1. Tohoku University, Sendai, Japan*

**9:18**

**GC-04**. **Demonstration of Leaky-Integrate-Fire Behavior in Domain Wall Magnetic Tunnel Junction Neuromorphic Devices.** *N. Zogbi*[1], T. Leonard[1], S. Liu[1], V.C. Rogers[1], C.H. Bennett[2] and J.C. Incorvia[1] *1. Electrical and Computer Engineering, The University of Texas at Austin, Austin, TX, United States; 2. Sandia National Laboratories, Albuquerque, NM, United States*

**9:30**

**GC-05**. **Fast Excitation Dynamics in Artificial Spin Ice Made from Magnetic Tunnel Junctions.** ***(Invited)*** *S. Majetich*[1] *1. Physics, Carnegie Mellon University, Pittsburgh, PA, United States*

**10:06**

**GC-07**. **Magnonic Resonators as Building Blocks of Scalable Magnonic Logic Circuits and Reservoir Computers.** *A. Shytov*[1], O. Kyriienko[1], K. Fripp[1] and V. Kruglyak[1] *1. University fo Exeter, Exeter, United Kingdom*

**10:18**

**Break**

**10:45**

**GC-06**. **Nonlinear Magnonic Hardware for Pattern Recognition.** ***(Invited)*** C. Heins[1,2], L. Körber[1,2,3], J. Kim[4], T. Devolder[4], S. Thlang[4], J. Mentink[3], A. Kákay[1], J. Fassbender[1,2], H. Schultheiss[1] and *K. Schultheiss*[1] *1. Institut für Ionenstrahlphysik und Materialforschung, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 2. Fakultät Physik, Technische Universität Dresden, Dresden, Germany; 3. Institute of Molecules and Materials, Radboud University, Nijmegen, Netherlands; 4. Centre de Nanosciences et de Nanotechnologies, CNRS, Université Paris-Saclay, Palaiseau, France*

**11:21**

**GC-09**. **Brownian reservoir computing approach for Gesture recognition by using geometrically confined skyrmion dynamics.** G. Beneke[1], T. Winkler[1], K. Raab[1], M.A. Brems[1], F. Kammerbauer[1], P. Gerhards[2], K. Knobloch[2], S. Krishnia[1], J. Mentink[3] and *M. Kläui*[1,4] *1. Institut für Physik, Johannes Gutenberg-Universität Mainz, Mainz, Germany; 2. Infineon Technologies Dresden, Dresden, Germany; 3. Institute for Molecules and Materials, Radboud University, Nijmegen, Netherlands; 4. Center for Quantum Spintronics, Norwegian University of Science and Technology, Trondheim, Norway*

## Session GD
# MICROSCOPY, IMAGING, AND MAGNETIC CHARACTERIZATION II

Shawn Pollard, Chair
The University of Memphis, Memphis, TN, United States

**8:30**

**GD-01**. **Unraveling stochasticity and fluctuations in magnetic thin films using coherent X-ray scattering.** ***(Invited)*** *S. Roy*[1], A. Singh[2], E. Hollingworth[3], S.A. Morley[1], A. Us-Saleheen[1], Z. Tumbleson[2], M. McCarter[1], S. Kevan[1], P. Fischer[2] and F. Hellman[3] *1. Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, CA, United States; 2. Materials Sciences Division, Lawrence Berkeley National Laboratory, Berkeley, CA, United States; 3. Dept. of Physics, University of California Berkeley, Berkeley, CA, United States*

**9:06**

**GD-02**. **Direct Imaging of Room Temperature Magnetic Skyrmions in Gradient-DMI Engineered CoPt Single Layers.** A. Erickson[1], Q. Zhang[2], H. Vakili[1], S. Lamichhane[1], L. Jia[2], I. Fescenko[3], E. Schwartz[1], S. Liou[1], A. Kovalev[1], J. Chen[2,4] and *A. Laraoui*[1] *1. University of Nebraska-Lincoln, Lincoln, NE, United States; 2. National University of Singapore, Singapore, Singapore; 3. University of Latvia, Riga, Latvia; 4. National University of Singapore (Suzhou) Research Institute, Suzhou, China*

**9:18**

**GD-03**. **Magnetic domain structures of rare-earth metal surfaces.** *P. Härtl*[1], M. Leisegang[1] and M. Bode[1] *1. Experimental Physics 2, University of Würzburg, Würzburg, Germany*

**9:30**

**GD-04**. **Scanning SQUID Characterization of Strained Multiferroic Iron Substituted Gadolinium Orthochromite Thin Film.** *J. Bedard*[1], J. Pfund[1], M. Jain[1,2,3] and I. Sochnikov[1,2,3] *1. Department of Physics, University of Connecticut, Storrs, CT, United States; 2. Department of Material Science & Engineering, University of Connecticut, Storrs, CT, United States; 3. Institute of Material Science, University of Connecticut, Storrs, CT, United States*

**9:42**

**GD-05**. **Visualization of Anomalous Nernst Effect Using Probe-Induced Local Temperature Gradients.** *H. Isshiki*[1], N.D. Budai[1], M.R. Ullerithodi[1], A. Kobayashi[1], Z. Zhu[1], R. Uesugi[1,3], T. Higo[1,3], S. Nakatsuji[1,3] and Y. Otani[1,2] *1. Institute for Solid State Physics, Univ. of Tokyo, Kashiwa, Japan; 2. CEMS, RIKEN, Wako, Japan; 3. Department of Physics, Univ. of Tokyo, Tokyo, Japan*

**9:54**

**GD-06**. **Synthesis of Magnetic Nanostructures in Porphyrin and Phthalocyanine Matrices.** V. Pena Perez[1], C. Reynaga Gonzales[1], E. Villegas[1], J. Baughman[1], T. Chung[1], F. Iglesias[1], A. Khodagulyan[1], O. Bernal[1] and *A.N. Kocharian*[1] *1. Department of Physics and Astronomy, California State University Los Angeles, Los Angeles, CA, United States*

**10:06**

**GD-07**. **A quantum sensing metrology for magnetic memories.** P. Rickhaus[1], V.J. Borras[1], R. Carpenter[2], S. Couet[2], U. Celano[3], O. Pylypovskyi[4], L. Zaper[1], A. Stark[1], *M. Munsch*[1], M. Nordmann[1], C. Adelmann[2], P. van der Heide[2], P. Maletinsky[5] and D. Makarov[4] *1. Qnami AG, Muttenz, Switzerland; 2. IMEC, Leuven, Belgium; 3. ASU, Tempe, AZ, United States; 4. Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 5. University of Basel, Basel, Switzerland*

**10:18**

**Break**

**10:45**

**GD-08**. **Control of the Antiferromagnetic Configuration in $La_{0.55}Sr_{0.45}MnO_3$ Ultrathin Films.** *C.A. Vaz*[1] and G. Panchal[1] *1. Swiss Light Source, Paul Scherrer Institut, Villigen PSI, Switzerland*

**10:57**

**GD-09**. **Wide-field MOKE microscopy and magnetometry on $Cr_2Ge_2Te_6$ exfoliated van-der-Waals flakes.** I. Soldatov[1], B. Özer[1], L. Veyrat[2], B. Buchner[1] and *R. Schaefer*[1] *1. Leibniz Institute for Solid State and Materials Research Dresden, Dresden, Germany; 2. Nano & semiconductor group, LNCMI-Toulouse, Toulouse, France*

**11:09**

**GD-10**. **Magneto-Optical Kerr Effect Characterisation of Static and Dynamic Processes in a Thulium Iron Garnet Film.** *P.S. Keatley*[1], M.J. Gross[2], J.J. Bauer[3], M.F. Chowdhury[4], J. Atulasimha[4], C.A. Ross[3] and R. Hicken[1] *1. Department of Physics and Astronomy, University of Exeter, Exeter, United Kingdom; 2. Electrical Engineering and Computer Science Department, Massachusetts Institute of Technology, Cambridge, MA, United States; 3. Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA, United States; 4. Department of Mechanical and Nuclear Engineering, Virginia Commonwealth University, Richmond, VA, United States*

**11:21**

**GD-11**. **Strain induced magnetic effects in thin films studied by transmission electron microscopy.** *A. Kovács*[1], M. Charilaou[2], D. Kong[1], I. Kézsmárki[3], X. Han[4] and R.E. Dunin-Borkowski[1] *1. Ernst Ruska-Centre, Forschungszentrum Juelich, Juelich, Germany; 2. University of Louisiana at Lafayette, Lafayette, LA, United States; 3. University of Augsburg, Augsburg, Germany; 4. Southern University of Science and Technology, China, China*

**11:33**

**GD-12**. **Probing Complex Spin Fluctuations by Megahertz X-ray Photon Correlation Spectroscopy.** *L. Shen*[1,2], Z. Tumbleson[3,4], R. Plumley[1], C. Peng[1], S.A. Morley[3], G. Mercurio[5], A. Scherz[5], S. Roy[3], E. Blackburn[2] and J.J. Turner[1] *1. SLAC National Accelerator Laboratory, Menlo Park, CA, United States; 2. Lund University, Lund, Sweden; 3. Lawrence Berkeley National Laboratory, Berkeley, CA, United States; 4. UC Santa Cruz, Santa Cruz, CA, United States; 5. European XFEL GmbH, Hamburg, Germany*

**11:45**

**GD-13**. **Domain wall curvature effects on the measurement of the Dzyaloshinskii Moriya interaction strength in the creep regime.** *A. Magni*[1], A. Di Pietro[1], G. Carlotti[2], G. Durin[1], M. Madami[2], C. Marrows[3], S. Pizzini[4], L. Ranno[4], S. Tacchi[5], E. Darwin[6], A. Huxtable[3], B.J. Hickey[3] and M. Kuepferling[1] *1. INRIM, Torino, Italy; 2. Physics and Geology, Università di Perugia, Perugia, Italy; 3. University of Leeds, Leeds, United Kingdom; 4. Insitut Néel, Grenoble, France; 5. Consiglio Nazionale delle Ricerche, Perugia, Italy; 6. EMPA, Duebendorf, Switzerland*

FRIDAY MORNING 8:30

CELESTIN C

## Session GE
# ANALYSIS AND DESIGN FOR HIGH-PERFORMANCE MAGNETIC SYSTEMS

David Lowther, Chair
McGill University, Montreal, QC, Canada

**8:30**

**GE-01**. **Overview of Permanent Magnet Wind Power Generators.** ***(Invited)*** *M. Jiang*[1], S. Niu[1] and K. Chau[1] *1. Department of Electrical and Electronic Engineering, The Hong Kong Polytechnic University, Kowloon, Hong Kong*

**9:06**

**GE-02**. **Advanced Electric Machines and Drives for Wind Power Generation.** ***(Invited)*** Z. Dong[1,2], R. Huang[1,2], Y. Liu[1,2] and *C. Liu*[1,2] *1. School of Energy and Environment, City University of Hong Kong, Hong Kong, China; 2. Shenzhen Research Institute, City University of Hong Kong, Shenzhen, China*

**9:42**

**GE-03**. **Magnetic materials as key drivers for a sustainable electrification.** ***(Invited)*** *A. Bollero*[1], L. Powalla[1], M. Köhne[1] and W. Rammaier[1] *1. Advanced Technologies and Microsystems, Robert Bosch GmbH, Sector Research and Advance Engineering, 71272 Renningen, Stuttgart, Germany*

**10:18**

**Break**

**GE-04**. **High Power Density PM Motor for Electric Aircraft Propulsion Utilizing Litz Wire and Hairpin Winding Technologies.** *A.T. Huynh*[1], H. Huang[1], J. Jiang[1], T. Zou[1], D. Gerada[1], T. Yang[1] and C. Gerada[1] *1. Power Electronics and Machines Centre, Faculty of Engineering, University of Nottingham, Nottingham, United Kingdom*

Now VP4-10

**10:45**

**GE-05**. **Investigation of High Pass-Through-Flux and Sputtering Performance of Ferromagnetic Sputtering Targets.** *Q. Zeng*[1], D. VanHeerden[1], J. Wagner[1], G. Wiehl[1] and S. Kennedy[1] *1. Materion Corp., Brewster, NY, United States*

**10:57**

**GE-06**. **Fractional operators for the analytical expressions of the dynamic magnetic power loss.** *B. Ducharne*[1,2] and G. Sebald[2] *1. INSA Lyon, Villeurbanne, France; 2. Tohoku University, Sendai, Japan*

**GE-07**. **Withdrawn**

**11:09**

**GE-08**. **Coil Design for a Moving-Magnet Planar Motor Using the Stream-Function Method.** *B. Kuijpers*[1], J. Jansen[1] and E. Lomonova[1] *1. Eindhoven University of Technology, Eindhoven, Netherlands*

**11:21**

**GE-09**. **Design of an Electromagnetic Reaction Wheel with Halbach Array.** K. Liu[1], S. Lin[1], K. Peng[1] and *J. Chang*[1,2] *1. Department of Power Mechanical Engineering, National Tsing Hua University, Hsinchu, Taiwan; 2. Department of Mechanical and Computer-Aided Engineering, National Formosa University, Yunlin, Taiwan*

FRIDAY MORNING 8:30

IMPERIAL 5AB

## Session GF
# ULTRAFAST MAGNETISATION DYNAMICS AND SWITCHING

Andrei Kirilyuk, Chair
Radboud University, Nijmegen, Netherlands

**8:30**

**GF-01**. **Ultra-Fast All Optical Switching in Spintronic Devices.** ***(Invited)*** J. Gorchon[1], T. Hauet[1], M. Hehn[1,2], J. Hohlfeld[1], G. Malinowski[1] and *S. Mangin*[1,2] *1. Institut Jean Lamour, Université de Lorraine, Nancy, France; 2. CSIS, Tohoku University, Sendai, Japan*

**9:06**

**GF-02**. **Measuring the Intrinsic Timescales of Ultrafast Spin Reorientation with Extreme Ultraviolet Light.** *A. Grafov*[1], S.A. Ryan[1], N. Li[1], H.T. Nembach[2], J.M. Shaw[2], H. Bhandari[3], T. Kafle[1], R. Sapkota[1], H.C. Kapteyn[1,4], N.J. Ghimire[3] and M.M. Murnane[1] *1. JILA, University of Colorado Boulder, Boulder, CO, United States; 2. NIST, Boulder, CO, United States; 3. University of Notre Dame, Notre Dame, IN, United States; 4. KMLabs Inc., Boulder, CO, United States*

**9:18**

**GF-03**. **Ultrafast Spin Dynamics across Metal/Semiconductor Interfaces: All-Optical Injection of Spin Currents in Silicon.** *S. Laterza*[1], A. Caretta[1] and M. Malvestuto[1,2] *1. Elettra Sincrotrone Trieste S.C.p.A., Trieste, Italy; 2. Istituto Officina Dei Materiali-CNR, Trieste, Italy*

**GF-04**. **Withdrawn**

**9:30**

**GF-05**. **Ultrafast Spin Dynamics in Fe-Gd Ferrimagnetic Alloys Investigated with Near-Fermi Level Probes.** S. Saha[1,2], R. Knut[2], N. Alzahrani[3,4], J.E. Shoup[4,5] and *D.A. Arena*[4] *1. Physics, Ashoka University, Haryana, India; 2. Physics, Uppsala University, Uppsala, Sweden; 3. Physics, University of Jeddah, Jeddah, Saudi Arabia; 4. Physics, University of South Florida, Tampa, FL, United States; 5. Materials Science and Engineering Division, National Institute of Standards and Technology, Gaithersburg, MD, United States*

**9:42**

**GF-07**. **Probing Ultrafast Spin Excitations in Magnetic Alloys Using Extreme Ultraviolet Spectroscopy.** *N. Li*[1], A. Grafov[1], S.A. Ryan[1], M.F. Elhanoty[2], O. Grånäs[2], E. Lesne[3], C. Felser[3], H.C. Kapteyn[1] and M.M. Murnane[1] *1. JILA, University of Colorado, Boulder, CO, United States; 2. Department of Physics and Astronomy, Uppsala University, Uppsala, Sweden; 3. Max Planck Institute for Chemical Physics of Solids, Dresden, Germany*

**9:54**

**GF-08**. **All-optical switching in Pt/Co multilayers: from helicity dependent switching to bubble domains.** *A. Villar*[1], D. Doménech[1], R. Montero[2], A. Devishvili[3], R. Morales[1,4,5], P. Vavassori[5,6] and J. Porro[1,5] *1. BCMaterials, Basque Centre for Materials, Applications & Nanostrcutures, Leioa, Spain; 2. Laser Facility, SGiker, Leioa, Spain; 3. Institut Laue-Langevin, Grenoble, France; 4. Chemical-Physics, UPV/EHU, Faculty of Science and Technology, Leioa, Spain; 5. IKERBASQUE, Basque Foundation for Science, Bilbao, Spain; 6. CIC nanoGUNE BRTA, Donostia-San Sebastián, Spain*

**10:06**

**Break**

**10:45**

**GF-10**. **Light-helicity induced orbital angular momentum transfer torque in ferromagnetic metals.** *K. Nukui*[1,2], S. Iihama[3,2], K. Ishibashi[1,2], S. Yamashita[1], A. Sakuma[1], P. Scheid[4], G. Malinowski[4], M. Hehn[4,5], S. Mangin[4,5] and S. Mizukami[2,5] *1. Department of Applied Physics, Tohoku University, Sendai, Japan; 2. WPI-AIMR, Tohoku University, Sendai, Japan; 3. FRIS, Tohoku University, Sendai, Japan; 4. CNRS, Institut Jean Lamour, Université de Lorraine, Nancy, France; 5. CSIS, Tohoku University Sendai, Japan*

**10:57**

**GF-11**. **Substrate-Mediated Phononic Switching of Magnetization Using Transient Polarization Gratings.** F.G. Fennema[1,2], A. Tsukamoto[3], A. Kirilyuk[1,2] and *C.S. Davies*[1,2] *1. HFML-FELIX, Radboud University, Nijmegen, Netherlands; 2. Radboud University, Institute for Molecules and Materials, Nijmegen, Netherlands; 3. Nihon University, Chiba, Japan*

