



IEEE  
**INERTIAL** 2026  
The 13<sup>th</sup> IEEE International Symposium on Inertial Sensors & Systems  
Destin, Florida, USA || May 10-13, 2026



THE 13<sup>TH</sup> IEEE INTERNATIONAL SYMPOSIUM ON  
INERTIAL SENSORS & SYSTEMS  
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# WELCOME MESSAGE

Dear Colleagues and Friends,



A heartfelt welcome to the attendees of the **13th IEEE International Symposium on Inertial Sensors and Systems (IEEE INERTIAL 2026)**! We are delighted to host this year's conference in **Destin, Florida, USA**, a vibrant coastal city along the emerald waters of the Gulf of Mexico. Known for its sugar-white beaches and inviting climate, this popular destination offers a refreshing blend of natural beauty and seaside charm. Destin provides an inspiring setting for engaging discussions, learning, and meaningful connections around inertial sensors and systems.

This year's symposium continues the tradition that began in **2014 in Laguna Beach, California, USA**, as an informal and highly focused international gathering dedicated exclusively to **inertial sensors and their emerging applications**. IEEE INERTIAL is sponsored by the **IEEE Sensors Council** and overseen by the **Technical Committee of Inertial Sensors and Systems (TCISS)**. It remains the **premier IEEE event dedicated to inertial sensor technologies**, offering a forum where academia, industry, and government institutions come together to share groundbreaking research and discuss the latest challenges and opportunities in the field.

Inertial technology continues to play a critical role across numerous industries, with adoption accelerating due to advances in miniaturization, performance, and integration. The progress in development addresses the major industry trends that will reshape the inertial sensor and system landscape such as autonomy, GNSS-denied operation, user experience, health and many others. **This year's program will showcase cutting-edge developments**, including, but not only, the **latest advancements in accelerometers and gyroscopes**, the **progress of quantum sensors as they transition from the lab to real-world applications**, and the **technical challenges of deploying consumer-grade inertial sensors in space**. We will also explore topics such as the **siliconization of photonics** and its implications for next-generation inertial sensing. Through a rich selection of invited talks, technical presentations, and interactive discussions, we aim to highlight the most important trends shaping the future of our field.

IEEE INERTIAL 2026 continues our commitment to a **single-track format**, ensuring that all attendees can fully engage with every aspect of the program. **Our technical program spans four days**, including **tutorials, keynote presentations, oral and poster sessions, and industry exhibitions**. The contributions presented here will be compiled in the **technical digest**, providing in-depth insights into the latest research, with most papers available through **IEEE Xplore** following the conference.

Beyond the technical sessions, **we offer numerous opportunities for networking and social engagement**, allowing participants to connect with peers and experience the local culture and cuisine. The **Welcome Reception** provides a relaxed setting to meet fellow attendees the night before the core of the symposium starts, while the **Sponsor Appreciation Night** recognizes the invaluable contributions of our industry partners. The highlight of our social events will be the **Gala Dinner**, that will take place overlooking the water, where we will celebrate outstanding research by awarding the **Best Student Paper**.



As we gather for **IEEE INERTIAL 2026**, we extend our sincere appreciation to the **Oversight Committee, the Technical Program Committee, and the many expert reviewers** who contributed their time to review submissions, ensuring a high standard of quality. We are also deeply grateful to the **IEEE Sensors Council for their sponsorship**, as well as to our **patrons, exhibitors, and administrative team** for their efforts in making this event possible. Most importantly, we thank **you, our attendees**, for your participation and contributions, which continue to make IEEE INERTIAL the essential event for the inertial sensor community.

We hope you find **IEEE INERTIAL 2026** to be a rewarding, stimulating, and enjoyable experience. Take full advantage of the technical sessions, networking opportunities, and social events—and don't forget to take in the spectacular surroundings of **Destin**.