**GF-13**. **Withdrawn**

FRIDAY MORNING 8:30

IMPERIAL 5CD

## Session GG
# ELECTRONIC STRUCTURE AND FUNDAMENTAL PROPERTIES

Jinke Tang, Co-Chair
University of Wyoming, Laramie, WY, United States
Durga Paudyal, Co-Chair
University of Iowa, Iowa City, IA, United States

**8:30**

**GG-01**. **Magnetic Properties of the Metallic Delafossite Triangular-Lattice Antiferromagnet $PdCrO_2$ and its Anomalous Hall Effect.** *Y. Tao*[1], Y. Zhang[1], F. Tutt[1], A. Paul[2], E. Ritz[1], J. Garcia-Barriocanal[3], T. Birol[1] and C. Leighton[1] *1. Chemical Engineering and Materials Science, University of Minnesota, Minneapolis, MN, United States; 2. Indian Institute of Technology Jammu, Jammu and Kashmir, India; 3. Characterization Facility, University of Minnesota, Minneapolis, MN, United States*

**8:42**

**GG-02**. **First-principle Calculations of Magnetic Properties of $Dy_6(Fe,Mn)Bi_2$ Compounds for Magnetic Refrigeration Applications.** A. Garcia-Adeva[1], F. Ramón-García[1], *E. Apiñaniz*[1], A. Herrero[2], I. Aseguinolaza[2] and A. Oleaga[2] *1. Física Aplicada, Universidad del País Vasco (UPV/EHU), Vitoria-Gasteiz, Spain; 2. Física Aplicada, Universidad del País Vasco (UPV/EHU), Bilbao, Spain*

**8:54**

**GG-03**. **Superconducting diode effect without magnetic field in layered superconductor $FeTe_{0.6}Se_{0.4}$.** *U. Nagata*[1], M. Aoki[1,2], A. Daido[3], R. Ohshima[1,2], S. Kasahara[4], Y. Kasahara[3], Y. Ando[1,2], Y. Matsuda[3], Y. Yanase[3,2] and M. Shiraishi[1,2] *1. Electronic Science and Engineering, Kyoto University, Kyoto, Japan; 2. CSRN Kyoto University, Kyoto, Japan; 3. Science, Kyoto University, Kyoto, Japan; 4. Research Institute for Interdisciplinary Science, Oakyama University, Okayama, Japan*

**9:06**

**GG-04**. **Non-trivial Spin Structures and Multiferroic Properties of the DMI-Compound $Ba_2CuGe_2O_7$.** *P. Wild*[1], K. Fellner[1], M. Dembski-Villalta[1] and S. Mühlbauer[1] *1. TUM/MLZ, Garching, Germany*

**9:18**

**GG-05**. **Transition metals: Matching microscopic quantum dynamics with macroscopic magnetic order.** *V. Janiš*[1] and M. Khanore[1] *1. Institute of Physics, Czech Academy of Sciences, Praha, Czechia*

**9:30**

**GG-06**. **Spin fluctuation driven magnetoresistance, domain re-distribution and anomalous Hall effect in helical antiferromagnetic Eu metal thin films.** N. Shrestha[1] and *J. Tang*[1] *1. Department of Physics and Astronomy, University of Wyoming, Laramie, WY, United States*

**9:42**

**GG-07**. **Comprehensive Study of GGA+*U* Approach to Modeling Electronic Structure of $\alpha''$–$Fe_{16}N_2$.** *P. Stoeckl*[1], P. Swatek[2] and J. Wang[1,2] *1. Physics, University of Minnesota, Minneapolis, MN, United States; 2. Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN, United States*

**9:54**

**GG-08**. **Signatures of Magnetic Glassiness in Zinc Ferrite: Low-Temperature Fast "Rejuvenation" versus Room-Temperature Slow Relaxation and Memory-Effect.** *A. Ney*[1], J. Lumetzberger[1], V. Ney[1], D. Primetzhofer[2], A. Zakharova[3], N. Daffe[3], F. Wilhelm[4] and A. Rogalev[4] *1. Solid State Physics Division, Johannes Kepler Univ, Linz, Austria; 2. Uppsala Univ, Uppsala, Sweden; 3. Swiss Light Source, Villigen, Switzerland; 4. ESRF, Grenoble, France*

**GG-09**. **Withdrawn**

**10:06**

**Break**

**10:45**

**GG-10**. **Frustration driven low-temperature spin dynamics in magnetically diluted Co-based glassy spinel systems.** *M. Roy Chowdhury*[1], T. Sarkar[2], E.S. Choi[3] and S. Thota[1] *1. Physics, Indian Institute of Technology Guwahati, Guwahati, India; 2. Department of Materials Science and Engineering, Uppsala University, Uppsala, Sweden; 3. National High Magnetic Field Laboratory, Tallahassee, FL, United States*

**10:57**

**GG-11**. **Single Molecule Magnet's (SMM) Effects on Antiferromagnet-based Magnetic Tunnel Junction.** *B. Sankhi*[1] and P. Tyagi[1] *1. Mechanical engineering, University of the district of Columbia, Washington, DC, United States*

**11:09**

**GG-12**. **Self-consistent magnetic dynamic susceptibility in the itinerant magnets.** M. Auslender[1] and *V. Antropov*[2] *1. Ben-Gurion University of the Negev, Be'er Sheva, Israel; 2. Ames National Laboratory, Ames, IA, United States*

**11:21**

**GG-13**. **Enhanced cooperativity in photon magnon hybrid system using nested meta-resonator: insights of coherent and dissipative coupling.** S. Yadav[1], P. Kumar[1], M. Sharma[1,2] and *B.K. Kuanr*[1] *1. Special Centre for Nanoscience, Jawaharlal Nehru University, South West Delhi, India; 2. Department of Physics, Deshbandhu College, University of Delhi, New Delhi, India*

**11:33**

**GG-14**. **Spin Dynamics in the Floating Phase of a Frustrated Spin-5/2 Chain Magnet.** *Q. Huang*[1], A.B. Niraula[1], D. Dahlbom[2], B. Thipe[1], G. Granroth[2], B. Winn[2], A. Aczel[2], J. Chen[1], S. Stadle[1], D. Young[1], K. Barros[3], X. Tao[4,5], J. Zhang[6], S. Calder[2], C. Batista[7] and X. Bai[1] *1. Department of Physics and Astronomy, Louisiana State University, Baton Rouge, LA, United States; 2. Oak Ridge National Laboratory, Oak Ridge, TN, United States; 3. Los Alamos National Laboratory, Los Alamos, NM, United States; 4. State Key Laboratory of Crystal Material, Jinan, China; 5. Institute of Crystal Materials, Jinan, China; 6. Shandong University, Jinan, China; 7. Department of Physics and Astronomy, University of Tennessee, Knoxville, TN, United States*

**11:45**

**GG-15**. **Reexamination of the Electronic Phase Diagram of Doped $NiS_2$: Electronic, Magnetic, and Structural Inhomogeneity across the Mott Insulator-Metal Transition.** *Y. Tao*[1], B. Das[1], S. Calder[2], E. Day-Roberts[1], M. Maiti[1], Y. Lee[1], C. Komar[1], T. Birol[1] and C. Leighton[1] *1. Chemical Engineering and Materials Science, University of Minnesota, Minneapolis, MN, United States; 2. Neutron Scattering Division, Oak Ridge National Laboratory, Oak Ridge, TN, United States*

## Session GP
# HARD MAGNETS IV & MATERIALS WITH COUPLED MAGNETIC PHENOMENA II
# (Poster Session)

Christopher Woodgate, Chair
University of Warwick, Coventry, United Kingdom

**GP-01**. **Intrinsic hard magnetic properties and thermal stability of a $ThMn_{12}$-type permanent magnet.** *N. Batnyam*[1] and D. Odkhuu[1] *1. Physics, Incheon National University, Yeoun-su, The Republic of Korea*

**GP-02**. **Bulk Anisotropic Nanograin $Sm_{0.4}Pr_{0.6}Co_5$ Magnets with Excellent Energy Product.** W. Liu[1], L. Zhang[1], *Z. Wang*[1], L. Liu[1], Y. Li[1] and M. Yue[1] *1. Beijing University of Technology, Beijing, China*

**GP-03**. **Enhancing intrinsic permanent magnetic properties of $ThMn_{12}$-type $Sm(Fe_{1-x}Co_x)_{11.5}Ti_{0.5}$ through interstitial B, N, and C elements.** *S. Dorj*[1,2], T. Namsrai[1], J. Narmandakh[2], O. Tumentsereg[3], O. Khorgolkhuu[4] and O. Dorj[1,3] *1. Department of Physics, National University of Mongolia, Ulaanbaatar, Mongolia; 2. Institute of Physics and Technology, Mongolian Academy of Sciences, Ulaanbaatar, Mongolia; 3. Department of Physics, Incheon National University, Incheon, The Republic of Korea; 4. National Institute for Computational Sciences, Oak Ridge, TN, United States*

**GP-04**. **Anisotropic nanocrystalline $(Sm_{0.4}Pr_{0.6})Co_5$ permanent magnets with controllable magnetic properties.** L. Liu[1], W. Liu[1], Y. Li[1], *L. Zhang*[1], Z. Wang[1] and M. Yue[1] *1. Beijing University of Technology, Beijing, China*

**GP-06**. **Magnetic properties of $Sm_2Fe_{17}N_3$ at low temperature.** I. Nlebedim[1] and *X. Liu*[1] *1. Division of Critical Materials, Ames National Laboratory, Ames, IA, United States*

**GP-08**. **Withdrawn**

## Session GQ
# SPIN-ORBITRONICS II: ANTIFERROMAGNETS, DMI AND UNCONVENTIONAL TORQUES (Poster Session)

Daniel Gopman, Chair
National Institute of Standards and Technology, Gaithersburg, MD, United States

**GQ-01**. **Current-induced field-free magnetization switching in the MXene-based $Cr_2N$/(Co/Pt) multilayer structure.** *P. Kumar*[1] and S. Isogami[1] *1. National Institute for Materials Science, Tsukuba, Japan*

**GQ-02**. **Enhancing Unconventional Spin-Orbit Torque Efficiency: Unraveling the Role of Polycrystalline Effects in Low-Symmetry Materials.** *Y. Yang*[1] and J. Wang[1] *1. University of Minnesota, Minneapolis, MN, United States*

**GQ-03**. **Spin Transport in Antiferromagnetic CoO Thin Films.** *C. Schmitt*[1], E. Galindez Ruales[1], H. Meer[1], T. Kikkawa[2], A. Akashdeep[1], T. Kuschel[1,3], E. Saitoh[2,4] and M. Kläui[1] *1. Johannes Gutenberg University Mainz, Mainz, Germany; 2. The University of Tokyo, Tokyo, Japan; 3. Bielefeld University, Bielefeld, Germany; 4. Tohoku University, Sendai, Japan*

**GQ-04**. **ST-FMR Investigations of a $WSe_2$ Spin Sink.** *Y. Chu*[1], K. Chiu[1] and M. Lin[1,2,3] *1. Department of Physics, National Taiwan University, Taipei, Taiwan; 2. Institute of Atomic and Molecular Sciences, Academia Sinica, Taipei, Taiwan; 3. Research Center for Applied Sciences, Academia Sinica, Taipei, Taiwan*

**GQ-05**. **Study of Dzyaloshinskii Moria Interaction on Magnetic Tunnel Junction-Based Molecular Spintronics Devices (MTJMSD).** *B. Sankhi*[1] and P. Tyagi[1] *1. Mechanical engineering, University of the District of Columbia, Washington, DC, United States*

**GQ-06**. **Median Mishaps between Chirality and Spin-Orbit Torques via Asymmetric Hysteresis.** M. Kim[1,2] and *D. Kim*[1] *1. Korea Institute of Science and Technology, Seoul, The Republic of Korea; 2. Seoul National University, Seoul, The Republic of Korea*

**GQ-07**. **Spin-Orbit Torques in Permalloy Films with Shape-Induced High-Order Magnetic Anisotropy.** *A. Zaig*[1] *1. Physics, Bar-Ilan University, Ramat Gan, Israel*

**GQ-08**. **Temperature Dependence of Dzyaloshinskii-Moriya Interaction in Pt/Co/Gd Thin Films.** F. Wei[1], Y. Zhou[1], W. Zhang[2] and *S. Kang*[1] *1. Shand University, Jinan, China; 2. Weifang University, Weifang, China*

## Session GR
# MAGNETOELECTRIC MATERIALS AND PHENOMENA III & SPINTRONIC DEVICES III: STT/SOT MRAMS AND SWITCHING DYNAMICS (Poster Session)

Xiaoyu (Criss) Zhang, Chair
Northeastern University, Boston, MA, United States

**GR-01**. **Room Temperature Ferromagnetism in Transition-Metal-Doped ZnO Semiconductors Induced by Tunable Bound Magnetic Polarons.** *A. Alsmadi*[1] and B. Salameh[1] *1. Physic Department, Kuwait University, Sabah Al Salem University City. Kuwait, Kuwait*

**GR-02**. **Magnetotransport Properties of $NiFe_{1+x}Mn_{1-x}Al$ Heusler Alloys.** *S. Diallo*[1], P. Shand[1], P. Lukashev[1], P. Kharel[2], G. Baker[2], J. Wysong[2] and B. Schmidt[1] *1. Physics, University of Northern Iowa, Cedar Falls, IA, United States; 2. Chemistry, Biochemistry and Physics, South Dakota State University, Brookings, SD, United States*

**GR-03**. **Withdrawn**

**GR-04**. **Anomalous Hall Effect in a Room Temperature Magnetic High Entropy Alloy.** *R. Roy Chowdhury*[1], N. Schulz[1], E. Kasotakis[2], M. Farle[2], N. Shkodich[2], M. Phan[1] and H. Srikanth[1] *1. Department of Physics, University of South Florida, Tampa, FL, United States; 2. Universität Duisburg-Essen, Duisburg, Germany*

**GR-05**. **Role of texture breaking layer on the reference layer stability of STT-MRAM devices.** *J. Chatterjee*[1], S. Rao[1], R. Carpenter[1], K. Wostyn[1], A. Palomino Lopez[1] and S. Couet[1] *1. IMEC, Leuven, Belgium*

**GR-06**. **Investigation of the origin of enhanced spin-orbit torque efficiency in strained Py/Pt bilayer.** *A. Chouhan*[1], H.A. Mendonca[1], S. Dutta[1], A. Shukla[1], R.R. Pandey[1] and A.A. Tulapurkar[1] *1. Department of Electrical Engineering, Indian Institute of Technology Bombay, Mumbai, India*

**GR-07**. **Tailoring the Structural and Magnetic Properties of $LaNiO_3$ Perovskite Nanostructure via Mn Doping for Spintronic Applications.** *S. K*[1,2], M. Swalihu[3,4] and R. N E[1] *1. Department of Physics, Farook College, Calicut, India; 2. Department of Physics, Providence Women's College, Calicut, India; 3. Department of Physics, Catholicate College, Pathanamthitta, India; 4. International and Interuniversity Center for Nanoscience and Nanotechnology, Mahatma Gandhi University, Kottayam, India*

**GR-08**. **Innovative Trenched Bottom Electrode Molecular Devices with Gate Electrodes: Advances and Applications in Spintronics.** *E. Peigney*[1], H. Brown[1], B. Sankhi[1] and P. Tyagi[1] *1. NSF CREST Center for Nanotechnology Research and Education, University of the District of Columbia, Washington, DC, United States*

FRIDAY MORNING 9:00

EXHIBIT HALL

## Session GS
## EMERGING COMPUTING USING MAGNETIC AND SPINTRONIC MATERIALS (Poster Session)

Gregory Stephen, Chair
Laboratory for Physical Sciences, College Park, MD, United States

**GS-02**. **Using Machine Learning Algorithms to Predict the Magnetic Susceptibility of Rare Earth Ions.** *P. Brungi*[1], N. Carlstedt[1] and P. Andrei[1] *1. Department of Electrical and Computer Engineering, Florida State University, Tallahassee, FL, United States*

**GS-03**. **Operational window of inverse temperature for accurate probabilistic computing with stochastic magnetic tunnel junctions.** *H. Kaneko*[1], S. Kanai[1,2,3], H. Ohno[2] and S. Fukami[2,4] *1. Tohoku Univ., Sendai, Japan; 2. National Institutes for Quantum Science and Technology, Takasaki, Japan; 3. Japan Scienceand Technology Agency, Kawaguchi, Japan; 4. Inamori Research Institute for Science, Kyoto, Japan*

**GS-04**. **Simulation of Error Rate of and Logic Gates Made from Stochastic MTJs.** S. Endo[1] and *S. Greaves*[1] *1. RIEC, Tohoku University, Sendai, Japan*

**GS-05**. **Design of a High-Speed Vacuum Pump Motor Applying 6Phase and Harmonic Reduction.** H. Han[1], I. Yang[2], *D. Choi*[1], S. Lee[1] and W. Kim[3] *1. Next Generation Smart Energy System Convergence, Gachon University, Seongnam-si, The Republic of Korea; 2. Electrical Engineering, Hanyang University, Seoul, The Republic of Korea; 3. Electrical Engineering, Gachon University, Seongnam-si, The Republic of Korea*

**GS-06**. **Research on Reducing Cogging Torque and Torque Ripple by Changing the Shape of Permanent Magnet in Large Ship Motor.** S. Jeon[1], D. Choi[1], Y. Song[1], S. Lee[1] and *W. Kim*[1] *1. Next Generation Smart Energy System Convergence Major, Gachon University, Seongnam, The Republic of Korea*

**GS-07**. **Performance Prediction of Coaxial Magnetic Gear Based on Ring Specimen Test Result.** *S. Lee*[1], S. Im[1], B. Bae[1] and M. Lim[1] *1. Automotive Engineering (Automotive-Computer Convergence), Hanyang University, Seoul, The Republic of Korea*

## Session GT
# MAGNETIZATION DYNAMICS AND MICROMAGNETICS II (Poster Session)

Michael Donahue, Co-Chair
National Institute of Standards and Technology, Gaithersburg, MD, United States
Jonathan Leliaert, Co-Chair
Ghent University, Ghent, Belgium

**GT-01**. **Temperature-Based Frequency Tunability in Spin-Torque Vortex Nano Oscillators for Neuromorphic Computing System.** S. Soni[1,2], *S. Shreya*[1], Y. Rezaeiyan[1], H. Farkhani[1], B.K. Kaushik[2] and F. Moradi[1] *1. Electrical and Computer Engineering Department, Aarhus University, Aarhus, Denmark; 2. Electronics and Communication Engineering Department, Indian Institute of Technology Roorkee, Roorkee, India*

**GT-02**. **Effect of Tracer Size Distribution on Magnetic Particle Imaging Resolution.** *E. Azizi*[1], B. Rezaei[1], S. Mostufa[1], S. Liang[2], Y.A. Wang[3], J. Wang[2], C. Li[1], J. Gomez-Pastora[4], R. He[1] and K. Wu[1] *1. Electrical and Computer Engineering, Texas Tech University, Lubbock, TX, United States; 2. Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN, United States; 3. Ocean Nano Tech LLC, San Diego, CA, United States; 4. Chemical Engineering, Texas Tech University, Lubbock, TX, United States*

**GT-03**. **Fast Identification of the Jiles-Atherton-Model Parameters and the Electric Conductivity Based on Gaussian Process Regression.** *A. Schaefer*[1], Y. Gong[1] and N. Parspour[1] *1. Institute of Electrical Energy Conversion (iew), University of Stuttgart, Stuttgart, Germany*

**GT-04**. **Kolmogorov-Arnold Network for 2-D Magnetostatic Fields Solving.** *Y. Zhu*[1], K. Xu[1], B. Wan[1], G. Lei[1] and J. Zhu[2] *1. School of Electrical and Data Engineering, University of Technology Sydney, Ultimo, NSW, Australia; 2. School of Electrical and Computer Engineering, University of Sydney, Camperdown, NSW, Australia*

**GT-06**. **Comprehensive Database of Magnetic Materials Using AI-Driven Methodologies.** *Y. Zhang*[1,2], S. Itani[1] and J. Zang[1] *1. Physics, University of New Hampshire, Durham, NH, United States; 2. Chemistry, University of New Hampshire, Durham, NH, United States*

**GT-07**. **Clustering Vector Fields Using Unsupervised Machine Learning.** S.A. Pathak[1,2], S.J. Holt[1,2], *A. Petrocchi*[1,2], M. Lang[1,2] and H. Fangohr[1,2,3] *1. Max Planck Institute for the Structure and Dynamics of Matter, Hamburg, Germany; 2. Center for Free-Electron Laser Science, Hamburg, Germany; 3. Faculty of Engineering and Physical Sciences, University of Southampton, Southampton, United Kingdom*

**GT-08**. **Physics Informed Neural Networks Based on Unsupervised Learning for Multidomain Electromagnetic Analysis.** *B. Wan*[1], G. Lei[1], Y. Zhu[1], K. Xu[1], Y. Guo[1] and J. Zhu[2] *1. School of Electrical and Data Engineering, University of Technology Sydney, Ultimo, NSW, Australia; 2. School of Electrical and Information Engineering, University of Sydney, Camperdow, NSW, Australia*

FRIDAY MORNING 9:00

EXHIBIT HALL

## Session GU
## MICROSCOPY, IMAGING, AND MAGNETIC CHARACTERIZATION III (Poster Session)

Sascha Schäfer, Chair
University of Regensburg, Regensburg, Germany

**GU-01**. **Antiferromagnetism in $La_{0.8}Sr_{0.2}MnO_3$ Ultrathin Films Driven by Interfacial Charge Doping.** G. Panchal[1], F. Stramaglia[1] and *C.A. Vaz*[1] *1. Swiss Light Source, Paul Scherrer Institut, Villigen PSI, Switzerland*

**GU-02**. **High-Gradient Magnetic Separation and Phenotypic Characterization of Sickle RBCs.** *J. Chalmers*[1], P.R. Iyer[1], J. Strayer[1], X. Wu[1], H. Choe[1], A. DeBastiani[1], B. Karakuzu[1,2], J. Gomez-Pastora[3], K. Wu[4], A. Palmer[1], M. Zborowski[5] and P. Desai[6] *1. Chemical and Biomolecular Engineering, Ohio State University, Columbus, OH, United States; 2. Bioengineering, Izmir Institute of Technology, Izmir, Turkey; 3. Chemical Engineering, Texas Tech University, Lubbock, TX, United States; 4. Electrical and Computer Engineering, Texas Tech University, Lubbock, TX, United States; 5. Biomedical Engineering, Cleveland Clinic Lerner Research Institute, Cleveland, OH, United States; 6. Levine Cancer Institute, Charlotte, NC, United States*

**GU-03**. **Numerical Analysis of Hybrid Electromagnetic Coil Systems for Efficient Gradient Field Generation in Human-Sized Magnetic Particle Imaging.** *S. Mostufa*[1], E. Azizi[1], B. Rezaei[1], C. Li[1], J. Gomez-Pastora[2], R. He[1] and K. Wu[1] *1. Department of Electrical and Computer Engineering, Texas Tech University, Lubbock, TX, United States; 2. Department of Chemical Engineering, Texas Tech University, Lubbock, TX, United States*

**GU-04**. **Method to Measure the Mass and Particle Size of Rare Earth Materials in Aqueous Solutions.** *A. Igboanugo*[1] and P. Andrei[1] *1. Florida State University, Tallahassee, FL, United States*

**GU-06**. **An XPEEM Study of Voltage-induced Magnetic Domain Separation in a $La_{0.7}Sr_{0.3}MnO_3$ Thin Film.** T. Chen[1], D. Sasaki[2], *B. Achinuq*[3], N. Ghazikhanian[4], P. Salev[5], H. Ohldag[3], A. Scholl[3], I.K. Schuller[4], Y. Takamura[2] and A.D. Kent[1] *1. Department of Physics, New York University, New York, NY, United States; 2. Department of Materials Science and Engineering, University of California Davis, Davis, CA, United States; 3. Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, CA, United States; 4. Department of Physics, University of California San Diego, La Jolla, CA, United States; 5. Department of Physics and Astronomy, University of Denver, Denver, CO, United States*

FRIDAY MORNING 9:00

EXHIBIT HALL

## Session GV
## ELECTRICAL MACHINES, POWER ELECTRONICS & ELECTROMECHANICAL CONVERSION (Poster Session)

Abdelmounaim Tounzi, Chair
Université de Lille, Villeneuve d'Ascq, France

**GV-03**. **Design and Analysis of an Interior Permanent Magnet Synchronous Motor with a Carbon Fiber-Reinforced Plastic Sleeve Based on Electromagnetic-Mechanical Coupled Analysis.** *K. Kwak*[1], Y. Choi[1], M. Koo[2], H. Shin[3], K. Shin[4] and J. Choi[1] *1. Electrical Engineering, Chungnam National University, Daejeon, The Republic of Korea; 2. Purpose Built Mobility Group, Korea Institute of Industrial Technology, Gwangju, The Republic of Korea; 3. Specialized Machinery and Robotics Group, Korea Institute of Industrial Technology, Gimje, The Republic of Korea; 4. Electrical Engineering, Changwon National University, Changwon, The Republic of Korea*

**GV-07**. **High Efficiency Rotary Transformer Design Based on Modular Core.** *P. Huang*[1], T. Chang[2], I. Lu[2] and M. Tsai[1] *1. Mechanical Engineering, National Cheng Kung University, Tainan, Taiwan; 2. Electric Motor Technology Research Center, National Cheng Kung University, Tainan, Taiwan*

**GV-08**. **A Study of Roadside Coil Configuration in Wireless Power Transfer System for EVs Using Repeater Coils.** *A. Saito*[1], S. Miyahara[1], F. Sato[1] and H. Matsuki[2] *1. Tohoku Gakuin University, Sendai, Japan; 2. Tohoku University, Sendai, Japan*

## Session HA
# CAVITY MAGNONICS AND NON-RECIPROCAL SPIN WAVE PROPAGATION

Can-Ming Hu, Chair
University of Manitoba, Winnipeg, MB, Canada

**1:30**

**HA-01**. **Anomalous Long-Distance Coherence in Critically Driven Cavity Magnonics.** ***(Invited)*** *Y. Yang*[1], J. Yao[1], Y. Xiao[2], P. Fong[3], H. Lau[3,4] and C. Hu[1] *1. Physics, University of Manitoba, Winnipeg, MB, Canada; 2. Physics, Nanjing University of Aeronautics and Astronautics, Nanjing, China; 3. Physics, Simon Fraser University, Burnaby, BC, Canada; 4. Quantum Algorithms Institute, Surrey, BC, Canada*

**2:06**

**HA-02**. **Spin-Wave Edge and Cavity Modes in a Moiré Magnonic Crystal.** ***(Invited)*** *G. Gubbiotti*[1] *1. IOM, CNR, Perugia, Italy*

**2:42**

**HA-03**. **The Toroidal Moment in Nanomagnets and its Connection with Nonreciprocal Magnonics.** ***(Invited)*** F. Brevis[1], L. Körber[2,3], R. Gallardo[1,4], A. Kákay[3] and *P. Landeros*[1,4] *1. Departamento de Física, Universidad Técnica Federico Santa María, Valparaíso, Chile; 2. Institute of Molecules and Materials, Radboud University, Nijmegen, Netherlands; 3. Institut für Ionenstrahlphysik und Materialforschung, Helmholtz-Zentrum Dresden - Rossendorf, Dresden, Germany; 4. Center for the Development of Nanoscience and Nanotechnology (CEDENNA), Santiago, Chile*



## Session HB
# INTERDISCIPLINARY AND EMERGING TOPICS

Alpha N'Diaye, Co-Chair
Lawrence Berkeley National Laboratory, Berkeley, CA, United States
Cinthia Piamonteze, Co-Chair
Paul Scherrer Institut, Villigen PSI, Switzerland

**HB-01**. **Withdrawn**

**1:30**

**HB-02**. **High-Gradient Magnetic Chromatography of Rare-Earth Elements.** P. Brungi[1], N. Carlstedt[1] and *P. Andrei*[1] *1. Florida State University, Tallahassee, FL, United States*

**1:42**

**HB-03**. **Numerical simulations of magnetic packed columns for biological cell separation.** *H. Choe*[1], J. Chalmers[1], J. Strayer[1], X. Wu[1], P. Iyer[1], A. DeBastiani[1], B. Karakuzu[1,2], J. Gomez-Pastora[3], M. Zborowski[4] and K. Wu[5] *1. William G. Lowrie Department of Chemical and Biomolecular Engineering, The Ohio State University, Columbus, OH, United States; 2. Department of Bioengineering, Izmir Institute of Technology, Izmir, Turkey; 3. Department of Chemical Engineering, Texas Tech University, Lubbock, TX, United States; 4. Department of Biomedical Engineering, Cleveland Clinic, Cleveland, OH, United States; 5. Department of Electrical and Computer Engineering, Texas Tech University, Lubbock, TX, United States*

**1:54**

**HB-04**. **Wirelessly Measuring Brain Activity Using Magnetoelectric Nanoparticles as an Amplifier of Neuron Signals.** *S. Chen*[1], E. Zhang[2], J. Tian[3] and S. Khizroev[3] *1. Chemical, Environmental, and Materials Engineering, University of Miami, Coral Gables, FL, United States; 2. MAVT, ETH Zurich, Zurich, Switzerland; 3. Electrical Engineering, University of Miami, Coral Gables, FL, United States*

**2:06**

**HB-05**. **Characterizing the Physicochemical Properties of Magnetic Nanoparticles by a Surface Plasmon Resonance Approach.** *S. Mostufa*[1], B. Rezaei[1], E. Azizi[1], Y.A. Wang[2], C. Li[1], J. Gomez-Pastora[3], R. He[1] and K. Wu[1] *1. Department of Electrical and Computer Engineering, Texas Tech University, Lubbock, TX, United States; 2. Ocean Nano Tech LLC, San Diego, CA, United States; 3. Department of Chemical Engineering, Texas Tech University, Lubbock, TX, United States*

**2:18**

**HB-06**. **Magnetic Force Microscopy Revealing Long-range Room Temperature Stable Molecule Bridge Induced Magnetic Ordering on Magnetic Tunnel Junction (MTJ).** *P. Tyagi*[1] *1. University of the District of Columbia, Washington, DC, United States*

**2:30**

**HB-07**. **Ultrastrongly-coupled magnon-polaritons in magnetochiral meta-molecules.** *S. Tomita*[1], K. Mita[1], T. Kodama[1], T. Ueda[2], T. Nakanishi[3], K. Sawada[4] and T. Chiba[1] *1. Tohoku University, Sendai, Japan; 2. Kyoto Institute of Technology, Kyoto, Japan; 3. Kyoto University, Kyoto, Japan; 4. RIKEN SPring-8 Center, Sayo, Japan*

**2:42**

**HB-08**. **Magnetic Tunnel Junction Testbed Based Molecular Spintronics Devices: A Method of Solving 70-Year-Old Challenge in Making Molecular Devices.** *P. Tyagi*[1] and C. Riso[1] *1. University of the District of Columbia, Washington, DC, United States*

**2:54**

**HB-09**. **Electronic and Magnetic Structure Study of Multiwalled Carbon Nanotubes for Spintronics Applications Using X-ray Absorption and Magnetic Circular Dichroism Spectroscopy.** *S. Gautam*[1], P. Thakur[2], S. Augistine[3], N. Brookes[4] and K. Chae[5] *1. Dr. SSB Univ Inst Chemical Engg & Tech, Panjab University, Chandigarh, India; 2. Beamline Division, Diamond Light Source, Oxfordshire, United Kingdom; 3. Department of Physics, Deva Matha College, Kottayam, India; 4. ESRF, Grenoble, France; 5. Advanced Analysis & Data Center, Korea Institute of Science & Technology, Seoul, The Republic of Korea*

FRIDAY AFTERNOON 1:30

CELESTIN A

## Session HC
# COMPUTING WITH SPIN DYNAMICS

Matthew Daniels, Chair
National Institute of Standards and Technology, Gaithersburg, MD, United States

**1:30**

**HC-01**. **Neuromorphic Computing with Networks of Interconnected Magnetic Tunnel Junctions.** ***(Invited)*** A. López[1], D. Costa[2], T. Böhnert[2], P.P. Freitas[2], R. Ferreira[2], J. Camarero[3,4], C. León[1], J. Grollier[5] and *M. Romera*[1] *1. Complutense University of Madrid, Madrid, Spain; 2. International Iberian Nanotechnology Laboratory, Braga, Portugal; 3. IMDEA Nanociencia, Madrid, Spain; 4. Universidad Autónoma de Madrid, Madrid, Spain; 5. Unité Mixte de Physique CNRS, Thales, Université Paris-Sud, Université Paris-Saclay, Palaiseau, France*

**2:06**

**HC-02**. **A Neuromorphic Computational Model for Spintronics-based Hopfield Oscillatory Neural Network.** S. Soni[1,2], Y. Rezaeiyan[1], T. Boehnert[3], R. Ferreira[3], B.K. Kaushik[2], F. Moradi[1] and *S. Shreya*[1] *1. Electrical and Computer Engineering Department, Aarhus University, Aarhus, Denmark; 2. Electronics and Communication Engineering Department, Indian Institute of Technology Roorkee, Roorkee, India; 3. Spintronics, International Iberian Nanotechnology Laboratory (INL), Braga, Portugal*

**2:18**

**HC-03**. **Real time machine learning with spintronic enhanced Generative Adversarial Network.** *S. Gupta*[1], A. Abhinandan[2], V. Vadde[1], B. Muralidharan[1] and A. Sharma[2] *1. Electrical Engineering, Indian Institute of Technology Bombay, Mumbai, India; 2. Electrical Engineering, Indian Institute of Technology Ropar, Ropar, India*

**2:30**

**HC-04**. **Physical reservoir computing (PRC) utilizing a solid-state magneto-ionic platform.** *M. Rajib*[1], D. Bhattacharya[2], M.F. Chowdhury[1], S. Sarker[1], C. Jensen[2], G. Chen[3], K. Liu[2] and J. Atulasimha[1,4] *1. Mechanical and Nuclear Engineering Department, Virginia Commonwealth University, Richmond, VA, United States; 2. Department of Physics, Georgetown University, DC, DC, United States; 3. Nanjing University, Nanjing, China; 4. Electrical and Computer Engineering, Virginia Commonwealth University, Richmond, VA, United States*

**2:42**

**HC-06**. **Implementing a Fault Tolerant Spin Ensemble Qubit with Exchange Coupling.** *A. Chakraborty*[1], M.F. Chowdhury[1], M. Niknam[2,3], L. Bouchard[2] and J. Atulasimha[1] *1. Department of Mechanical and Nuclear of Engineering, Virginia Commonwealth University, Richmond, VA, United States; 2. Department of Chemistry and Biochemistry, University of California Los Angeles, Los Angeles, CA, United States; 3. Center for Quantum Science and Engineering, University of California Los Angeles, Los Angeles, CA, United States*

**2:54**

**HC-07**. **Pipelined Voltage-Propagated Skyrmion Logic with High Thermal Stability.** *B. Walker*[1], K. Muthukrishnan[1], R. Thapa[1], E. Rivas[1], X. Hu[1], M. Frank[2], F. García Sánchez[3], A.J. Edwards[1] and J.S. Friedman[1] *1. Electrical and Computer Engineering, University of Texas at Dallas, Richardson, TX, United States; 2. Sandia National Laboratories, Albuquerque, AZ, United States; 3. Departamento de Fisica Aplicada, Universidad de Salamanca, Salamanca, Spain*

## Session HD
# STATICS AND DYNAMICS OF MAGNETIC TEXTURES

Alejandro Riveros, Chair
Universidad Central de Chile, Santiago, Chile

**1:30**

**HD-01**. **Unraveling Optically Induced Ultrafast Modification of Nanoscale Magnetic Textures.** ***(Invited)*** *R. Jangid*[1,2], N. Zhou Hagström[1,3], M. Madhavi[1], K. Rockwell[4], J.M. Shaw[5], J. Brock[6], M. Pancaldi[7], D. De Angelis[7], F. Capotondi[7], E. Pedersoli[7], H.T. Nembach[8,9], M. Keller[5], S. Bonetti[3,10], E. Fullerton[6], E. Iacocca[4], R. Kukreja[1] and T. Silva[5]
*1. University of California Davis, Davis, CA, United States; 2. Synchrotron Light Source II, Brookhaven National Laboratory, Upton, NY, United States; 3. Department of Physics, Stockholm University, Stockholm, Sweden; 4. Center for Magnetism and Magnetic Nanostructures, University of Colorado Colorado Springs, Colorado Springs, CO, United States; 5. Quantum Electromagnetics Division, National Institute of Standards and Technology, Boulder, CO, United States; 6. Center for Memory and Recording Research, University of California, San Diego, La Jolla, CA, United States; 7. Elettra Sincrotrone Trieste S.C.p.A., Trieste, Italy; 8. Department of Physics, University of Colorado, Boulder, CO, United States; 9. Physical Measurement Laboratory, National Institute of Standards and Technology, Boulder, CO, United States; 10. 'Department of Molecular Sciences and Nanosystems, Ca' Foscari University of Venice, Venezia, Italy*