**Welcome to IEEE INERTIAL 2026!**

Sincerely,

Grant Lodden  
General Co-Chair  
IEEE INERTIAL 2026

Ohad Zohar  
General Co-Chair  
IEEE INERTIAL 2026



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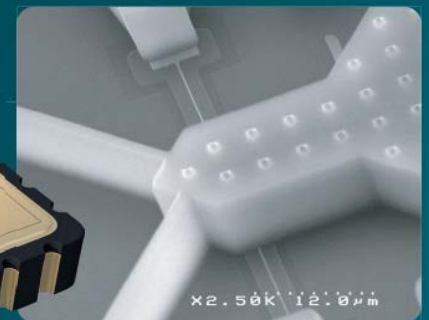
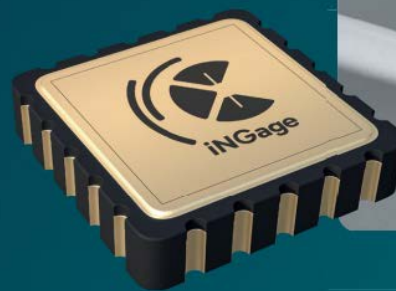
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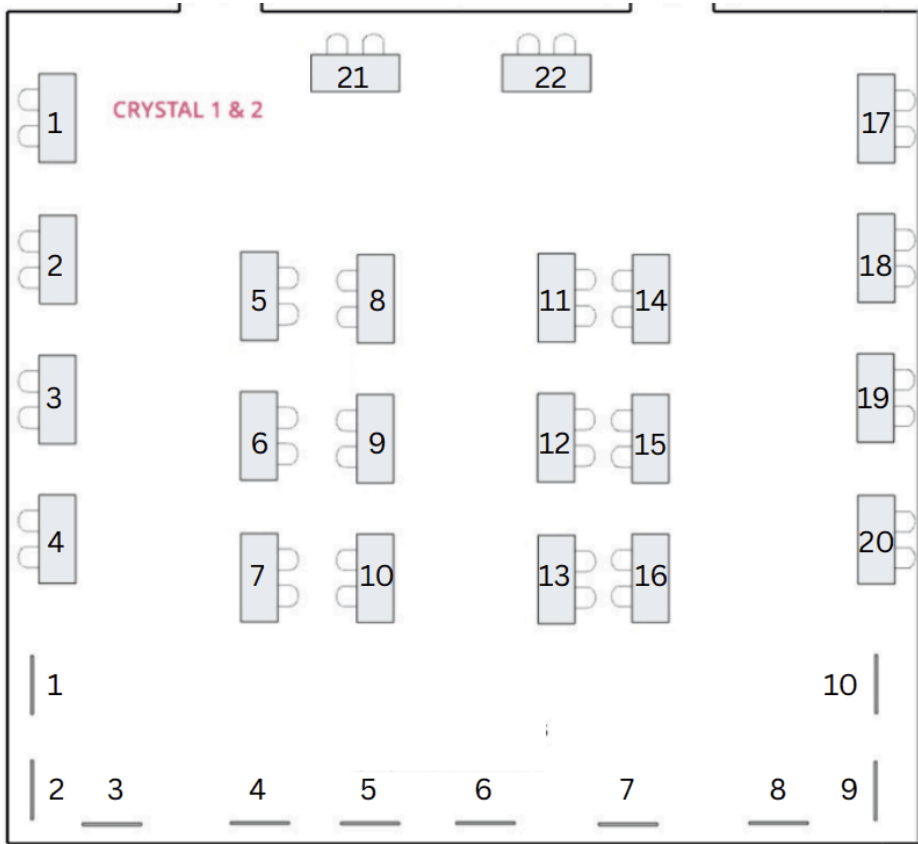


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# EXHIBIT HALL LAYOUT





**Sunday, May 10<sup>th</sup> | 09:00 - 10:45**

### **Introduction to Inertial Sensor and System Testing**

**Room:** Crystal 3

**Instructor:** Marius Gheorghe, *Ideal Aeromsmith, USA*

**Abstract:** This tutorial will focus on inertial sensors and systems, providing in-depth coverage of various testing aspects associated with them. This coverage will include both theoretical and practical technical details, ranging from mathematical error models to observability, to the design of test plans, and to tricks of the trade. Finally, the presentation will conclude with real-life failures that will underscore the critical role that rigorous testing plays in ensuring the reliability and functionality of inertial sensors and systems in real-world applications.

---



**Sunday, May 10<sup>th</sup> | 11:15 - 13:00**

### **AI-Aided Navigation Across Environments**

**Room:** Crystal 3

**Instructor:** Itzik Klein, *University of Haifa, Israel*

**Abstract:** Imagine a drone flawlessly delivering a package or an autonomous underwater vehicle exploring the ocean's depths. What's the secret behind their incredible ability to know exactly where they are and navigate complex environments with such accuracy? The answer is the transformative power of artificial intelligence-aided navigation. This tutorial will reveal the key technologies and algorithms that enable AI-aided autonomous navigation in challenging scenarios across environments. It will also provide an in-depth analysis of AI-aided navigation algorithms and methods as well as current trends in this rapidly growing topic.

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**Sunday, May 10<sup>th</sup> | 14:30 - 16:15**

### **Quantum-enabled sensors: why and how?**

**Room:** Crystal 3

**Instructor:** Carrie Weidner, *University of Bristol, UK*

**Abstract:** There is a lot of hype surrounding quantum technologies, and one of the most mature applications of these technologies lies within inertial sensing. Within this tutorial, I will motivate why quantum sensing is so exciting and timely. Through the lens of the work that my colleagues and I are doing as a part of the UK's Hub for Quantum Enabled Positioning, Navigation, and Timing, I will illustrate some of these technologies and describe how they work. Finally, if there is time, I will provide some insight from my own work on how we use quantum robust control to explore inertial sensing with extremely cold atoms trapped in the optical potentials generated by high-power laser systems (and how we can make these systems smaller and more scalable!).



**Monday, May 11<sup>th</sup> | 09:00 - 09:45**

### **Taking MEMS sensor innovation out of the comfort-zone to advance PNT**

**Room:** Crystal 3

**Speaker:** Sunil Bhawe, *DARPA, USA*

**Abstract:** The Highly Accelerated Learning of Vibratory Systems (HALOVS) portfolio in DARPA's Defense Sciences Office is a fundamental science portfolio to develop, model, prototype, and demonstrate technologies to overcome the existing performance limitations of vibratory sensors for improved positioning and navigation. In this presentation I highlight recent results from the HALOVS initiative [1] and hope to inspire the IEEE Inertial community to leverage the results to improve on the four pillars of vibratory sensors: noise and bias drift, scale factor, shock and vibration, and aging.



**Monday, May 11<sup>th</sup> | 14:55 - 15:40**

### **The history and likely future of atomic/quantum devices in navigation**

**Room:** Crystal 3

**Speaker:** Michael Larsen, *Northrop Grumman, USA*

**Abstract:** Atomic clocks helped to revolutionize navigation as the backbone technology of our modern GNSS networks around the globe. Magnetic navigation aiding is demonstrating closed loop operation in field tests using atomic magnetometers as a key enabling component. Atomic/quantum inertial sensors are now leaving the lab and completing field trials at sea, in the air, and on orbit. These sensors appear to be on the cusp of commercialization for some niche applications and continue to promise greater impact products in the future.