**2:06**

**HD-02**. **Co/Gd based nanofilm engineering for the ultrafast field-free optical writing of nanometer-scale skyrmion bubbles.** *M. van der Schans*[1] and B. Koopmans[1] *1. Applied Physics and Science Education, Eindhoven University of Technology, Eindhoven, Netherlands*

**2:18**

**HD-03**. **From Ferromagnetic Magnetostatics to Antiferromagnetic Topology: Antiferromagnetic Vortex States in NiO-Fe Nanostructures.** M. Slezak[1], *T. Wagner*[2], V. Bharadwaj[2], O. Gomonay[2], A. Koziol Rachwal[1], T.O. Mentes[3], A. Locatelli[3], M. Zajac[4], D. Wilgocka-Slezak[5], P. Drozdz[6] and T. Slezak[1]
*1. Faculty of Physics and Applied Computer Science, AGH University of Science and Technology, Krakow, Poland; 2. Institute of Physics, Johannes Gutenberg University Mainz, Mainz, Germany; 3. Elettra - Sincrotrone Trieste S.C.p.A., Trieste, Italy; 4. National Synchrotron Radiation Centre SOLARIS, Jagiellonian University, Krakow, Poland; 5. Jerzy Haber Institute of Catalysis and Surface Chemistry PAS, Krakow, Poland; 6. Institute of Physics, Maria Curie-Sklodowska University, Lublin, Poland*

**2:30**

**HD-04**. **Demonstration of the Current-induced Creation and Motion of Magnetic Vortex-Antivortex Pairs.** *J. Yang*[1], T. Lee[1], S. Ko[1], K. Moon[2], S. Lee[3], M. Shin[4], S. Kim[5] and K. Kim[1] *1. Physics, Korea Advanced Institute of Science and Technology, Daejeon, The Republic of Korea; 2. Quantum Spin Team, Korea Research Institute of Standards and Science, Daejeon, The Republic of Korea; 3. Electronic Engineering, Gachon University, Seongnam, The Republic of Korea; 4. Electrical Engineering, Korea Advanced Institute of Science and Technology, Daejeon, The Republic of Korea; 5. Physics, University of Ulsan, Ulsan, The Republic of Korea*

**2:42**

**HD-05**. **Modulated Effective Exchange in PyGd Alloys Probed through Vortex Annihilation Processes.** *L. Jacob*[1], H. Han[2], M. Im[3] and S. Pollard[1] *1. Department of Physics and Materials Science, University of Memphis, Memphis, TN, United States; 2. Department of Materials Science and Engineering, Korea National University of Transportation, Chungju, The Republic of Korea; 3. Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, CA, United States*

**2:54**

**HD-06**. **Computational studies of novel Dzyaloshinsky-Moriya interactions.** *S.J. Holt*[1,2], S.A. Pathak[1,2], M. Lang[1,2] and H. Fangohr[1,2,3] *1. Max Planck Institute for the Structure and Dynamics of Matter, Hamburg, Germany; 2. Center for Free-Electron Laser Science, Hamburg, Germany; 3. University of Southampton, Southampton, United Kingdom*

**3:06**

**HD-07**. **Finite Element Method Modeling of Magnetoelastic Dynamics.** *E. Savostin*[1] and V. Lomakin[1] *1. Materials Science, University of California San Diego, La Jolla, CA, United States*

FRIDAY AFTERNOON 1:30

CELESTIN C

## Session HE
## SENSORS AND APPLICATIONS III

Andrea Meo, Chair
Politecnico di Bari, Bari, Italy

**1:30**

**HE-01**. **Magnetic Layering for Low Detectability Magnetoelectric Magnetic Sensors.** ***(Invited)*** *J. McCord*[1] *1. Department of Materials Science, Kiel University, Kiel, Germany*

**2:06**

**HE-02**. **Utilizing Field Gradient Measurements for Object Tracking in Permanent Magnet Based Manipulation Systems.** *J. Davy*[1], M. Brockdorff[1] and P. Valdastri[1] *1. School of Electronic Engineering, University of Leeds, Leeds, United Kingdom*

**2:18**

**HE-03**. **Observation of magnetic nanoparticles-protein aggregates and highly sensitive protein detection.** K. Kaneko[1], A. Ban[2], T. Murayama[2], L. Tonthat[1], *S. Yabukami*[2,1], M. Tanaka[3], Y. Tanaka[3] and T. Abe[2] *1. Graduate School of Engineering, Tohoku University, Sendai, Japan; 2. Graduate School of Biomedical Engineering, Tohoku University, Sendai, Japan; 3. Graduate School of Life Sciences, Tohoku University, Sendai, Japan*

**2:30**

**HE-05**. **A machine learning powered wearable imaging sensor for cancer detection.** *Z. Sun*[1], R. Hong[2,3], Q. Chen[4], H. Chang[3] and J. Hong[4] *1. Hubei University of Technology, Wuhan, China; 2. Albany High School, Albany, CA, United States; 3. Lawrence Berkeley National Lab, Berkeley, CA, United States; 4. UC Berkeley, Berkeley, CA, United States*

**2:42**

**HE-06**. **Low Loss Phononic Phase Shifter Mediated by Acoustic Driven Magnetic Resonance.** *A. Will-Cole*[1], A. Franson[2], A. Wendt[3], P. Shah[2], L. Hackett[1], M. Miller[1], M. Newburger[2], M. Page[2] and M. Eichenfield[1,3] *1. Sandia National Laboratories, Albuquerque, NM, United States; 2. Air Force Research Laboratory, Fairborn, OH, United States; 3. University of Arizona, Tucson, AZ, United States*

**2:54**

**HE-07**. **Urban Traffic Vehicle Speed Estimation Solutions Using Dual-Axis Magneto-Impedance Sensors.** *R. Yao*[1] and T. Uchiyama[1] *1. Graduate School of Engineering, Nagoya University, Nagoya, Japan*

FRIDAY AFTERNOON 1:30

IMPERIAL 5AB

## Session HF
# TERAHERZ ANTIFERROMAGNETIC SPINTRONICS

Vito Puliafito, Chair
Politecnico di Bari, Bari, Italy

**1:30**

**HF-01**. **Terahertz antiferromagnetic dynamics induced by ultrafast spin currents.** ***(Invited)*** *J. Chauleau*[1] *1. SPEC, CEA-Saclay, Gif-sur-Yvette, France*

**2:06**

**HF-02**. **Distortion-free sampling of ultrabroadband terahertz electric fields by spin accumulation.** A. Chekhov[1,2], Y. Behovits[1,2], J. Heitz[1,2], M. Syskaki[3], S. Jaiswal[3], *O. Gueckstock*[1,2], B. Serrano[1,2], A. Ruge[1,2], J. Kredl[4], M. Wolf[2], M. Münzenberg[4], G. Jakob[3], M. Kläui[3], T. Seifert[1,2] and T. Kampfrath[1,2] *1. Freie Universität Berlin, Berlin, Germany; 2. Fritz-Haber-Institut der Max-Planck-Gesellschaft, Berlin, Germany; 3. Institute of Physics, Johannes Gutenberg University, Mainz, Germany; 4. Institute of Physics, Greifswald University, Greifswald, Germany*

**2:18**

**HF-03**. **Ultrafast collapse of octupole order in chiral antiferromagnetic $Mn_3Sn$ films with perpendicular magnetic anisotropy.** *Z. Jin*[1,2], K. Nukui[1,2], K. Ishibashi[1,2], S. Iihama[3], M. Ishibashi[2] and S. Mizukami[2,4] *1. Department of Applied Physics, Tohoku University, Sendai, Japan; 2. WPI-AIMR, Tohoku University, Sendai, Japan; 3. Department of Materials Physics, Nagoya University, Nagoya, Japan; 4. CSIS, Tohoku University, Sendai, Japan*

**2:30**

**HF-04**. **Ultrafast spin-transport dynamics revealed by broadband terahertz spectroscopy.** *L. Nadvornik*[1], J. Jechumtal[1], R. Rouzegar[2,3], O. Gueckstock[2,3], C. Denker[4], W. Hoppe[5], Q. Remy[2], T. Seifert[2,3], P. Kubascik[1], G. Woltersdorf[5], P. Brouwer[2], M. Münzenberg[4] and T. Kampfrath[2,3] *1. Faculty of Mathematics and Physics, Charles University, Prague, Czechia; 2. Department of Physics, Freie Universität Berlin, Berlin, Germany; 3. Department of Physical Chemistry, Fritz Haber Institute of the Max Planck Society, Berlin, Germany; 4. Institut für Physik, Universität Greifswald, Greifswald, Germany; 5. Institut für Physik, Martin-Luther-Universität, Halle, Germany*

**2:42**

**HF-05**. **Antiferromagnetic Quantum Spin and Anomalous Hall Insulator: Dissipationless Neel Spin-orbit Torque.** *J. Tang*[1], H. Zhang[2] and R. Cheng[1,2,3] *1. Department of Physics and Astronomy, University of California, Riverside, CA, United States; 2. Department of Electrical and Computer Engineering, University of California, Riverside, CA, United States; 3. Department of Materials Science and Engineering, University of California, Riverside, CA, United States*

**2:54**

**HF-06**. **Helicity-dependent THz emission induced by circularly-polarized light in platinum-thin films.** *K. Ishibashi*[1,2], K. Nukui[1,2], S. Iihama[3], H. Morishita[4,2] and S. Mizukami[2,4] *1. Dept. of Appl. Phys., Tohoku University, Sendai, Japan; 2. WPI-AIMR, Tohoku University, Sendai, Japan; 3. Dept. of Mater. Phys., Nagoya University, Nagoya, Japan; 4. CSIS, Tohoku University, Sendai, Japan*

**3:06**

**HF-07**. **Magnon-mediated terahertz spin transport in metallic Gd|Pt thin-films.** *O. Gueckstock*[1], T. Amrhein[1], B. Andres[1], P. Jimenez Cavero[2], C. Gahl[1], T. Seifert[1], M. Rouzegar[1], I. Radu[1], I. Lucas[2], L. Morellon[2], M. Weinelt[1], T. Kampfrath[1] and N. Thielemann-Kühn[1] *1. Freie Universität Berlin, Berlin, Germany; 2. Universidad de Zaragoza, Zaragoza, Spain*

## Session HG
# ENERGY AND POWER APPLICATIONS

Mariappan Paranthaman, Chair
Oak Ridge National Laboratory, Oak Ridge, TN, United States

**1:30**

**HG-01**. **Enhancing Thermoelectric Effects with Magnetism and Topology.** ***(Invited)*** *S. Watzman*[1], E.F. Scott[1] and K.A. Schlaak[1] *1. Department of Mechanical and Materials Engineering, University of Cincinnati, Cincinnati, OH, United States*

**2:06**

**HG-03**. **High-bandwidth Current Shunt with Extremely Low Stray Magnetic Field for Accurate Magnetic Loss Measurement in Non-sinusoidal Power Converters.** L. Yi[1], W. Lee[2] and *J. Moon*[1] *1. Florida State University, Tallahassee, FL, United States; 2. Michigan State University, East Lansing, MI, United States*

**2:18**

**HG-04**. **Additional Degree of Freedom in the Design of Shifted Inductances Axes Synchronous Motors.** H.N. Nasser[1], Y. Amara[1], F. Chabour[1], *J.J. Paulides*[2] and M. Ghandour[3] *1. GREAH, Université Le Havre Normandie, Le Havre, France; 2. Advanced Electromagnetics Group, Waalwijk, Netherlands; 3. Faculty of Engineering, Lebanese University, Beirut, Lebanon*

**2:30**

**HG-05**. **Force Wave and Vibration Analysis of Different Rotor Slot Combinations in Induction Motors.** *D. Kong*[1], B. Jia[1] and Y. Xiang[1] *1. Guangdong Ocean University, Zhanjiang, China*

**2:42**

**HG-06**. **Dynamic Analysis and Validation of Superconducting Rotor with a Spoke Suspension Torque Tube.** *J. Xiao*[1], S. Sirimanna[2], H. Rautela[1], T. Balachandran[2] and K. Haran[1] *1. University of Illinois Urbana Champaign, Champaign, IL, United States; 2. Hinetics LLC, Champaign, IL, United States*

**2:54**

**HG-07**. **Optically Excited Brushless High-Speed Wound Field Synchronous Generator.** *K. Lee*[1], G. Gardner[2], R. Atkinson[2] and W. Lee[1] *1. Purdue University, West Lafayette, IN, United States; 2. Michigan State University, East Lansing, MI, United States*

## Session VP1
# BIOMAGNETICS AND MICROFLUIDICS (Poster Virtual Session)

Jenifer Gomez-Pastora, Co-Chair
Texas Tech University, Lubbock, TX, United States
Cristina González Fernández, Co-Chair
Universidad de Cantabria, Santander, Spain

**VP1-03**. **Unlocking Preclinical Drug Screening Application with Magnetoimpedance Sensor.** *J. Ma*[1], N. Ohta[1], T. Ozaki[1], S. Moribe[1], H. Kikuta[1], Y. Hirata[1] and M. Hirano[1] *1. Toyota Central R&D Labs., Inc., Nagakute, Japan*

**VP1-04**. **Magnetic analysis of magnetically controlled capsule endoscopes in curved intestines under a rotating magnetic field drive strategy.** *Z. Teng*[1,2], J. Ren[3,4], H. Sun[3,4], J. Liu[3,4] and Q. Wang[3,4] *1. Department of Automation, University of Science and Technology of China, Hefei, China; 2. The Ganjiang Innovation Academy, Chinese Academy of Sciences, Ganzhou, China; 3. Institute of Electrical Engineering, Chinese Academy of Sciences, Beijing, China; 4. The University of Chinese Academy of Sciences, Beijing, China*

**VP1-05**. **Assessing the resolution of transcranial magnetic stimulation by measuring the magnetic flux density at the cortical surface.** A. Sato[1] and *T. Torii*[1,2] *1. Department of Human Information Engineering, Tokai University, Kumamoto, Japan; 2. Graduate School of Science and Technology / Course of Science and Technology, Tokai University, Kumamoto, Japan*

**VP1-06**. **Investigating the inclusion of anatomical variations in computer-assisted exploration of the induced electric field in transcranial magnetic stimulation.** *X. Zhong*[1], D. Jiles[2] and H. Jiang[1,3] *1. Research Institute of Tsinghua University in Shenzhen, Shenzhen, China; 2. Department of Electrical and Computer Engineering, Iowa State University, Ames, IA, United States; 3. School of Integrated Circuits, Tsinghua University, Beijing, China*

**VP1-07**. **Investigation of transmitting coil with rotating magnetic field in real-time monitoring system for laboratory animals.** *T. Omori*[1], F. Sato[1], Y. Furuya[2] and S. Sasaki[2] *1. Graduate School of Engineering, Tohoku Gakuin University, Sendai, Japan; 2. Hikaridenshi Co., Ltd., Osaki, Japan*

**VP1-08**. **A Study on Optimization of Power Receiving Coil for Real-Time Vital Signs Measurement in Small Laboratory Animals.** *K. Hase*[1], T. Omori[1], F. Sato[1], Y. Furuya[2], K. Sagara[2], S. Sasaki[2] and T. Yoshikawa[3] *1. Tohoku Gakuin Univ., Sendai, Japan; 2. Hikaridenshi Co., Ltd., Osaki, Japan; 3. Hokkaido Univ., Sapporo, Japan*

**VP1-09**. **The behavior of magnetic emulsions in microchannels under the influence of an inhomogeneous magnetic field.** *D. Kalyuzhnaya*[1], E. Sokolov[1] and P. Ryapolov[1] *1. Southwest State University, Kursk, Russian Federation*

**VP1-10**. **EMI Shielding Effectiveness of Ferrofluid Layer in the Presence of Oscillating Magnetic Field.** H. Hsieh[1], H. Kuan[1], *Y. Li*[1] and Y. Cheng[1] *1. Mechanical and Aerospace, Chung-Cheng Institute of Technology, National Defense University, Taoyuan, Taiwan*

**VP1-11**. **Rheological properties of magnetorheological fluids using magnetic spherical nickel particles with different surface roughness.** *G. Stoian*[1], G. Balusescu[1], M. Grigoras[1], H. Chiriac[1] and N. Lupu[1] *1. National Institute of Research and Development for Technical Physics, Iasi, Romania*

**VP1-12**. **Machine learning-based prediction model for magnetic hyperthermia.** D. Chu[1] and *A. Tomitaka*[1] *1. University of Houston-Victoria, Victoria, TX, United States*

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## Session VP2
## ELECTRICAL MACHINES AND POWER ELECTRONICS I
## (Poster Virtual Session)

Amanda de Oliveira Barros, Co-Chair
University of Texas at El Paso, El Paso, TX, United States
Ahmed Hemeida, Co-Chair
Aalto University, Helsinki, Finland
Anh Huynh, Co-Chair
University of Nottingham, Nottingham, United Kingdom

**VP2-01**. **An Improved Equivalent Magnetic Network for Performance Prediction of Yokeless and Segmented Armature Axial Flux Permanent Magnet Motor.** *C. Wang*[1] and B. Peng[1] *1. Shenyang University of Technology, Shenyang, China*

**VP2-02**. **Analysis of Air-Gap Field Modulation Effect in Multi-Unit Distributed Permanent Magnet Arc Motor.** *Z. Pan*[1], J. Zhao[1], S. Fang[2] and Z. Yu[1] *1. School of Electrical Engineering and Automation, Hefei University of Technology, Hefei, China; 2. School of Electrical Engineering, Southeast University, Nanjing, China*

**VP2-09**. **AC Loss Analysis of Flat Wire Motor based on Hybrid Winding Structure of Litz Wire and Flat Wire.** *Y. Li*[1], J. Li[1], Y. Li[1], S. Wang[1], L. Zhang[1], L. Zeng[2] and R. Pei[1,2] *1. Shenyang University of Technology, Shenyang, China; 2. Suzhou Inn-Mag New Energy Ltd, Suzhou, China*

**VP2-10**. **Advanced Study of Lateral Inter-Laminar Faults in Laminated Magnetic Cores with Homogenization Method.** *S. Gao*[1,2], Y. Gao[2], X. Zhao[1], H. Hamzehbahmani[3], W. Guan[4] and K. Muramatsu[5] *1. North China Electric Power University, Baoding, China; 2. Oita University, Oita, Japan; 3. Durham University, Durham, United Kingdom; 4. Wuhan University, Wuhan, China; 5. Saga University, Saga, Japan*

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## Session VP3
## ELECTRICAL MACHINES AND POWER ELECTRONICS II (Poster Virtual Session)

Amanda de Oliveira Barros, Chair
University of Texas at El Paso, El Paso, TX, United States

**VP3-01**. **A Novel Optimization Method of Topology for Improving Torque Quality in Permanent Magnet Synchronous Machine.** *X. Liang*[1], M. Wang[1], Y. Liu[1], P. Zheng[1] and W. Li[1] *1. Harbin Institute of Technology, Harbin, China*

**VP3-02**. **Generalized Newton-Raphson Iteration Algorithm for Solving Nonlinear Magnetic Field Problems Considering Vector Hysteresis Models.** *J. Yin*[1], Y. Li[1], S. Yue[1], Y. Dou[2] and Z. Li[3] *1. Key Laboratory of Reliability and Intelligence of Electrical Equipment, Hebei University of Technology, Tianjin, China; 2. Zhejiang University–University of Illinois at Urbana-Champaign Institute, Zhejiang University, Haining, China; 3. Key Laboratory of Smart Grid of Ministry of Education, Tianjin University, Tianjin, China*

**VP3-03**. **Torque Performance Improvement of CP-PMSM Based on Decision Tree and Bayesian Optimization Algorithm.** Z. Pan[1], *J. Zhao*[1] and K. Wei[1] *1. School of Electrical Engineering and Automation, Hefei University of Technology, Hefei, China*

**VP3-04**. **The Structure Improvement Method and Analysis Based on the Characteristics of Motor Magnetic Field.** *X. Liang*[1], M. Wang[1], Y. Liu[1], P. Zheng[1] and J. Gao[1] *1. Harbin Institute of Technology, Harbin, China*

**VP3-05**. **Analysis of Stator Iron Loss in Permanent Magnet Synchronous Motor Under Rotating Magnetization Based on Field-Oriented Control.** *H. Shi*[1,2], Y. Li[1,2], J. Yin[1,2] and S. Yue[1,2] *1. Hebei University of Technology, State Key Laboratory of Reliability and Intelligence of Electrical Equipment, Tianjin, China; 2. Hebei University of Technology, Hebei Key Laboratory of Equipment and Technology Demonstration of Flexible DC Transmission, Tianjin, China*

**VP3-06**. **Optimization of the Magnetic Field of the Main and Auxiliary Poles of a Disc Motor by Analytical Method.** *J. Wang*[1], Z. Xu[1], Y. Liu[1], Z. Xing[1] and W. Ji[1] *1. School of Electrical Engineering, Shenyang University of Technology, Shenyang, China*

**VP3-07**. **Fast Quasi-Three-Dimensional Modeling of Double-Sided Axial Flux Permanent Magnet Machines Considering End Effect.** L. Dai[1], S. Niu[1], *J. Wen*[1], L. Xiao[1] and M. Hu[1] *1. Department of Electrical and Electronic Engineering, The Hong Kong Polytechnic University, Hong Kong, Hong Kong*

**VP3-08**. **Advanced Harmonic Interaction Modeling for Fast and Accurate Cogging Torque Calculation in Permanent Magnet Machines.** L. Dai[1], S. Niu[1], *J. Gao*[2] and S. Huang[2] *1. Department of Electrical and Electronic Engineering, The Hong Kong Polytechnic University, Hong Kong, Hong Kong; 2. Hunan University, Changsha, China*

**VP3-09**. **Three phase transmitting coil for leakage magnetic field reduction in wireless power transfer.** *D. Kim*[1], J. Cheon[1], H. Park[1] and D. Kim[1] *1. Yeungnam University, Gyeungsan-si, The Republic of Korea*

**VP3-10**. **Magnetic Field and Torque Analysis of Coaxial Magnetic Gear Considering Permeability Nonlinear in Harmonic Modeling Method.** *M. Nguyen*[1], D. Hoang[1], K. Shin[2], Y. Kim[3], A. Phung[4] and J. Choi[1] *1. Electrical Engineering, Chungnam National University, Daejeon, The Republic of Korea; 2. Electrical Engineering, Changwon National University, Changwon, The Republic of Korea; 3. Biosystem Machinery Engineering, Chungnam National University, Daejeon, The Republic of Korea; 4. Electrical Engineering, Hanoi University of Science and Technology, Hanoi, Vietnam*

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## Session VP4
## ELECTRICAL MACHINES AND POWER ELECTRONICS III
## (Poster Virtual Session)

Ahmed Hemeida, Chair
Aalto University, Helsinki, Finland

**VP4-01**. **Core Loss Separation Model Based on Static Hysteresis Loops.** *J. Li*[1], L. Zeng[2] and R. Pei[1,2] *1. School of Electrical Engineering, Shenyang University of Technology, Shenyang, China; 2. Suzhou Inn-Mag New Energy Ltd., Suzhou 215000, China, Suzhou, China*

**VP4-02**. **A Multi-Topology and Multi-Objective Optimization System for PMSM Using AutoML-Based Surrogate Models.** *J. Luo*[1], X. Zhu[1] and J. Wu[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang 212013, Zhenjiang, China*

**VP4-03**. **Effect of Different Winding Layers and Connection Method on the Electromagnetic Performance of Dual Three-Phase HSPMSG.** *Q. Fan*[1], X. Zhang[1], L. Zeng[2] and R. Pei[1,2] *1. School of Electrical Engineering, Shenyang University of Technology, Shenyang, China; 2. Suzhou Inn-Mag New Energy Ltd, Suzhou, China*

**VP4-04**. **Multi-objective Optimization Design of Built-in High-speed Permanent Magnet Synchronous Motor Based on High Silicon Steel.** *P. Meng*[1], D. Ma[1], Q. Fan[1], L. Zeng[2] and R. Pei[1,2] *1. Shenyang University of Technology, Shenyang, China; 2. Suzhou Inn-Mag New Energy Ltd, Suzhou, China*

**VP4-06**. **Air-gap Region Topology Optimization of a Hair-pin PM Motor for Electromagnetic Vibration Reduction.** *P. Zhao*[1] and X. Zhu[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, China*

**VP4-07**. **A Sensitivity-Region-Extended Robust Optimization Approach for Spoke-type Permanent Magnet Synchronous Motor.** *J. Wu*[1], X. Zhu[1] and P. Zhao[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, China*

**VP4-08**. **Automatic Design Method for Motor Topology Based on Data-Driven.** *Q. Xu*[1], S. Fang[1], X. Lin[1] and Y. Wang[1] *1. Southeast University, Nanjing, China*

**VP4-09**. **A Novel Modular Consequent-Pole PMSM with Low Rotor Losses and High-Power Factor.** X. Zheng[1], H. Lin[1] and *X. Zeng*[1] *1. School of Electrical Engineering, Southeast University, Nanjing, China*

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## Session VP5
## ELECTRICAL MACHINES AND POWER ELECTRONICS IV (Poster Virtual Session)

Anh Huynh, Chair
University of Nottingham, Nottingham, United Kingdom

**VP5-01**. **Design and Investigation of Combinatorial-Magnetic-Source Topology for a High Torque Performance Field-Modulated Permanent Magnet In-Wheel Motor.** *Y. Xie*[1], Z. Xiang[1] and Y. Zhou[1] *1. Jiangsu University, Zhen Jiang, China*

**VP5-02**. **Field-Collaborative-Modulated Design and Investigation for a High Torque Performance Permanent Magnet Vernier Machine.** *X. Wang*[1], Z. Xiang[1], Y. Zhou[1] and Y. Xie[1] *1. Jiangsu University, Zhen Jiang, China*

**VP5-03**. **Investigation of Flux Barrier Design on Flux Weakening Capability of Consequent Pole Reverse Salient PM Machines.** *Q. Zhou*[1], Y. Li[1], S. Ding[1] and J. Hang[1] *1. School of Electrical Engineering and Automation, Anhui University, Hefei, China*

**VP5-04**. **Design of Winding Connections of Permanent Magnet Synchronous Motor for Widening Speed.** Y. Du[1], *H. Yuan*[1] and F. Xiao[1] *1. Jiangsu University, Zhenjiang, China*

**VP5-05**. **Low Electromagnetic Vibration Design and Investigation of Hair-pin Dual-V-type Motor Considering Winding Magnetomotive Force.** *H. Qu*[1], L. Quan[1] and D. Fan[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang 212013, China, Zhenjiang, China*

**VP5-06**. **An Interior Permanent Magnet Synchronous Machine with Asymmetric Structure for Improving Torque Density.** *X. Liang*[1], M. Wang[1], Y. Liu[1], P. Zheng[1] and W. Li[1] *1. Harbin Institute of Technology, Harbin, China*

**VP5-07**. **A New Hybrid-excited Permanent Magnet Arc Motor with Different Permanent Magnet Arrays Exhibiting Flux-reversal Effect in Dual Stators.** *N. Chen*[1], S. Fang[1], X. Lin[1] and Z. Chen[1] *1. School of Electrical Engineering, Southeast University, Nanjing, China*

**VP5-08**. **High-Order-Harmonic Suppression Design Method with Halbach Magnetic Field Based on Multi-Objective Genetic Algorithm.** L. Yin[1], *Y. Wang*[1], R. Sun[1], L. Wu[1] and X. Xu[2] *1. State Grid Lianyungang Power Supply Company, Lianyungang, China; 2. College of Automation Nanjing University of Posts and Telecommunications, Nanjing, China*

**VP5-09**. **Motor Performance Analysis Considering the Effects of Carbon Fiber Preload Force and Rotor Centrifugal Force on Silicon Steel Characteristics.** *B. Yang*[1], Y. Li[1], C. Yan[1], L. Zeng[2] and R. Pei[1,2] *1. Shenyang University of Technology, Shenyang, China; 2. Suzhou Inn-Mag New Energy Ltd, Suzhou, China*

**VP5-10**. **Investigation of Different Pole Configurations in New Asymmetric Permanent Magnet Synchronous Reluctance Machines.** *A. Mohammadi Ajamloo*[1,2], A. Ghaheri[3], M. Ibrahim[1,2,4] and P. Sergeant[1,2] *1. Electromechanical, Systems and Metal Engineering, Ghent University, Gent, Belgium; 2. Core Lab MIRO, FlandersMake@UGent, Leuven, Belgium; 3. Department of Electrical Engineering, Shahid Beheshti University, Tehran, The Islamic Republic of Iran; 4. Department of Electrical Engineering, Kafrelshiekh University, Kafr el-Sheikh, Egypt*

**VP5-11**. **Comparative study of electromagnetic and mechanical characteristics of permanent magnet synchronous generator according to magnet mounting method.** *J. Park*[1], W. Jung[1], H. Ban[1], K. Shin[2], K. Kim[3], K. Kim[3] and J. Choi[1] *1. Chungnam National University, Daejeon, The Republic of Korea; 2. Changwon National University, Changwon, The Republic of Korea; 3. Korea Research Institute of Ships and Ocean Engineering, Daejeon, The Republic of Korea*

**VP5-12**. **Electromagnetic Field Analysis for Axial Flux Permanent Magnet Motor Based on 3-D Analytical Method.** *M. Koo*[1] and H. Shin[2] *1. Purpose Built Mobility Group, Korea Institute of Industrial Technology, Gwangju, The Republic of Korea; 2. Specialized Machinery and Robotics Group, Korea Institute of Industrial Technology, Gimje, The Republic of Korea*

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## Session VP6
## ELECTRICAL MACHINES AND POWER ELECTRONICS V
## (Poster Virtual Session)

Duc-Kien Ngo, Chair
University of Technology and Education - The University of Danang, Vinh, Vietnam

**VP6-01**. **A Phase-Decoupled Dual Three-phase Permanent Magnet Synchronous Motor Using Auxiliary Teeth.** *Q. Wu*[1], W. Li[1], L. Wang[1], L. Li[1], F. Xu[2] and J. Zhu[1] *1. Nanjing University of Science and Technology, Nanjing, China; 2. Nanjing Chenguang Group Co., Ltd., Nanjing, China*

**VP6-02**. **Flux Regulation Capability and Torque Performance Enhancement Design of a New Hybrid-Rotor-Pole Controllable Flux PM Motor.** *W. Fan*[1], X. Zhu[2], L. Xu[2] and L. Quan[2] *1. Nantong University, Nantong, China; 2. Jiangsu University, Zhenjiang, China*

**VP6-03**. **Withdrawn**

**VP6-04**. **Open-Phase Fault-Tolerant Control for Dual Three-Phase PMSMs Using PIR Controller.** Q. Wu[1], W. Li[1], *H. Li*[1] and B. Ji[1] *1. Nanjing University of Science and Technology, Nanjing, China*

**VP6-05**. **Inter-Turn Short-Circuit Fault Detection Method for DTPPMSM Based on Voltages Demodulation.** S. Li[1] and *C. Liu*[1] *1. Harbin Institute of Technology, Harbin, China*

**VP6-06**. **Analysis of a New Consequent-Pole Hybrid Excited Machine with Drum Winding.** G. Qu[1], *J. Yu*[1], Z. Li[1], Y. Liu[1] and Y. Jiang[2] *1. College of Nuclear Technology and Automation Engineering, Chengdu University of Technology, Chengdu, China; 2. College of Automation & College of Artificial Intelligence, Nanjing University of Posts and Telecommunications, Nanjing, China*

**VP6-07**. **A High-power Density Permanent Magnet Machine Featuring a Novel Lightweight Rotor with A Fin Reuse Structure.** *J. Yu*[1], J. Yang[1], Y. Jiang[1] and S. Huang[1] *1. Hunan University, Changsha, China*

**VP6-08**. **Analytical analysis and experimental verification of electromagnetic performance of slotless permanent magnet brushless motor.** *H. Li*[1], J. Yang[1], Y. Jiang[1] and S. Huang[1] *1. College of Electrical and Information Engineering, Hunan University, Changsha, China*

**VP6-09**. **Design of Pole-changing Flux Reversal PM Motor Based on PM Magnetomotive-Force Period.** *H. Chen*[1], Y. Du[1], F. Xiao[1], X. Zhu[1], Z. He[1] and Z. Chen[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, China*

**VP6-10**. **Experimental Verification of Electromagnetic Characteristic Analysis of Outer-Rotor-Type BLDC Motor Using Subdomain Method and Optimal Design Using Genetic Algorithm.** *T. Kim*[1], J. Yang[1], K. Shin[2] and J. Choi[1] *1. Chungnam National University, Daejeon, The Republic of Korea; 2. Changwon National University, Changwon, The Republic of Korea*

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## Session VP7
## ELECTRICAL MACHINES AND POWER ELECTRONICS VI
## (Poster Virtual Session)

Christopher H. T. Lee, Chair
Nanyang Technological University, Singapore, Singapore

**VP7-01**. **Mechanical Flux-Weakening Design of the Bidirectional Flux-Modulated Radial Permanent Magnet Generator for Wind Power Generation.** *Z. Dong*[1], M. Jiang[1] and S. Niu[1] *1. Department of Electrical and Electronic Engineering, The Hong Kong Polytechnic University, Hung Hom, Hong Kong*

**VP7-02**. **Withdrawn**

**VP7-03**. **High-Efficiency-Region Broadening Design and Analysis of A Variable-Leakage-Flux Permanent Magnet Motor from the Perspective of Losses Replacement.** *M. Jiang*[1], X. Zhu[2] and Z. Xiang[2] *1. Jiangsu Ocean University, Lianyungang, China; 2. Jiangsu University, Zhenjiang, China*

**VP7-04**. **Investigation on Influence of Varying Design Dimensions of AFSRM on Output Performance.** *Q. Guo*[1] and W. Zhang[1] *1. College of Electrical Engineering, Zhejiang University, Hangzhou, China*

**VP7-05**. **Torque Ripple Reduction Design Approach of Permanent Magnet Machines Based on Circumferential Pole Pair Shift.** *L. Dai*[1], S. Niu[1], J. Gao[2] and S. Huang[2] *1. Department of Electrical and Electronic Engineering, The Hong Kong Polytechnic University, Hong Kong, Hong Kong; 2. Hunan University, Changsha, China*

**VP7-06**. **Design and Optimization of Torque and Loss Characteristics for a Permanent Magnet In-Wheel Motor Considering Dominant Airgap Harmonic.** *J. Ren*[1], L. Quan[1] and Z. Xiang[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, China*

**VP7-07**. **A Flywheel Energy Storage System with Double High-Strength Steel Rotors.** *P. Zhang*[1], J. Yang[1], Y. Jiang[1] and S. Huang[1] *1. College of Electrical and Information Engineering, Hunan university, Changsha, China*

**VP7-08**. **Study on AC Copper Loss Suppression of Permanent Magnet Flat Wire Motor Based on Flux Density Harmonic Suppression.** *X. Wang*[1], L. Quan[1] and Z. Xiang[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang 212013, Zhenjiang, China*

**VP7-09**. **A Pole-Changing Double-sided Permanent Magnet Vernier Motor.** H. Chen[1], Y. Du[1], F. Xiao[1], X. Zhu[1] and *Z. He*[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, China*