These advancements seem exciting and compelling, but what is real? How will these technologies stack up against alternatives? Where will these systems fit, and will there be a viable market for them? I will share my perspective on the history behind these technologies, how to interpret their current state, and what the future may hold.



**Tuesday, May 12<sup>th</sup> | 08:30 - 09:15**

### **Three Decades of MEMS Inertial Sensors**

**Room:** Crystal 3

**Speaker:** Bill Clark, *ADI, USA*

**Abstract:** ADI began exploring MEMS in the late 1980's developing the iMEMS® process integrating sensors with active circuits. That process culminated in our first product, the ADXL50, released in 1993 targeting automotive airbag deployment. Over the ensuing 30 years, ADI and others have deployed numerous MEMS processes and technologies for inertial sensing, pressure sensing, and optical actuation. As the technology matures, manufacturing commonalities and consolidation are leading to increasing scale, lower cost, and commoditization. ADI enters a 4th decade of inertial MEMS continuing to develop high performance accelerometers, gyroscopes, and

IMUs.



**Wednesday, May 13<sup>th</sup> | 9:30 - 10:15**

### **Physics-Aware Generative AI for Inertial Sensing: Bridging the Simulation-Reality Gap in Motion Intelligence**

**Room:** Crystal 3

**Speaker:** Mahesh Chowdhary, *STMicroelectronics, USA*

**Abstract:** Inertial sensors are foundational to modern motion intelligence, powering applications from smartphones and wearables to robotics and autonomous systems, yet they remain constrained by noise, drift, and the "simulation-to-reality" gap. What if we could solve these physical limitations using the power of generative AI? This keynote presentation unveils a transformative approach: embedding kinematic laws directly into Large Foundation Models.

We will explore how Physics-Aware Generative AI moves beyond black-box learning to create motion forecasts that are not only accurate but physically guaranteed. From accelerating development with synthetic data to deploying State Space Models for lag compensation, this presentation covers the cutting edge of motion intelligence. Attendees will see real-world applications in AR/VR—specifically how predictive generation dramatically reduces motion-to-photon latency. Join us to discover how the convergence of generative modeling and inertial physics is redefining what is possible in navigation and autonomous systems.

## INVITED SPEAKERS



**Monday, May 11<sup>th</sup> | 10:45 - 11:15**

### **QST High-Performance Inertial Sensor Technologies**

**Room:** Crystal 3

**Speaker:** Cenk Acar, *QST Solutions, USA*

**Abstract:** This presentation reviews QST's high-performance inertial MEMS sensor technology platform and its evolution from early development through high-volume production. It highlights a decade of innovation culminating in a single-die 6-axis MEMS IMU architecture that integrates 3-axis gyroscope and 3-axis accelerometer functions using a unique three-wafer Through-Silicon-Via (TSV) structure and dual-cavity design. The presentation describes key device-level innovations, including high-Q gyroscope operation, compact single proof-mass 3-axis gyro architecture, stress-optimized accelerometer design, and packaging approaches that enable both

strong performance and manufacturability.

It also outlines the successful transfer and qualification of the technology platform into QST manufacturing, along with commercialization progress through the QMI8658 and QMI8660 product lines. Overall, the talk demonstrates how differentiated MEMS design, scalable process integration, and system-level optimization position this technology for continued leadership in compact, high-performance inertial sensing.

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**Tuesday, May 12<sup>th</sup> | 10:30 - 11:00**

### **Honeywell's MEMS Inertial Sensors: Progress towards Navigation-grade**

**Room:** Crystal 3

**Speaker:** John Reinke, *Honeywell, USA*

**Abstract:** Honeywell's navigation-grade inertial measurement unit (IMU) business still relies upon what many consider to be legacy sensor technologies, specifically ring laser gyroscopes and QA2000 accelerometers. These sensors are large and expensive and, hence, in need of replacement. Micro-electromechanical systems (MEMS) inertial sensors, with their inherent small size and low cost, represent the ultimate successor, if their performance can truly get to navigation-grade.

Honeywell's MEMS inertial sensors aren't there yet, but their promising potential has driven significant development since their tactical-grade beginnings. This talk will provide an overview of MEMS inertial sensor development at Honeywell, including progress from DARPA's PRIGM:NGIMU program that led to Honeywell's upcoming HG3900 IMU. Recent measured data from gyroscope prototypes will illustrate the state-of-the-art at Honeywell.

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**Tuesday, May 12<sup>th</sup> | 10:45 - 11:15**

### **Inertial MEMS Sensors for Cardiac, Respiratory and Vascular Health Monitoring**

**Room:** Crystal 3

**Speaker:** Farrokh Ayazi, *Georgia Tech and StethX Microsystems, USA*

**Abstract:** Microelectromechanical systems (MEMS) devices have become indispensable in inertial and vibration sensing, owing to their exceptionally small form factor, high performance, and low power consumption. In this talk, I will present recent advances in the use of MEMS inertial sensors for wearable medical applications, with a focus on precision seismocardiography (SCG), mechanomyography (MMG), and the detection of respiratory and vascular sounds. I will also discuss strain plethysmography (SPG), a novel approach for measuring arterial strain variations induced by pulsatile blood flow.