## Session VP8
# EMERGING COMPUTING SYSTEMS & MAGNETIC RECORDING (Poster Virtual Session)

Sara Majetich, Chair
Carnegie Mellon University, Pittsburgh, PA, United States

**VP8-01**. **Exploring the energy efficiency of MRAM-based Computing-in-Memory for DNN training.** *S. Zhou*[1] and Y. Jiang[1] *1. Jiangnan University, Wuxi, China*

**VP8-03**. **Experimental Demonstration of Reliable Probabilistic Switching in SOT-MRAM.** *C. Fu*[1], Z. Liu[1], J. Liu[1], S. Lu[1], H. Zhang[1], W. Li[1], J. Lu[1] and S. Peng[1] *1. Fert Beijing Institute School of Integrated Circuit Science and Engineering, Beihang University, Beijing, China*

**VP8-04**. **Magnetization Transition in Dual-Layer Heat-Assisted Magnetic Recording.** *Y. Jian*[1], V. Lomakin[2], K. Luo[1] and J. Chen[1] *1. Huazhong University of Science and Technology, Wuhan, China; 2. University of California San Diego, La Jolla, CA, United States*

**VP8-05**. **A Study on Applying GA for Performance Improvement of SP Decoder in SMR.** *M. Nishikawa*[1], Y. Nakamura[1], Y. Kanai[2] and Y. Okamoto[1] *1. Matsuyama, Japan; 2. Niigata Institute of Technology, Kashiwazaki, Japan*

**VP8-06**. **Time dependence of signal-to-noise ratio for recording media designed for microwave-assisted magnetic recording.** *T. Tanaka*[1], S. Onaka[1], S. Kashiwagi[1], X. Ya[2] and Y. Kanai[3] *1. ISEE, Kyushu University, Fukuoka, Japan; 2. Artificial Intelligence and Big Data College, Chongqing College of Electronic Engineering, Chongqing, China; 3. Department of Engineering, Niigata Institute of Technology, Kashiwazaki, Japan*

**VP8-07**. **Reynolds Number in Electrodynamics.** *Y. Lunin*[1] *1. retired, retired, Kherson, Ukraine*

**VP8-08**. **Binary neural networks with giant conductance changes in $Co_2MnSi/MgO/Co_2MnSi$ magnetic tunnel junctions.** R. Kusunose[1], *T. Marukame*[1] and T. Uemura[1] *1. Hokkaido University, Sapporo, Japan*

**VP8-09**. **Transient Magnetic Field Optimization for Stable Entanglement in Spin Dimers.** *J. Wang*[1] and J. Krause[2] *1. University of Michigan, Northville, MI, United States; 2. Northville High School, Northville, MI, United States*

## Session VP9
# HARD MAGNETS
# (Poster Virtual Session)

H. Sepehri-Amin, Chair
National Institute for Materials Science (NIMS), Tsukuba, Japan

**VP9-01**. **Composition Design of Sintered $Sm_2Co_{17}$-type Magnets with High Magnetic Properties and Remanence Temperature Stability.** *Z. Long*[1], C. Zhang[2], Y. Teng[3], C. Ling[1], Y. Kang[1], B. Zhang[2], H. Zhang[1], Y. Li[1] and M. Yue[1] *1. College of Materials Science and Engineering, Beijing University of Technology, Beijing, China; 2. Hangzhou Kede Magnetic Components Co., Ltd, Hangzhou, China; 3. Guangdong Ocean University, Yangjiang, China*

**VP9-02**. **Adjusting initial mixing and calcination processes to prepare high-performance strontium ferrite magnets.** H. Muhammad[1], *Y. Li*[1], H. Zhang[1], L. Rongming[2] and M. Yue[1] *1. Beijing University of Technology, Beijing, China; 2. BGRIMM Technology Group Co Ltd, Beijing, China*

**VP9-03**. **Magnetic properties, interaction and magnetic hardening of nanocrystalline $PrCo_5$/NdFeB hybrid magnets.** J. Zuo[1], *W. Lu*[1], Y. Bo[1], C. Li[1], M. Zhang[1], Y. Liu[1], S. Bai[1], F. Liu[1] and Y. Li[2] *1. School of Science, Inner Mongolia University of Science and Technology, Baotou, China; 2. Instrumental Analysis Center, Inner Mongolia University of Science and Technology, Baotou, China*

**VP9-04**. **Magnetic properties in bulk nanocrystalline $Nd_{1.8}Fe_{14}B$/$PrCo_5$ magnet prepared by hot deformation.** *J. Zuo*[1], W. Lu[1], Y. Bo[1], C. Li[1], M. Zhang[1] and Y. Li[1] *1. School of Science, Inner Mongolia University of Science and Technology, Baotou, China*

**VP9-05**. **Magnetic properties of Fe-Pt/Pr-Fe-B/Fe-Pt tri-layered thin sheet magnets.** *K. Okamura*[1], A. Yamashita[1], T. Yanai[1], C. Qi[2], K. Nagai[2], T. Shinshi[2], H. Fukunaga[1] and M. Nakano[1] *1. Nagasaki university, Nagasaki, Japan; 2. Tokyo Institute of Technology, Yokohama, Japan*

**VP9-06**. **Ba-substituted Sr hexaferrites for microwave absorber application: Structural & magnetic properties.** *S. Kaushik*[1], M. Dabla[1], M. Sharma[1,2] and B.K. Kuanr[1] *1. Special Centre for Nanoscience, Jawaharlal Nehru University, New Delhi, India; 2. Department of Physics, Deshbandhu College, New Delhi, India*

**VP9-07**. **Fe-Pt films prepared from plating baths containing glycine as a complexing agent.** *Y. Yamaguchi*[1], N. Ogushi[1], A. Hamakawa[1], D. Fukushima[1], T. Yanai[1], A. Yamashita[1], M. Nakano[1] and H. Fukunaga[1] *1. Nagasaki University, Nagasaki, Japan*

**VP9-08**. **Magnetic properties of $Sm(Fe,Ga)_7C$ melt-spun ribbons.** *T. Saito*[1] and D. Nishio-Hamane[2] *1. Chiba Institute of Technology, Narashino, Japan; 2. The University of Tokyo, Kashiwa, Japan*

## Session VP10
# HIGH SPEED MACHINES (Poster Virtual Session)

Kenji Nakamura, Chair
Tohoku University, Sendai, Japan

**VP10-01**. **Hybrid Surrogate Model-Based Multidisciplinary Optimization on High Speed Permanent Magnet Synchronous Motor Facilitating Rotor Design.** *Y. Liu*[1], F. Zhang[1] and X. Luo[1] *1. School of Electrical Engineering, Shenyang University of Technology, Shenyang, China*

**VP10-02**. **Electromagnetic Heat Flow Coupling Optimization of High Speed Permanent Magnet Motor Based on Deep Neural Network.** *X. Luo*[1] and F. Zhang[1] *1. Shenyang University of Technology, ShenYang, China*

**VP10-03**. **Rotor Stress Analysis of High-Speed Permanent Magnet Machines Considering Adhesive Debonding.** *Y. Pan*[1], J. Yang[1], Y. Jiang[1] and S. Huang[1] *1. College of Electrical and Information Engineering, Hunan University, Changsha, China*

**VP10-04**. **Analysis and Verification of Motor Performance Based on Local Carburizing of Rotor.** *Y. Li*[1], C. Sun[2], C. Yan[1], W. Li[1], L. Zeng[3] and R. Pei[1,3] *1. Shenyang University of Technology, Shenyang, China; 2. Technology Center of Angang Steel Company Limited, Anshan, China; 3. Suzhou Inn-Mag New Energy Ltd., Suzhou, China*

**VP10-05**. **Performance Study of High-Speed Motors Based on the Forming Transposition Winding Method.** *S. Wang*[1], L. Zhang[1], J. Li[1], Y. Li[1], Z. Li[1], R. Pei[1,2] and L. Zeng[2] *1. Shenyang University of Technology, Shenyang, China; 2. Suzhou Inn-Mag New Energy Ltd, Suzhou, China*

**VP10-06**. **Design of a High-Speed Solid-Rotor Induction Motor with Resonant Winding.** *L. Xiao*[1], S. Niu[1] and M. Jiang[1] *1. Department of Electrical and Electronic Engineering, The Hong Kong Polytechnic University, Hong Kong, China*

**VP10-07**. **Exploring the Application of High Conductivity Graphene-copper Composites for High Speed Motors.** *J. Li*[1], Y. Li[1], S. Wang[1], R. Pei[1,2] and Y. An[1] *1. Shenyang University of Technology, Shenyang, China; 2. Suzhou Inn-Mag New Energy Ltd, Suzhou, China*

**VP10-08**. **Optimal Design of Rotor Bar in Squirrel-Cage Induction Motor according to Rotor Bar Angle.** *H. Ban*[1], S. Eom[1], K. Yu[1], J. Park[1], J. Jang[1], K. Shin[2] and J. Choi[1] *1. Electrical Engineering, Chungnam National University, Daejeon, The Republic of Korea; 2. Electrical Engineering, Changwon National University, Changwon, The Republic of Korea*

**VP10-11**. **Quarter Sub-Harmonic-Based Self-Excited Brushless Wound Field Synchronous Machine Using Three-Layer Winding Configuration.** *S. Bukhari*[1] and P. Rasilo[1] *1. Electrical Engineering, Tampere University, Tampere, Finland*

**VP10-12**. **Quarter Sub-Harmonic-Based Self-Excited Brushless Wound Rotor Synchronous Machine Topology.** *S. Bukhari*[1] and P. Rasilo[1] *1. Electrical Engineering, Tampere University, Tampere, Finland*

**VP10-13**. **High-Efficient Self-Excited Brushless Wound Rotor Synchronous Machine Topology.** *S. Bukhari*[1] and P. Rasilo[1] *1. Electrical Engineering, Tampere University, Tampere, Finland*

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## Session VP11
## MAGNETIC ASPECTS RELATED TO ELECTROMECHANICAL CONVERSION, TRANSFORMERS AND INDUCTORS (Poster Virtual Session)

Yacine Amara, Chair
Université Le Havre Normandie, Le Havre, France

**VP11-01**. **A novel method for eliminating residual flux in transformers using composite voltage.** *Y. Ren*[1], Y. Wang[1] and C. Liu[1] *1. Hebei University of Technology, Tianjin, China*

**VP11-02**. **Using Solenoid Coils to Enhance the Anti-offset Capability of the Bipolar Coil in Wireless Power Transfer Systems.** *R. Xie*[1], W. Pan[1], X. Chen[1], X. Mao[1] and Y. Zhang[1] *1. Fuzhou University, Fuzhou, China*

**VP11-03**. **The Analytical Calculation Model for Litz Wire Winding Loss in High-Power High-Frequency Transformers.** *X. Li*[1,2] and Y. Li[1] *1. Hebei University of Technology, Tianjin, China; 2. The State Key Lab of Reliability and Intelligence of Electrical Equipment, Tianjin, China*

**VP11-04**. **The Influence of Different Slot Permanent Magnet Magnetization Directions on the Power Density Enhancement of Transverse Flux Linear Generator.** *M. Chen*[1,2], L. Huang[2], G. Meng[1], T. Xia[1] and Y. Li[2] *1. Smart Grid Research Institute, Nanjing Institute of Technology, Nanjing, China; 2. School of Electrical Engineering, Southeast University, Nanjing, China*

**VP11-05**. **Design and Analysis of a Dual-PM Excited Permanent Magnet Arc Motor With Staggered Rotor Configuration.** *K. Wei*[1], Z. Pan[1], J. Zhao[1] and J. Cai[1] *1. School of Electrical Engineering and Automation, Hefei University of Technology, Hefei, China*

**VP11-06**. **Analysis of Receiving Coil Turns and Simplified Receiving Coil Configuration Effects on Inductive Angular Position Sensor Performance.** *D. Xu*[1], Y. Zhao[1], X. Wang[1], F. Zeng[2] and S. Hwang[3] *1. School of Mechatronic Engineering and Automation, Shanghai University, Shanghai, China; 2. Shanghai Zenidrive Technology Co., Shanghai, China; 3. School of Mechanical Engineering, Pusan National University, Busan, The Republic of Korea*

**VP11-08**. **Research on Radial Electromagnetic Force of FESS Hybrid Maglev Bearing.** A. Zhongliang[1], *Y. Haoze*[1], G. Jun[1], Z. Ting[1] and L. Xiaojie[1] *1. Shenyang University of Technology, Shen Yang, China*

**VP11-09**. **Space-Time Simulation of Fault Current Limiters Involving Cores Exhibiting Hysteresis.** *A.A. Adly*[1,2] *1. Egypt-Japan University of Science and Technology (E-JUST), Alexandria, Egypt; 2. Elect. Power Engineering, Cairo University, Giza, Egypt*

**VP11-10**. **Performance of Oriented Si-steel and Fe-Based Amorphous Alloy Core Transformers under DC Bias.** *M. Zou*[1], M. Yang[1], T. Tang[1], L. Wu[1] and J. Si[1] *1. Chongqing University of Posts and Telecommunications, Chongqing, China*

**VP11-11**. Now GV-01 **A novel composite soft magnetic material based three-phase saturated core fault current limiter.** *J.L. Liu*[1,2], J. Yuan[1,2] and J. Wu[3] *1. School of Electrical Engineering and Automation, Wuhan Univerisity, Wuhan City, China; 2. State Key Laboratory of Power Grid Environmental Protection, Wuhan University, Wuhan City, China; 3. Central China Branch of State Grid Corporation of China, Wuhan City, China*

**VP11-12**. **Design and Implementation of Fixed-bias Flux 3-Phase Magnetic Bearing.** *S. Noh*[1], J. Park[1], D. Lee[2] and H. Cho[1,2] *1. Convergence System Engineering, Chungnam National University, Daejeon, The Republic of Korea; 2. Electrical, Electronics, and Communication Engineering Education, Chungnam National University, Daejeon, The Republic of Korea*

**VP11-13**. **Study on the performance regulation characteristics of orthogonal controllable reactors considering different magnetic materials.** J. Yuan[1,2], *J. Hou*[1,2], H. Zhou[1,2], X. Li[1,2] and G. Ma[1,2,3] *1. State Key Laboratory of Power Grid Environmental Protection, Wuhan University, Wuhan, China; 2. School of Electrical Engineering and Automation, Wuhan University, Wuhan, China; 3. Department of Electrical and Electronic Engineering, The Hong Kong Polytechnic University, Hong Kong, China*

## Session VP12
# MAGNETIC TEXTURES AND DYNAMICS: EXPERIMENTAL DETECTION AND MODELING (Poster Virtual Session)

Jonathan Leliaert, Co-Chair
Ghent University, Ghent, Belgium
Lucas Perez, Co-Chair
Universidad Complutense de Madrid, Madrid, Spain

**VP12-01**. **In-plane magnetic field dependence of torque exerted on a domain wall in Pd/$Co_2$MnGa.** *T. Koyama*[1], Y. Nishioka[1], T. Uemura[1] and M. Yamanouchi[1] *1. Graduate School of Information Science and Technology, Hokkaido University, Sapporo City, Japan*

**VP12-02**. **Thermal stability of skyrmions in polycrystalline thin film.** *S. Onaka*[1], T. Tanaka[1], S. Kashiwagi[1] and X. Ya[2] *1. ISEE, Kyushu University, Fukuoka, Japan; 2. Artificial Intelligence and Big Data College, Chongqing College of Electronic Engineering, Chongqing, China*

**VP12-03**. **Excitation Modes for Spin Waves in a Two-dimensional Magnetic Vortex Lattice.** *P. Bhattacharjee*[1] and S. Barman[1,2] *1. Department of Basic Sciences and Humanities, Institute of Engineering & Management, Kolkata, India; 2. University of Engineering & Management, Kolkata, India*

**VP12-04**. **Constriction Effects on Magnetic Skyrmion Behavior in Magnetic Nanowires.** *W.Z. Al Saidi*[1] and R. Sbiaa[1] *1. Physics, Sultan Qaboos University, Muscat, Oman*

**VP12-05**. **Simulation on Spin-Orbit Torque Switching with Stray Field Assistance.** *J. Chen*[1], J. Liu[1], Z. Liu[1], W. Li[1], J. Lu[1] and S. Peng[1] *1. Fert Beijing Institute, School of Integrated Circuit Science and Engineering, BeihangUniversity, Beijing, China*

**VP12-06**. **Incorporation of Anisotropic Vector Hysteresis Model into FEA Based on TEAM Problem 32.** *R. Chen*[1], F. Martin[2], S. Yue[3], Y. Li[3] and Y. Li[3] *1. Department of Electrical Engineering, Tsinghua University, Beijing, China; 2. Department of Electrical Engineering and Automation, Aalto University, Espoo, Finland; 3. Hebei University of Technology, Tianjin, China*

**VP12-07**. **Data-Driven Neural Network Prediction of Hysteresis Behavior of Soft Magnetic Materials under Physical Constraints.** *Y. Qin*[1], Z. Li[1], Y. Li[1], R. Pei[1,2] and L. Zeng[2] *1. Department of Electric Engineering, Shenyang University of Technology, Shenyang, China; 2. Suzhou Inn-Mag New Energy Ltd., Suzhou, China*

**VP12-08**. **Simulation of ultrafast magnetization dynamics in ferromagnetic nanoparticles.** P. Steblinski[1], T. Blachowicz[1,2] and *A. Ehrmann*[1,3] *1. Virtual Institute of Applied Research on Advanced Materials (VIARAM), Bobolin, Poland; 2. Institute of Physics—Center for Science and Education, Silesian University of Technology, Gliwice, Poland; 3. Faculty of Engineering and Mathematics, Bielefeld University of Applied Sciences and Arts, Bielefeld, Germany*

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## Session VP13
## MAGNETOELECTRIC MATERIALS AND PHENOMENA & ENERGY HARVESTING AND VIBRATION ANALYSIS (Poster Virtual Session)

Raghav Sharma, Chair
Indian Institute of Technology Ropar, Delhi, India

**VP13-01**. **Voltage-controlled magnetic anisotropy gradient-driven skyrmion-based half-adder and full-adder.** *S. Sara*[1], C. Murapaka[1] and A. Haldar[2] *1. Physics, IITH, Hyderabad, India; 2. MSME, IITH, Hyderabad, India*

**VP13-02**. **Strain induced multiferroicity in $Co_{3-x}Sb_xO_4$ (x=0, 0.1 and 0.2) thin films.** *J. Rahman*[1], V. Gowtham[2], S. Murugan[2], N. Rajeevan[1] and R. Ramadurai[2] *1. Department of Physics, Farook Autonomous College, University of Calicut, Calicut, India; 2. Material Science and Metallurgical Engineering, IIT, Hyderabad, Hyderabad, India*

**VP13-03**. **Investigation of structural and magnetic properties of $MnTa_2O_6$.** *M. Anas*[1] and P. Kharel[1] *1. Chemistry, Biochemistry and Physics, South Dakota State University, Brookings, SD, United States*

**VP13-04**. **Calculation of Vibration in Transformer Laminated Cores under DC Bias Based on Electric-magnetic-mechanical Coupling Model.** *H. Li*[1], X. Zhao[1], Y. Yu[1], R. Li[1], L. Liu[2] and Z. Du[2] *1. Department of Electrical Engineering, North China Electric Power University, Baoding, China; 2. Hebei Provincial Key Laboratory of Electromagnetic and Structural Performance of Power Transmission and Transformation Equipment, Baoding, China*

**VP13-05**. **Vibration and Noise Measurement of High-frequency Transformer Cores with Different Shapes Under Non-Sinusoidal Excitation.** Y. Li[1], *X. Liu*[1], Y. Dou[2], T. Chen[1] and Z. Dong[1] *1. State Key Laboratory of Reliability and Intelligence of Electrical Equipment, Tianjin, China; 2. Zhejiang University–University of Illinois at Urbana-Champaign Institute, Zhejiang University, Haining, China*

**VP13-06**. **Optimizing Wave-Driven Electromagnetic Energy Harvesters: An Evaluation of Magnetic Configurations.** *J. Park*[1], T. Martinez[1], S. Jordon[1], Y. Choi[1], N. Wereley[1] and A. Flatau[1] *1. University of Maryland, College Park, MD, United States*

**VP13-07**. **Analyzing Electrical Transport Phenomena in $NdMn_{0.3}Co_{0.7}O_3$.** *F.H. Bhat*[1], G. Anjum[2] and A. Jan[1] *1. Physics, IUST, Kashmir, Awantipora, India; 2. Physics, SAM Degree College, Budgam, J&K, Budgam, India*

**VP13-08**. **Magneto-elastic Properties of Samarium Doped Cobalt-Nickel Ferrite Ceramics Obtained by Spark Plasma Sintering.** *M. Ibuado*[1], C. Santillan[1], J. Saenz[1], M. Grijalva-Castillo[1] and J. Matutes[1] *1. Materials physics, CIMAV, Chihuahua, Mexico*

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## Session VP14
## MATERIALS FOR SPINTRONICS & MAGNETIZATION DYNAMICS (Poster Virtual Session)

Kevin Garello, Chair
SPINTEC, Grenoble, France

**VP14-01**. **$L1_0$ FeAu perpendicular magnetic tunnel junction: A DFT + NEGF study.** *R.R. Sheikh*[1] and R.K. Ghosh[1,2] *1. Electronics and Communication Engineering, Indraprastha Institute of Information Technology Delhi, New Delhi, India; 2. Center for Quantum Technologies, Indraprastha Institute of Information Technology Delhi, New Delhi, India*

**VP14-02**. **Electric Field Control of Spin in Monolayer $WS_2/WTe_2$ Field Effect Transistors:- A DFT+NEGF Study.** A. Shah[1] and *A. Kashyap*[2] *1. SCEE, IIT Mandi, Mandi, India; 2. SPS, IIT Mandi, Mandi, India*

**VP14-03**. **Magnetic and electrical transport properties of a prospective altermagnet $NdB_2C_2$.** M. Anas[1] and *P. Kharel*[1] *1. Chemistry, Biochemistry and Physics, South Dakota State University, Brookings, SD, United States*

**VP14-04**. **High temperature ferrimagnetic semiconductors by spin-dependent doping in high temperature antiferromagnets.** *J. Li*[1], G. Su[1] and B. Gu[1] *1. University of Chinese Academy of Sciences, Beijing, China*

**VP14-05**. **Néel-order spin-orbit torques in CuMnAs from first principles ballistic transport.** *M.T. Stamenova*[1] and A. Droghetti[2] *1. School of Physics and CRANN, Trinity College Dublin, Dublin, Ireland; 2. CNR-SPIN Research unit, d'Annunzio University, Chieti, Chieti, Italy*

**VP14-06**. **Tailoring $LaMn_{1-x}Co_xO_3$ Thin Film Properties Using Swift Heavy Ion Irradiation.** *A. Jan*[1] *1. Physics, Islamic University of Science and Technology, Kashmir, Pulwama, India*

**VP14-07**. **Spin dynamics of room temperature van der Waals (vdW) ferromagnets $Fe_{4.8}Ni_{0.2}GeTe_2$.** *P. Kumar*[1,2], S. Patnaik[1] and B.K. Kuanr[2] *1. School of Physical Sciences, Jawaharlal Nehru University, New Delhi, India; 2. Special Centre for Nanoscience, Jawaharlal Nehru University, New Delhi, India*

**VP14-08**. **A study of spin wave properties of YIG based microstrip coupled line geometry.** *S. Kumar*[1] and B.K. Kuanr[1] *1. SCNS JNU, Jawaharlal Nehru University, New Delhi, India*

**VP14-09**. **Reversible Sign Change in the Anomalous Hall Effect Induced by Strain.** *T. Morita*[1], T. Koyama[1,2,4] and D. Chiba[1,2,3] *1. SANKEN, Osaka University, Ibaraki, Japan; 2. CSRN, Osaka University, Toyonaka, Japan; 3. SRIS, Tohoku University, Sendai, Japan; 4. PRESTO, JST, Kawaguchi, Japan*

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## Session VP15
## MICROSCOPY, IMAGING, AND MAGNETIC CHARACTERIZATION & STRUCTURED MATERIALS (Poster Virtual Session)

Robert Hicken, Chair
University of Exeter, Exeter, United Kingdom

**VP15-01**. **Shortening of Pre-data Acquisition Time in Magnetic Particle Imaging Using AC Susceptometry.** *T. Sasayama*[1], N. Futagawa[1] and T. Yoshida[1] *1. Kyushu University, Fukuoka, Japan*

**VP15-03**. **Direct Magnetic Field Compensation with Multichannel Digital-to-Analog (D/A) Converter in Magnetic Particle Imaging.** *T. Matsushita*[1], T. Sasayama[1] and T. Yoshida[1] *1. Department of Electrical and Electronic Engineering, Kyushu University, Fukuoka, Japan*

**VP15-04**. **A novel EUV x-ray polarimeter for single-pulse experiments at MagneDyn@FERMI.** A. Caretta[1], S. Laterza[1] and *M. Malvestuto*[1] *1. elettra-sincrotrone trieste, Trieste, Italy*

**VP15-05**. **Magnetic structure of rare earth intermetallic compound $Er_6MnTe_2$: neutron diffraction and magnetization study.** *R. Nirmala*[1], G. Jangam[2], T. A[2], A.V. Knotko[3,4], V. Yapaskurt[5] and A. Morozkin[3] *1. Physics, Indian Institute of Technology Madras, Chennai, India; 2. Tata Institute of Fundamental Research, Mumbai, India; 3. Department of Chemistry, Moscow State University, Moscow, Russian Federation; 4. Faculty of Materials Science, Moscow State University, Moscow, Russian Federation; 5. Department of Petrology, Moscow State University, Moscow, Russian Federation*

**VP15-06**. **Improving Reciprocating SQUID Magnetometry by Explicit Response Linearization.** *P.S. Stamenov*[1] *1. School of Physics and CRANN, Trinity College, Dublin, Ireland*

**VP15-07**. **Wide temperature range magnetocaloric effect with $Gd_{1-x}Pr_xNi_{2-y}Co_y$ alloys.** R. Duarte de Melo[1], C.L. Rodrigues[1], D.M. Garcia[1] and *A. Gomes*[1] *1. Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil*

**VP15-08**. **Magnetocaloric effect for pyramid and flower-shaped CoO nanoparticles.** Y. Hotta[1], T. Tachibana[1] and *S. Kobayashi*[1] *1. Iwate University, Morioka, Japan*

**VP15-09**. **Enhanced High-Energy Products in Core@Shell Nanoparticles of Hard@Soft Magnetic Materials.** l.F. Silva[1], *L.L. Oliveira*[1], M.S. Nunes[2], A.L. Dantas[1,2] and A.S. Carriço[3] *1. Department of Science and Technology, State University of Rio Grande do Norte, Natal, Brazil; 2. Department of Physics, State University of Rio Grande do Norte, Mossoro, Brazil; 3. Department of Physics, Federal University of Rio Grande do Norte, Natal, Brazil*

**VP15-10**. **Experimental Investigation of Core-Shell Tungsten Nanoclusters for Radiation Protection.** *X. Tao*[1,2], X. Sun[1], F. Liu[2], B. Wang[1] and S. Peng[1] *1. Fert Beijing Institute, School of Integrated Circuit Science and Engineering, Beihang University, Beijing, China; 2. Hefei Innovation Research Institute of Beihang University, Anhui Hefei, China*

**VP15-11**. **Size Dependence of Magneto-Optical Scattering by Superparamagnetic Nanoparticles and its Connection to Aggregation.** *M. Syed*[1], S. Reza[1], H. Lu[1] and W. Amory[1] *1. Physics & Optical Engineering, Rose-Hulman Institute of Technology, Terre Haute, IN, United States*

## Session VP16
# SENSORS AND APPLICATIONS (Poster Virtual Session)

Prasanth Velvaluri, Chair
Northeastern University, Boston, MA, United States

**VP16-01**. **Magnetotransport Properties of Tunneling Magnetoresistance Devices with CoFeBSi, CoFeB/CoFeBSi and CoFeB/Ru/CoFeBSi Free Layers.** *P. Las*[1], F. Matos[2], R. Macedo[2], S. Cardoso de Freitas[2], P. Freitas[2] and P. Wisniowski[1] *1. Institute of Electronics, AGH University of Krakow, Krakow, Poland; 2. INESC-MN, Lisbon, Portugal*

**VP16-02**. **Analysis of Inductive Angular Position Sensor with the Characteristic of Annular Sector Coils.** *D. Xu*[1], S. Fang[1], F. Zeng[2] and S. Hwang[3] *1. School of Mechatronic Engineering and Automation, Shanghai University, Shanghai, China; 2. Shanghai Zenidrive Technology Co., Shanghai, China; 3. School of Mechanical Engineering, Pusan National University, Busan, The Republic of Korea*

**VP16-03**. **Research on magnetic interference compensation based on improved ellipsoidal fitting method.** *B. Fan*[1], J. Qiu[1], C. Cao[1], S. Huang[1] and X. Zeng[1] *1. College of Optoelectronic Engineering, Chongqing University, Chongqing, China*

**VP16-04**. **Analysis of Radial Eccentricity and Axial Misalignment Effects on Inductive Angular Position Sensor Performance.** *D. Xu*[1], Y. Zhao[1], X. Wang[1], F. Zeng[2] and S. Hwang[3] *1. School of Mechatronic Engineering and Automation, Shanghai University, Shanghai, China; 2. Shanghai Zenidrive Technology Co., Shanghai, China; 3. School of Mechanical Engineering, Pusan National University, Busan, The Republic of Korea*

**VP16-05**. **Implementation of ENG Metasurfaces for 5G Antenna Systems.** A. Eroglu[1] and *T. Islam*[2] *1. ECE, University of Massachusetts Boston, Boston, MA, United States; 2. ECE, North Carolina A&T State U, Greensboro, NC, United States*

**VP16-06**. **Modeling Non-Linear and Non-Stationary Magnetic Signals: An Enhanced Signal Processing Strategy for Wind Time Series Analysis.** *A. Swain*[1], I. Hossain[1], C. Liu[2] and P. Pong[1] *1. Electrical and Computer Engineering, New Jersey Institute of Technology, Newark, NJ, United States; 2. School of Energy and Environment, City University of Hong Kong, Kowloon Tong, Hong Kong*

**VP16-07**. **Magnetic Anomaly Target Motion State Detection Based on 3D Convolutional Neural Network.** *H. Sun*[1], J. Qiu[1], S. Huang[1], C. Cao[1] and X. Zeng[1] *1. Chongqing University, Chongqing, China*

**VP16-08**. **Multi-Axial Magnetic Sensing Using Co/Pt Double-Hall Superlattice SOT Structure: Experimental and Simulation.** Y. Huang[1], A. Fathy[1], L. Chang[2] and *Y. Tseng*[1] *1. National Yang Ming Chiao Tung University, Hsinchu, Taiwan; 2. Industrial Technology Research Institute, Hsinchu, Taiwan*

**VP16-09**. **High-Sensitivity Magnetoresistive Sensor with Optimized Orthogonal Exchange Bias for Low-Field Measurement.** Y. Yang[1], *S. Lamichhane*[1], C. Chen[2], A. Sokolov[3], X. Yin[1,3], Y. Liu[1,3], J. Hong[4], L. Chang[5] and S. Liou[1,3] *1. Department of Physics and Astronomy, University of Nebraska-Lincoln, Lincoln, NE, United States; 2. Department of Physics, National Central University, Taoyuan City, Taiwan; 3. Nebraska Center for Materials and Nanoscience, University of Nebraska-Lincoln, Lincoln, NE, United States; 4. Department of Physics, Tamkang University, New Taipei City, Taiwan; 5. Industrial Technology Research Institute, Hsinchu County, Taiwan*

**VP16-10**. **Temperature-Dependent Performance of Magnetic Tunnel Junction Sensors with Linear Response Across a Wide Field Range.** S. Lamichhane[1], C. Chen[2], A. Sokolov[3], X. Yin[1], Y. Liu[1], J. Hong[4], *L. Chang*[5] and S. Liou[1,3] *1. Physics & Astronomy, University of Nebraska-Lincoln, Lincoln, NE, United States; 2. Physics & Astronomy, National Central University, Taoyuan City, Taiwan; 3. Nebraska Center for Materials and Nanoscience, University of Nebraska-Lincoln, Lincoln, NE, United States; 4. Department of Physics, Tamkang University, New Taipei City, Taiwan; 5. Department Mechanical and Mechatronics Systems Research Labs, Industrial Technology Research Institute (ITRI), Hsinchu County, Taiwan*

**VP16-11**. **Microstructural Considerations on the Magnetostriction Enhancement in Dy Doped $Fe_{81}Al_{19}$ Alloys.** J. Uribe-Chavira[1], C. Santillan[1], J. Saenz[1], M. Ibuado[1], J. Matutes[1] and *M. Grijalva-Castillo*[2] *1. Centro de Investigación en Materiales Avanzados, S.C., Chihuahua, Mexico; 2. Conahcyt-Centro de Investigación en Materiales Avanzados, S.C., Chihuahua, Mexico*

**VP16-12**. **Indirect Current Feedback of Low-Frequency Signals in Rectangular Wave Eddy Current Testing of a Tunnel Magnetoresistive Sensor.** *Z. Guo*[1] and T. Sasayama[1] *1. Department of Electrical and Electronic Engineering, Kyushu University, Fukuoka, Japan*

**VP16-13**. **Dynamic Magnetization Measurement System for Soft Magnetic Materials.** Y. Chang[1], V. Doan[2], L. Bui[1,3], T. Nguyen[1] and *J. Jeng*[1] *1. Department of Mechanical Engineering, National Kaohsiung University of Science and Technology, Kaohsiung City, Taiwan; 2. Faculty of Electrical and Electronic Engineering, University of Technology and Education, The University of Da Nang, Da Nang, Vietnam; 3. Faculty of Mechanical Engineering, Hung Yen University of Technology and Education, Hung Yen, Vietnam*

## Session VP17
# SOFT MAGNETIC MATERIALS I (Poster Virtual Session)

Vinay Sharma, Chair
University of Maryland, College Park, MD, United States

**VP17-01**. **Influence of Crushing Process on the Magnetic Properties of Configurable Nanocrystalline Flake Ribbons.** *Y. Wang*[1], C. Jiang[1], J. Xiang[1], L. Mo[1], X. Wang[1] and W. Guo[1] *1. City University of Hong Kong, Kowloon, Hong Kong*

**VP17-02**. **Effects of compressive stress in thickness direction on the magnetic properties of grain-oriented electrical steel sheet.** *S. Yue*[1], C. Zhang[1], R. Chen[2], X. Li[1] and Y. Li[1] *1. Hebei University of Technology, Tianjin, China; 2. Tsinghua University, Beijing, China*

**VP17-04**. **Structure Design and Magnetic-Vibration Characteristics Analysis of Hybrid Core for High Efficiency Distribution Transformer.** Y. Li[1], *G. Han*[1], S. Yue[1], Z. Wan[1] and J. Yin[1] *1. State Key Laboratory of Reliability and Intelligence of Electrical Equipment, Hebei University of Technology, Tianjin, China*

**VP17-05**. **Analysis of Magnetic Domains Motion and Magnetic Properties of the Amorphous Sheet under the Uniaxial Stress.** Y. Li[1], *J. Li*[1], Y. Dou[2], S. Yue[1] and J. Zhou[1] *1. State Key Laboratory of Reliability and Intelligence of Electrical Equipment, Hebei University of Technology, Tianjin, China; 2. Zhejiang University–University of Illinois at Urbana-Champaign Institute, Zhejiang University, Haining 314400, Haining, China*

**VP17-06**. **Comprehensive investigation on high-frequency rotational magnetic properties of core materials for high-speed motors.** *M. Yang*[1,2], Y. Li[3,4], Z. Hu[1,2], S. Yue[3,4], J. Li[1,2], Q. Yang[5] and M. Ouyang[1,2] *1. State Key Laboratory of Automotive Safety and Energy, Tsinghua University, Beijing, China; 2. School of Vehicle and Mobility, Tsinghua University, Beijing, China; 3. State Key Laboratory of Reliability and Intelligence of Electrical Equipment, Hebei University of Technology, Tianjin, China; 4. Hebei Key Laboratory of Equipment and Technology Demonstration of Flexible DC Transmission, Hebei University of Technology, Tianjin, China; 5. School of Electrical Engineering and Automation, Tianjin University of Technology, Tianjin, China*