Microsystems built upon these sensing modalities, such as SeismicPatch™, when augmented with deep learning algorithms, enable the extraction of clinically meaningful digital health biomarkers. Together, these technologies offer powerful new tools for the diagnosis, monitoring, and management of a broad range of cardiopulmonary and vascular conditions.

## INVITED SPEAKERS



**Wednesday, May 13<sup>th</sup> | 11:15 - 11:45**

### **Inertial Sensors in Automotive Applications**

**Room:** Crystal 3

**Speaker:** Camille Saint-Jean, *STMicroelectronics, USA*

**Abstract:** Modern cars contain dozens of sensors. Accelerometers and gyroscopes are used in a variety of applications, from passive and active safety to road condition monitoring. After a brief overview of the main use cases for inertial sensors in automotive, this talk will focus on three applications.

First, in autonomous driving (ADAS), I will discuss how the increasing level of automation drives the need for better sensor performance.

Then, I will describe how the accelerometers embedded in the Tire Pressure Monitoring Sensor (TPMS) module can be used for tire health and road condition monitoring.

Finally, I will explain the principle of active suspension and road noise cancellation, two applications with increasing popularity, especially in electric vehicles.

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**Wednesday, May 13<sup>th</sup> | 14:00 - 14:30**

### **Packaging Challenges in MEMS-based Inertial Measurement Units**

**Room:** Crystal 3

**Speaker:** Mike Flaherty, *Analog Devices, USA*

**Abstract:** MEMS-based IMUs are sensing units that provide motion measurement in rotational and linear direction, and occasionally other sensing modalities of pressure or temperature are added to it. In past, IMU sensing units were designed using small discrete sensors with limited axes which were then combined to form integrated units in small form factor modules. As MEMS silicon manufacturing processes matured, IMUs have been designed into a single silicon with performance tradeoffs.

IMUs in single silicon have been commercialized for mass market like consumer and handheld applications driven by need for scale, lower cost, short life cycle, lower power, and higher mechanical reliability challenges. In navigational use cases, such as in automotive, industrial, and aerospace, IMUs are still designed with discrete sensors due to extremely high precision, repeatability, long life, and embedded processing. The question is: what are the challenges that makes designers to implement IMUs using integration of multiple (discrete) sensors?

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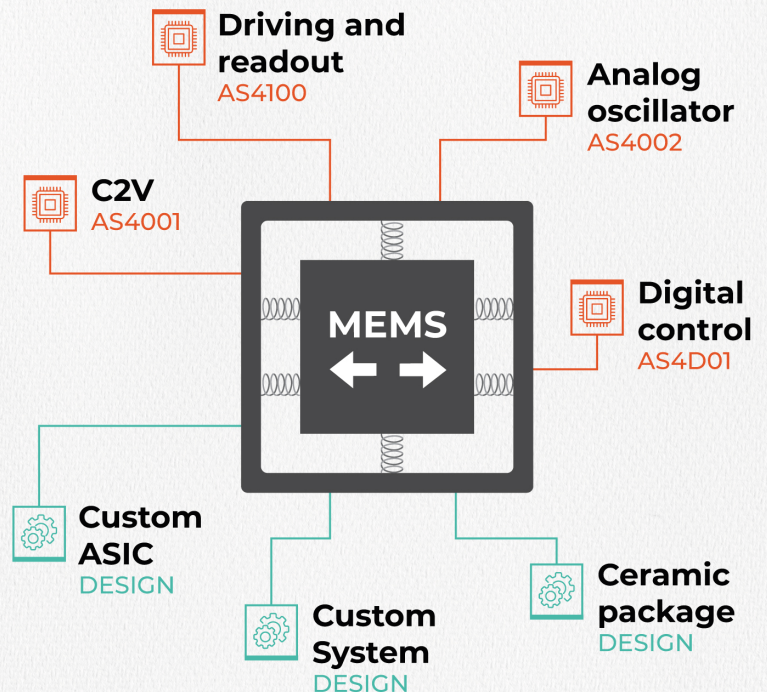
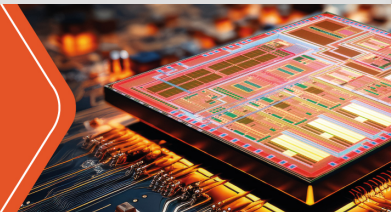


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# PROGRAM-AT-A-GLANCE

## May 10

8:30-18:00	Registration	Pre Function Area
9:00-10:45	Tutorial: Marius Gheorghe	Crystal 3
10:45-11:15	Coffee Break	Crystal 1 & 2
11:15-13:00	Tutorial: Itzik Klein	Crystal 3
13:00-14:30	Lunch Break	Sunset Terrace
14:30-16:15	Tutorial: Carrie Weidner	Crystal 3
18:00-20:00	Ideal Aerosmith Welcome Reception	Grand Lawn

## May 11

8:00-18:00	Registration	Pre Function Area
8:30-9:00	Opening Ceremony	Crystal 3
9:00-9:45	Keynote: Sunil Bhawe	Crystal 3
9:45-10:15	Exhibitor Lightning Round 1	Crystal 3
10:15-10:45	Coffee Break	Crystal 1 & 2
10:45-12:35	Session 1: Packaging and system-level integration of MEMS inertial sensors (with invited: Cenk Acar)	Crystal 3
12:35-12:55	Posters 1 Lightning Round	Crystal 3
12:55-14:25	IAI Lunch Break	Grand Piazza
14:25-14:55	Exhibitor Lightning Round 2	Crystal 3
14:55-15:40	Keynote: Mike Larsen	Crystal 3
15:40-16:20	Session 2: Optical Inertial Sensing and Testing	Crystal 3
16:20-16:50	Coffee Break & Poster Session 1	Crystal 1 & 2
16:50-17:50	Poster Session 1	Crystal 1 & 2
17:50-19:00	Industry Appreciation Event and Open Posters	Crystal 1 & 2

## PROGRAM-AT-A-GLANCE

### May 12

8:00-17:00	Registration	Pre Function Area
8:30-9:15	Keynote: Bill Clark	Crystal 3
9:15-9:40	Poster 2 Lightning Round	Crystal 3
9:40-10:00	Announcement from Sensors Council/TCISS	Crystal 3
10:00-10:30	Coffee Break	Crystal 1 & 2
10:30-12:20	Session 3: MEMS Gyroscopes (with invited: John Reinke)	Crystal 3
12:20-13:20	Acutronic Lunch Break	Grand Piazza
13:20-14:40	Session 4: MEMS Accelerometers	Crystal 3
14:40-15:10	Coffee Break & Poster Session 2	Crystal 1 & 2
15:10-16:10	Poster Session 2	Crystal 1 & 2
16:10-17:10	Industry Event	Crystal 3
19:00-21:00	Tronics Conference Banquet and Awards Ceremony	Harry T's Lighthouse

### May 13

8:00-15:30	Registration	Pre Function Area
8:30-9:30	WiSe Breakfast	Crystal 3
9:30-10:15	Keynote: Mahesh Chowdhary	Crystal 3
10:15-10:45	StethX Coffee Break	Crystal 1 & 2
10:45-12:45	Session 5: Applications of Inertial Sensors (with invited: Farrokh Ayazi and Camille Saint-Jean)	Crystal 3
12:45-13:45	Lunch Break	Grand Piazza
13:45-14:00	INERTIAL 2027 Announcement	Crystal 3
14:00-15:30	Session 6: IMU and Inertial Systems (with invited: Mike Flaherty)	Crystal 3
15:30-15:50	Conference Adjourns	Crystal 3

# TECHNICAL PROGRAM: MAY 10, 2026

*\*All times appear in Central Daylight Time ((CDT) UTC -5)*

**8:30-18:00**

**Registration**

**Room:** Pre Function Area

**9:00-10:45**

**Tutorial: Introduction to Inertial Sensor and System Testing**

**Speaker:** Marius Gheorghe, *Ideal Aerosmith, USA*

**Room:** Crystal 3

**Session Chair:** Tobias Hiller, *Bosch, Germany*

**10:45-11:15**

**Coffee Break**

**Room:** Crystal 1 & 2

**11:15-13:00**

**Tutorial: AI-Aided Navigation Across Environments**

**Speaker:** Itzik Klein, *University of Haifa, Israel*

**Room:** Crystal 3

**Session Chair:** Tobias Hiller, *Bosch, Germany*

**13:00-14:30**

**Lunch Break**

**Room:** Sunset Terrace

**14:30-16:15**

**Tutorial: Quantum-enabled sensors: why and how?**

**Speaker:** Carrie Weidner, *University of Bristol, UK*

**Room:** Crystal 3

**Session Chair:** Tobias Hiller, *Bosch, Germany*

**18:00-20:00**

**Ideal Aerosmith Welcome Reception**

**Room:** Grand Lawn

*\*Open to everyone*

# TECHNICAL PROGRAM: MAY 11, 2026

*\*All times appear in Central Daylight Time ((CDT) UTC -5)*

**8:00-18:00**

**Registration**

**Room:** Pre Function Area

**8:30-9:00**

**Opening Ceremony**

**Room:** Crystal 3

**9:00-9:45**

**Keynote: Taking MEMS sensor innovation out of the comfort-zone to advance PNT**

**Speaker:** Sunil Bhave, *DARPA, USA*

**Room:** Crystal 3

**Session Chair:** Ohad Zohar, *Smart Systems, Singapore*

**9:45-10:15**

**Exhibitor Lightning Round 1**

**Room:** Crystal 3

**10:15-10:45**

**Coffee Break**

**Room:** Crystal 1 & 2

**10:45-12:35**

**Packaging, system-level integration and testing of MEMS inertial sensors**

**Room:** Crystal 3

**Session Chairs:** Marius Gheorghe, *Ideal Aerosmith, USA*  
Diego Serrano, *Booz Allen Hamilton, USA*

**10:45**

**4078: QST High-Performance Inertial Sensor Technologies**

Cenk Acar

QST Solutions, United States

**11:15**

**4010: Impact of Soldering on the Thermal Offset Behavior of Open-Loop Mode-Split MEMS Gyroscopes**

Jan Ullmann{4}, Tobias Hiller{3}, Thorsten Balslink{3}, Lukas Blocher{3}, Thomas Northemann{3}, Matteo Tabusso{3}, Roman Forke{1}, Karla Hiller{2}

{1}Fraunhofer Institute for Electronic Nano Systems ENAS, Germany; {2}Fraunhofer Institute for Electronic Nano Systems ENAS & TU Chemnitz, Germany; {3}Robert Bosch GmbH, Germany; {4}Robert Bosch GmbH & Chemnitz University of Technology, Germany