**VP17-07**. **Research on the characteristics and suppression techniques for vibration and noise in amorphous three-dimensional wound core transformer.** *Z. Dong*[1], Y. Li[1], S. Yue[1] and X. Liu[1] *1. State Key Laboratory of Reliability and Intelligence of Electrical Equipment, Hebei University of Technology, Tianjin, China*

**VP17-08**. **Phase transition and magnetic properties of $LaMnO_3$-$Mn_3O_4$ composites.** *A. Dhakal*[1], S. Mishra[1], J. Mohapatra[2] and P. Joshi[2] *1. Physics and Materials Science, The University of Memphis, Memphis, TN, United States; 2. The University of Texas at Arlington, Arlington, TX, United States*

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## Session VP18
## SOFT MAGNETIC MATERIALS II
## (Poster Virtual Session)

Ju-Young Yoon, Chair
Tohoku University, Sendai, Japan

**VP18-01**. **Modelling of loss in amorphous ribbons with longitudinal-induced anisotropy: theory and experiments.** *O. de la Barrière*[1], C. Ragusa[2], E. Ferrara[3], A. Magni[3], F. Mazaleyrat[1] and F. Fiorillo[3] *1. CNRS, Gif-sur-Yvette, France; 2. Politecnico di Torino, Torino, Italy; 3. INRIM, Torino, Italy*

**VP18-02**. **Investigation of magnetic properties of high permeability materials at 77.15K temperature.** *J. Ge*[1], J. Li[1] and R. Pei[1] *1. Shenyang University of Technology, Shenyang, China*

**VP18-03**. **Magnetic Anisotropy Investigation of Grain-Oriented Electrical Steels for a Wide Range of Temperatures.** *Z. Li*[1], Y. Qin[1], X. Liu[1], Y. Li[1], R. Pei[1,2] and L. Zeng[2] *1. Department of Electric Engineering, Shenyang University of Technology, Shenyang, China; 2. Suzhou Inn-Mag New Energy Ltd., Suzhou, China*

**VP18-04**. **Magnetic Characteristics and Losses of High-Silicon Steel Core for High-Speed Motors in Ultra-low Temperature Environment.** *D. Ma*[1], J. Ge[1] and R. Pei[1] *1. Shenyang University of Technology, Shenyang, China*

**VP18-05**. **Giant Magnetoimpedance and Susceptibility by Magneto-optical Kerr Effect in Amorphous CoFeSiB Ribbons.** F.A. Albuquerque[1], V. Bellintani[1], J.H. Severo[2], A.D. Santos[2] and *C.S. MARTINS*[1] *1. Physics Laboratory, Faculty of Technology of São Paulo, São Paulo, Brazil; 2. Institute of Physics, University of São Paulo, São Paulo, Brazil*

**VP18-06**. **Temperature dependent structural, magnetic and microwave properties of hexagonal $BaFe_{12}O_{19}/Ba_2Co_2Fe_{12}O_{22}$ composite.** *S. Singh*[1], P. Sharma[2] and B. Chudasama[1,3] *1. Department of Physics & Material Sciences, Thapar Institute of Engineering & Technology, Patiala, India; 2. IILM University, Greater Noida, India; 3. TIET-VT Centre for Excellence in Emerging Materials, Thapar Institute of Engineering & Technology, Patiala, India*

**VP18-07**. **Studies of The Magnetic Properties of FeSiBCCr Amorphous Alloys Fabricated by Spark Plasma Sintering.** *X. Wang*[1], Z. Lin[1,2], S. Yue[1], Q. Chi[2], X. Guo[2] and Y. Li[1] *1. State Key Laboratory of Reliability and Intelligence of Electrical Equipment, Hebei University of Technology, Tianjin, China; 2. Ningbo Magnetic Materials Application Technology Innovation Center Co., Ltd, Ningbo, China*

**VP18-08**. **Crystallographic and Magnetic Properties of Manganese Ferrites Prepared by Liquid-Nitrogen Quenching.** *S. Yoon*[1] *1. Department of Physics, Gunsan National University, Gunsan, The Republic of Korea*

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## Session VP19
## SOFT MAGNETIC MATERIALS III
## (Poster Virtual Session)

Keita Nakagawara, Chair
Tohoku University, Sendai, Japan

**VP19-01**. **Room temperature magnetodielectric studies of $Sr_{3-x}La_xCo_2Fe_{24}O_{41}$ hexaferrite.** *A. Choudhary*[1], P. Sharma[2] and B. Chudasama[1,3] *1. DPMS, Thapar Institute of Engineering & Technology, Patiala, India; 2. IILM University, Greater Noida, India; 3. TIET-VT Centre for Excellence in Emerging Materials, Thapar Institute of Engineering & Technology, Patiala, India*

**VP19-04**. **Magnetic Properties of High Permeability Alloys Considering Stress Factors.** *J. Li*[1], J. Ge[1] and R. Pei[1] *1. Shenyang University of Technology, Shenyang, China*

**VP19-05**. **Loss analysis of amorphous high-speed PMSMs considering the effect of cutting damage.** *X. Lu*[1], L. Zhang[1] and R. Pei[1] *1. Shenyang University of Technology, Shenyang, China*

**VP19-06**. **Microwave absorption properties of graphene oxide/Zn-substituted Cobalt ferrites composites.** *M. Dabla*[1], S. Kaushik[1], M. Sharma[1,2] and B.K. Kuanr[1] *1. Special Centre for Nanoscience, Jawaharlal Nehru University, New Delhi, India; 2. Department of Physics, Deshbandhu College, New Delhi, India*

**VP19-07**. **First-principles calculations of electronic and magnetic properties of Co-Ni-Fe ternary alloy.** *G.D. Demin*[1], R.D. Tikhonov[2] and N.A. Djuzhev[1] *1. R&D Center "MEMSEC", National Research University of Electronic Technology (MIET), Moscow, Russian Federation; 2. Scientific-Manufacturing Complex "Technological Centre", Moscow, Russian Federation*

**VP19-08**. **Effect of Swift Heavy Ion (SHI) Irradiation on Magnetic Properties of Soft Magnetic FeGaB Thin Film.** *B. Arun*[1], J. Rahman[2] and K. James Raju[1] *1. School of Physics, University of Hyderabad, Hyderabad, India; 2. Department of Physics, Farook Autonomous College, University of Calicut, Calicut, India*

**VP19-09**. **Improvement in magnetic properties of soft magnetic films prepared from gel electrolyte.** *K. Shiraki*[1], Y. Matsumoto[1], M. Tashiro[1], T. Yanai[1], A. Yamashita[1], M. Nakano[1] and H. Fukunaga[1] *1. Nagasaki University, Nagasaki, Japan*

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## Session VP20
## SPECIAL MACHINES AND GEARED MACHINES I (Poster Virtual Session)

Doğa Ceylan, Chair
Eindhoven University of Technology, Eindhoven, Netherlands

**VP20-01**. **Investigation of Dual-stator Flux Modulated Machines With Multiple-PM Excitation.** *Y. Meng*[1], X. Yang[1], H. Chen[1] and S. Fang[2] *1. College of Electrical Engineering and Automation, Shandong University of Science and Technology, Qingdao, China; 2. School of Electrical Engineering, Southeast University, Nanjing, China*

**VP20-02**. **Investigation of Vernier Arc Machines with IPM Rotor Structures.** Y. Meng[1], M. Yang[1], S. Fang[2], *H. Chen*[1] and N. Wu[1] *1. College of Electrical Engineering and Automation, Shandong University of Science and Technology, Qingdao, China; 2. School of Electrical Engineering, Southeast University, Nanjing, China*

**VP20-03**. **A New Asymmetric Permanent Magnet Variable Flux Memory Machine with Magnetic-Field-Shifting Effect.** W. Liu[1], C. Zhang[1], J. Chen[1], Y. Fu[1] and *J. Zhang*[1] *1. Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Science, Ningbo, China*

**VP20-04**. **Power Factor Improvement Mechanism of Dual-PM Excited Vernier Machines.** H. Chen[1], Y. Meng[1], D. Li[2], R. Qu[2] and *X. Yang*[1] *1. Shandong University of Science and Technology, Qingdao, China; 2. Huazhong University of Science and Technology, Wuhan, China*

**VP20-05**. **Topology Design and Performance Analysis of a New Arch-shaped Magnet Variable Flux Memory Machine.** *W. Liu*[1], C. Zhang[1], J. Chen[1] and Y. Fu[1] *1. Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, Ningbo, China*

**VP20-06**. **A Novel Dual Magnetically Geared Halbach Array Based Tubular Linear Permanent Magnet Generator for Wave Energy Conversion.** *N. Shrivastava*[1], S. Sampathirao[1] and B. Subudhi[1] *1. School of Electrical Sciences, Indian Institute of Technology Goa, Ponda, India*

**VP20-07**. **Design of a Novel Carbon Nanotube Based Coreless Axial Flux Motor with Heat Pipes.** *V. Basam*[1] and S. Sampathirao[1] *1. School of Electrical Sciences, Indian Institute of Technology Goa, Ponda, India*

**VP20-08**. **A High Torque Density Axial-Flux Permanent Magnet Machine with Yokeless and Segmented Armature.** *L. Dai*[1], S. Niu[1], M. Jiang[1] and W. Wenjie[1] *1. Department of Electrical and Electronic Engineering, The Hong Kong Polytechnic University, Hong Kong, Hong Kong*

**VP20-09**. **Design and Analysis of a Brushless Power Feedback PM Adjustable Speed Drive with Bilayer Wound Rotor.** *X. Zheng*[1], H. Lin[1] and Y. Li[2,3] *1. School of Electrical Engineering, Southeast University, Nanjing, China; 2. Industrial Center, Nanjing Institute of Technology, Nanjing, China; 3. Jiangsu Provincial Engineering Research Center for Bionics Control Technology and Equipment, Nanjing, China*

**VP20-10**. **Experimental Verification of Eddy Current Loss Reduction in Magnets of Flux-Modulated-type Magnetic Gears.** *E. Asahina*[1] and K. Nakamura[1] *1. Tohoku University, Sendai, Japan*

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## Session VP21
## SPECIAL MACHINES AND GEARED MACHINES II (Poster Virtual Session)

Chuanbing Rong, Chair
Ford Motor Company, Dearborn, MI, United States

**VP21-01**. **A Novel Double-sided PM Flux Modulated Machine with Hybrid Magnet Arrangement.** H. Chen[1], Y. Meng[1], D. Li[2], R. Qu[2] and *Y. Zhang*[1] *1. Shandong University of Science and Technology, Qingdao, China; 2. Huazhong University of Science and Technology, Wuhan, China*

**VP21-02**. **Bagging-GA-Driven Multi-Objective Optimization of MR Fluid Brake-Integrated PMSM Considering Brake Torque Constraint.** Y. Hu[1], *H. Lu*[1] and W. Xu[1] *1. School of Electrical Engineering, Southeast University, Nanjing, China*

**VP21-03**. **A New Asymmetric Consequent Pole Flux-Reversal Permanent Magnet Machine With DC-biased Sinusoidal Current.** Y. Meng[1], *M. Yang*[1], H. Chen[1], X. Bai[1] and S. Fang[2] *1. College of Electrical Engineering and Automation, Shandong University of Science and Technology, Qingdao, China; 2. School of Electrical Engineering, Southeast University, Nanjing, China*

**VP21-04**. **A New Double-Sided Flux Modulated Permanent Magnet Arc Motor Having Parallel Complementary Effect.** *J. Cai*[1], Z. Pan[1], J. Zhao[1], K. Wei[1] and Z. Yu[1] *1. School of Electrical Engineering and Automation, Hefei University of Technology, Hefei, China*

**VP21-05**. **Research of Asymmetric Interior Permanent Magnet Synchronous Machine Considering the Characteristics of Different Excitation Sources.** *X. Liang*[1], M. Wang[1], P. Zheng[1], Y. Liu[1] and J. Gao[1] *1. Harbin Institute of Technology, Harbin, China*

**VP21-06**. **Integration Design of MR Fluid Brake-Based External Rotor PMSM For Robotic Arm Application.** *Y. Hu*[1], W. Xu[1] and W. Zhang[1] *1. School of Electrical Engineering, Southeast University, Nanjing, China*

**VP21-07**. **A Novel Twelve-Phase Variable Magnetic Circuit Memory Machine for Rim Thrusters.** *Y. Fu*[1,2], W. Liu[1], C. Zhang[1] and J. Chen[1] *1. Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Science, Ningbo, China; 2. University of the Chinese Academy of Sciences, Beijing, China*

**VP21-08**. **Design and Analysis of a Pole-changing Machine with Multi-auxiliary-teeth Structure.** *W. Wenjie*[1], S. Niu[1] and M. Jiang[1] *1. EEE, Hong Kong Polytechnic University, Hong Kong, Hong Kong*

**VP21-09**. **Improved Flux Observer Sensorless Control of Permanent Magnet Assisted Synchronous Reluctance Motor.** *T. Tang*[1], X. Liu[1], M. Lu[1], D. Lu[2] and P. Lin[1] *1. College of Electrical and Information Engineering, Hunan University, Changsha, China; 2. Nanjing Nari-Relays Electric Co., Ltd, Nanjing, China*

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## Session VP22
## SPECIAL MACHINES AND GEARED MACHINES III (Poster Virtual Session)

Kinjal Gandha, Chair
MP Materials, Fort worth, TX, United States

**VP22-01**. **A High-Performance Flux Modulated Arc Motors with Dual-PM Excitation.** *X. Yang*[1], S. Fang[1], X. Lin[1] and Q. Xu[1] *1. Southeast University, Nanjing, China*

**VP22-02**. **Performance Analysis and Optimization of a New Torque Enhanced Permanent Magnet Arc Machine.** *X. Lin*[1], S. Fang[1] and Q. Xu[1] *1. School of Electrical Engineering, Southeast University, Nanjing, China*

**VP22-03**. **Modeling and Suppression of Torque Ripple of Direct-Drive V-Shape Permanent Magnet Motor Considering Effects of Stator Teeth and PM Shape.** D. Fan[1] and *X. Chen*[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, China*

**VP22-05**. **Low-Torque-Ripple Bi-Directional Magnetic Field Modulation PM Motor considering Magnetic Motive Force Distribution Perspective.** *D. Fan*[1], H. Tian[1] and W. Shan[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, China*

**VP22-06**. **A Novel Cylindrical Laminated Rotor for High-Speed Homopolar Inductor Machine.** *Q. Li*[1], J. Yang[1], Y. Jiang[1] and S. Huang[1] *1. College of Electrical and Information Engineering, Hunan University, Changsha, China*

**VP22-07**. **An Axial Parallel Memory Machine with DC Bias Adjustment Flux Capability.** *L. Qin*[1], H. Yang[2] and S. Fang[2] *1. Tongji University, Shanghai, China; 2. Southeast University, Nanjing, China*

**VP22-08**. **Design and Optimization of a High Torque Density Dual Permanent Magnet Excited Vernier Machine with Non-Uniformly Distributed Stator Tooth.** *A. Chen*[1], L. Quan[1], Z. Xiang[1] and D. Fan[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, China*

**VP22-09**. **Power Factor Enhancement Design and Optimization of Variable Leakage Flux Permanent Magnet Motor Considering Driving Cycles.** *X. Zhou*[1] and Z. Xiang[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, China*

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## Session VP23
## SPIN-ORBITRONICS: DMI, SOT MRAM AND ENERGY EFFICIENT SWITCHING (Poster Virtual Session)

Yufan Li, Chair
The Chinese University of Hong Kong, Sha Tin, Hong Kong

**VP23-01**. **Orbitronics for Energy-Efficient Magnetization Switching.** *Y. Yao*[1], D. Zhu[1] and W. Zhao[1] *1. School of Integrated Circuit Science and Engineering, Beihang Univerisity, Beijing, China*

**VP23-03**. **Design of memory compiler for non-volatile embedded SOT-MRAM.** *H. Lin*[1] and Y. Jiang[1] *1. Jiangnan University, Wuxi, China*

**VP23-04**. **3-D MRAM memory compiler for high density memory design with TSVs interconnection.** H. Lin[1] and *Y. Jiang*[1] *1. Jiangnan University, Wuxi, China*

**VP23-05**. **Research and Design of Hierarchical Cache with Mixed SOT- and STT-MRAM in Multi-core CPU Environments.** *Y. Dai*[1] and Y. Jiang[1] *1. Jiangnan University, Wuxi, China*

**VP23-06**. **Stable Data Store Operation in Magnetic Nanowire Memory with Stepped Structures Observed by Magneto-optical Kerr Effect Microscopy.** *D. Kato*[1], K. Ogura[1], N. Kinoshita[1] and Y. Miyamoto[1] *1. Science & Technology Research Labs., NHK, Setagaya, Japan*

**VP23-07**. **Monte Carlo Simulation on Spinterface's Atomic Migration in SOT-MTJ Device.** *Y. Yuan*[1] and Y. Jiang[1] *1. Jiangnan University, Wuxi, China*

**VP23-08**. **Electronic and Magnetic Properties of a New Pnictide ($EuMn_2Bi_2$).** *D. Sagar*[1], Y. Khatri[1] and A. Kashyap[1] *1. School of Physical Science, Indian Institute of Technology Mandi, Mandi, India*

**VP23-09**. **Magnetic Control of Electromagnetically Induced Transparency in Slow Light Experiments.** *J. Wang*[1] and J. Krause[2] *1. University of Michigan, Dearborn, MI, United States; 2. Northville High School, Northville, MI, United States*

*Best student presentation award finalist

## - B -



*Best student presentation award finalist

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## - C -



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*Best student presentation award finalist

*Best student presentation award finalist

## - N -



*Best student presentation award finalist

## - O -



*Best student presentation award finalist

## - P -



*Best student presentation award finalist

## - Q -



*Best student presentation award finalist

## - R -



*Best student presentation award finalist

## - S -



*Best student presentation award finalist

*Best student presentation award finalist

*Best student presentation award finalist

## - T -



*Best student presentation award finalist

*Best student presentation award finalist

## - U -



## - V -



*Best student presentation award finalist

## - W -



*Best student presentation award finalist

## - X -



## - Y -



*Best student presentation award finalist

*Best student presentation award finalist

## - Z -



*Best student presentation award finalist

*Best student presentation award finalist