**11:35**

**4032: Cross-Verification of MEMS Die Stress with Optical Profiler and On-Chip Stress Measurements**

Ahmet Arif Aslan, Mehran Hosseini-Pishrobat, Erdinc Tatar

Bilkent University, Turkey

**11:55**

**4033: Electrical Test to Screen Hermeticity Leaks in MEMS Accelerometer at Wafer-Level**

Massimiliano Colombo, Matteo Catalano, Dario Premi, Marco Villa

STMicroelectronics, Italy

**12:15**

**4068: Hardware Validation of a Bias Self-Calibration Based Virtual Gyro**

John Liu{2}, Edward Konefat{2}, Howard Ge{1}, Stephen Schein{1}

{1}Aerospace Corporation, United States; {2}Jet Propulsion Laboratory, California Institute of Technology, United States

**12:35-12:55**

**Posters 1 Lightning Round**

**Room:** Crystal 3

**12:55-14:25**

**IAI Lunch Break**

**Room:** Grand Piazza

# TECHNICAL PROGRAM: MAY 11, 2026

14:25-14:55

**Exhibitor Lightning Round 2**

Room: Crystal 3

14:55-15:40

**Keynote: The history and likely future of atomic/quantum devices in navigation**

**Speaker:** Michael Larsen, *Northrop Grumman, USA*

Room: Crystal 3

**Session Chair:** Giacomo Langfelder, *Politecnico di Milano, Italy*

15:40-16:20

**Optical Inertial Sensing and Testing**

Room: Crystal 3

**Session Chair:** Michael Larsen, *Northrop Grumman, USA*

15:40

**4024: ODIN: Optomechanical Distributed Instrument for Inertial Sensing and Navigation**

Jose Sanjuan, Jackson Dahn, Ramses Miranda-Espino, Saruul Nasanjargal, Andrea Nelson, Jeremiah Stoddart, Mohanad Warrayat, Miguel Dovale, Felipe Guzman  
University of Arizona, United States

16:00

**4074: Early-Stage Feasibility of Optical Excitation and Read-Out Enabled by Laser Welding Packaging of a Dual-Shell Quartz HRG**

Lois Meira-Lopez, Melika Momenzadeh, Ozan Berk Boyraz, Austin R. Parrish, Maxim Shcherbakov, Ozdal Boyraz, Andrei M. Shkel  
University of California, Irvine, United States

16:20-16:50

**Coffee Break, Exhibits, & Poster Session 1**

Room: Crystal 1 & 2

16:50-17:50

**Poster Session 1**

Room: Crystal 1 & 2

**Session Chair:** Sergey Zotov, *Emcore, USA*

**4005: Amplitude Enhancement Methods of the Cluster Dither in a Ring Laser Gyro Based Inertial Measurement Unit**

Cheonjoong Kim{1}, Juneon An{1}, Haesung Yu{1}, Inseop Lee{1}, JunMin Park{2}  
{1}4th R&D Institute, Agency for Defense Development, Korea; {2}Chungnam National University, Korea

**4012: A Mechanical Solution for Quadrature Minimization in MEMS Pitch/Roll Gyroscopes**

Yassine Banani{1}, Giacomo Bolchi{2}, Patrick Fedeli{2}, Luca Giuseppe Falorni{2}, Gabriele Gattere{2}, Valentina Zega{1}  
{1}Politecnico di Milano, Italy; {2}STMmicroelectronics, Italy

**4015: Extracting Squeeze-Film Damping in MEMS Accelerometers: A Kinematic Analysis of Applied Damping Forces in State Space**

Matteo Tabusso{1}, Lukas Ackermann{1}, Jan Ullmann{2}, Thomas Northemann{1}, Jürgen Müller{1}  
{1}Robert Bosch GmbH, Germany; {2}Robert Bosch GmbH & Chemnitz University of Technology, Germany

**4017: Hybrid Calibration of IMU Using Combined Direct and Indirect Methods Under Thermal Transient Conditions**

Inseop Lee, Haesung Yu, Youn Seon Lee, Cheonjoong Kim  
4th R&D Institute, Agency for Defense Development, Korea

**4020: Cross-Axis Coupling in an Atomic-Beam Interferometric Inertial Sensor**

Yue Xin, Weichen Jia, Ke Shen, Shengzhe Wang, Qianlan Cai, Yanying Feng  
Tsinghua University, China

**4022: Test Results for AQUILA Space Accelerometer Engineering Model**

Rabin Francis{2}, Alberto Torasso{2}, Flavio Felici{2}, Lukasz Glura{2}, Ronan Friel{2}, Jeroen Vandersteen{1}  
{1}European Space Agency - ESA, Netherlands; {2}InnaLabs, Ireland

**4023: Simple Method for Identifying Decoupled Principal Mode Axes in Piezoelectric BAW Gyroscope Based on Admittance Measurement**

Yujiro Iwata{2}, Yuki Okamoto{1}, Shinya Yoshida{2}  
{1}National Institute of Advanced Industrial Science and Technology, Japan; {2}Shibaura Institute of Technology, Japan

**4027: A Highly Sensitive Single-Axis Gold MEMS Capacitive Accelerometer Improved with Spring and Proof-Mass Structures**

Torauto Yamada, Chihaya Mukaide, Hisashi Takahata, Tomoyuki Kurioka, Katsuyuki Machida, Tso-Fu Mark Chang, Yoshihiro Miyake, Masato Sone, Hiroyuki Ito  
Institute of Science Tokyo, Japan

## TECHNICAL PROGRAM: MAY 11, 2026

**4031: Detecting Intense Impacts and Motion Recognition in Padel Using Wearable MEMS IMU, Including High-g and Low-g Accelerometers**

Patrick Fedeli, Davide Bernabucci, Davide Terzi

STMicroelectronics, Italy

**4034: Advanced Simulation Flow to Predict Harmonic Response in MEMS Gyroscopes Subjected to External Vibrations**

Federico Morelli, Paola Carulli, Luca Giuseppe Falorni, Patrick Fedeli, Matteo Furlan

STMicroelectronics, Italy

**4038: Impact of Metallization on Quality Factor of Fused-silica Shell Resonators**

Sajal Singh, Jae Yoong Cho, Tal Nagourney, Khalil Najafi

University of Michigan, United States

**17:50-19:00**

**Industry Appreciation Event and Open Posters**

**Room:** Crystal 1 & 2

# TECHNICAL PROGRAM: MAY 12, 2026

*\*All times appear in Central Daylight Time ((CDT) UTC -5)*

**8:00-17:00**

**Registration**

**Room:** Pre Function Area

**8:30-9:15**

**Keynote: Three Decades of MEMS Inertial Sensors**

**Speaker:** Bill Clark, *ADI, USA*

**Room:** Crystal 3

**Session Chair:** Erdinc Tatar, *Bilkent University, Turkey*

**9:40-10:00**

**Announcement from Sensors Council/TCISS**

**Room:** Crystal 3

**10:30-12:20**

**MEMS gyroscopes**

**Room:** Crystal 3

**Session Chairs:** Gabriele Gattere, *ST Microelectronics, Italy*

Giacomo Bonaccorsi, *Bosch Sensortec, Germany*

**10:30**

**4036: MEMS Gyroscope Errors During Vibration**

John Reinke, Markus Gnerlich, Andrew Brown, Ved Gund, David Effa

Honeywell Aerospace Technologies, United States

**11:00**

**4011: System-Level Results of a High Sensitivity Vibrating MEMS Gyroscope Fabricated with the BDRIE-HS\* Technology**

Roman Forke{2}, Sebastian Weidlich{1}, Daniel Bülz{2}, Alexey Shaporin{2}, Karla Hiller{3}

{1}Chemnitz University of Technology, Germany; {2}Fraunhofer Institute for Electronic Nano Systems ENAS, Germany; {3}Fraunhofer Institute for Electronic Nano Systems ENAS & TU Chemnitz, Germany

**11:20**

**4026: Correction of the Angular Gain Through In-Operation Compensation of Nonlinearity in MEMS Rate-Integrating Gyroscopes**

Riccardo Nistri{2}, Gabriele Gattere{3}, Pietro Peliti{1}, Valentina Zega{2}, Davide Pavesi{2}, Giacomo Langfelder{2}, Paolo Frigerio{2}

{1}Northrop Grumman Italia, Italy; {2}Politecnico di Milano, Italy; {3}STMicroelectronics, Italy

**11:40**

**4070: Zero-Rate-Output Anomaly in Lissajous-FM Gyroscopes with Electrostatic Ring Resonators**

Takashihiro Tsukamoto{4}, Roman Forke{2}, Sebastian Weidlich{1}, Daniel Bülz{2}, Alexey Shaporin{2}, Karla Hiller{3}, Shuji Tanaka{4}

{1}Chemnitz University of Technology, Germany; {2}Fraunhofer Institute for Electronic Nano Systems ENAS, Germany; {3}Fraunhofer Institute for Electronic Nano Systems ENAS & TU Chemnitz, Germany; {4}Tohoku University, Japan

**12:00**

**4077: First Observation of Phononic Frequency Combs in Dual-Shell Gyroscopes: A Path to Quasi-Digital FM Angular Sensing**

Elena Wolgamot, Lois Meira-Lopez, Paul Carter, Andrei M. Shkel

University of California, Irvine, United States

**12:20-13:20**

**Acutronic Lunch Break**

**Room:** Grand Piazza

**13:20-14:40**

**MEMS Accelerometers**

**Room:** Crystal 3

**Session Chairs:** Cristiano Marra, *iNGage, Italy*

Roman Forke, *Fraunhofer, Germany*

**13:20**

**4060: Understanding the Nonlinear Behavior of a New z-Axis MEMS Accelerometer with In-Plane Readout**

Yassine Banani<sup>{1}</sup>, Christian Padovani<sup>{1}</sup>, Giacomo Langfelder<sup>{1}</sup>, Gabriele Gattere<sup>{2}</sup>, Valentina Zega<sup>{1}</sup>

<sup>{1}</sup>Politecnico di Milano, Italy; <sup>{2}</sup>STMicroelectronics, Italy

**13:40**

**4018: Improvement of Full Scale Range Error in Vibrating Beam Accelerometer Using Scale Factor Cubic Term Correction Method**

Theo Miani, Niall MacCarthy, Callisto Pili, Lokesh Gurung, Guillermo Sobreviela, Colin Baker, Ashwin Seshia

Silicon Microgravity Limited, United Kingdom

**14:00**

**4028: Identification of the Zero-Stiffness Condition in Closed-Loop MEMS Accelerometers**

Alessandro Ticozzi<sup>{2}</sup>, Marco Bestetti<sup>{1}</sup>, Marco Gadola<sup>{1}</sup>, Matteo Gianollo<sup>{1}</sup>, Giacomo Langfelder<sup>{2}</sup>

<sup>{1}</sup>Civitanavi by Honeywell, Italy; <sup>{2}</sup>Politecnico di Milano, Italy

**14:20**

**4059: Resonant Micro-Accelerometer with Tunable and ON/OFF Switchable Sensitivity**

Maxim Drizovsky, Slava Krylov, Alexandra Zobova

Tel Aviv University, Israel

**14:40-15:10**

**Coffee Break, Exhibits, & Poster Session 2**

**Room:** Crystal 1 & 2

**15:10-16:10**

**Poster Session 2**

**Room:** Crystal 1 & 2

**Session Chair:** Carrie Weidner, *University of Bristol, UK*

**4037: A Navigation Grade Single Proof Mass 3 Axis Accelerometer**

Robert Boysel, Louis Ross

MEI Micro, Inc., United States

**4050: In-Situ Improvement of the Non-Orthogonality of MEMS Gyroscopes via Embedded Compensation**

Leticia Baganha<sup>{1}</sup>, Lukas Blocher<sup>{2}</sup>, Jan Ullmann<sup>{3}</sup>, Tobias Tittjung<sup>{2}</sup>, Marco Arena<sup>{1}</sup>, Wolfram Mayer<sup>{1}</sup>, Tobias Hiller<sup>{2}</sup>

<sup>{1}</sup>Bosch Sensortec GmbH, Germany; <sup>{2}</sup>Robert Bosch GmbH, Germany; <sup>{3}</sup>Robert Bosch GmbH & Chemnitz University of Technology, Germany

**4051: A Novel Monolithic Approach for Bifurcation Analysis of Electrostatic Actuators with Geometric Nonlinearities**

Sreevidya Guru, Tobias Frey, Jad Khodor, Jochen Franz, Andrea Opreni

Robert Bosch GmbH, Germany

**4052: Reducing Etching-Induced Frequency Spread in MEMS Resonators Through Shape-Optimized Mass Cells**

Tobias Marx<sup>{1}</sup>, Simon Pffingstl<sup>{1}</sup>, Marian Hörsting<sup>{1}</sup>, Eva Maria Weig<sup>{2}</sup>, Matthias Wenzel<sup>{1}</sup>

<sup>{1}</sup>Robert Bosch GmbH, Germany; <sup>{2}</sup>Technical University of Munich, Germany

**4054: Design and Characterization of a Cost-Effective Metallic Hemispherical Resonator Gyroscope**

Ahmet Faruk Yavuz<sup>{2}</sup>, Gokhan Karapistik<sup>{3}</sup>, Dogan Onur Arisoy<sup>{3}</sup>, Pelin Seyrek Ozturk<sup>{3}</sup>, Ahmet Kutay Erozdin<sup>{3}</sup>, Emre Dalkilic<sup>{3}</sup>, Hamit Caglar Karatas<sup>{3}</sup>, Kivanc Azgin<sup>{1}</sup>

<sup>{1}</sup>Middle East Technical University, Turkey; <sup>{2}</sup>Middle East Technical University & Roketsan Inc., Turkey; <sup>{3}</sup>Roketsan Inc., Turkey

**4055: System Identification of MEMS Gyroscopes via Drive-Phase Frequency Modulation**

Tim Schörghofer<sup>{2}</sup>, Wolfram Mayer<sup>{1}</sup>, Milos Vujadinović<sup>{1}</sup>

<sup>{1}</sup>Bosch Sensortec GmbH, Germany; <sup>{2}</sup>Robert Bosch GmbH, Germany

**4056: Sensing Rotational Direction Using Paramagnetic Nanoparticles**

Jacob Pung<sup>{2}</sup>, Brian Krug<sup>{1}</sup>

<sup>{1}</sup>Grand Valley State University, United States; <sup>{2}</sup>L3Harris Technologies, Inc., United States

## TECHNICAL PROGRAM: MAY 12, 2026

**4065: Bend Stress Isolation Structure on the PCB: Fourfold Crab-Leg Stabilize Accelerometer Bias**

Keitaro Ito{1}, Teruhisa Akashi{2}, Hirofumi Funabashi{2}, Shota Harada{1}, Hiroyuki Wado{1}  
{1}MIRISE Technologies Corporation, Japan; {2}Toyota Central R&D Labs., Inc., Japan

**4067: Effect of Adsorbed Water on quality-Factor of Fused Silica Uncoated and Platinum-Coated Shell Resonators**

Sajal Singh, Jae Yoong Cho, Tal Nagourney, Khalil Najafi  
University of Michigan, United States

**4071: Towards High-Performance MEMS Gyroscopes: First Results from the LITEF Ring Gyroscope (LRG)**

Maximilian Marx, Stefan König, Johannes Pfeiffer, Stefan Bange, Alexander Jäckle, Ute Löffelmann, Michael Maurer, Sebastian Meier-Meybrunn, Sebastian Nessler, Stefan Rombach, Markus Ruf, Carsten Weber, Uwe Herberth  
Northrop Grumman LITEF GmbH, Germany

**16:10-17:10**

**StartUp Panel: Bias, Drift, and Burn Rate: Building a Successful Inertial Startup**

Room: Crystal 3

**19:00-21:00**

**Tronics Conference Banquet and Awards Ceremony**

Room: Harry T's Lighthouse

*\*Buses will transport you to and from the hotel. The first bus leaves at 6:20 pm, the second leaves at 6:30 pm, and the third at 6:45 pm. To come back to the hotel, the first bus leaves at 9:00 pm. Please wear your name badges for entry.*

# TECHNICAL PROGRAM: MAY 13, 2026

*\*All times appear in Central Daylight Time ((CDT) UTC -5)*

**8:00-15:30**

**Registration**

**Room:** Pre Function Area

**8:30-9:30**

**WiSe Breakfast**

**Room:** Crystal 3

**9:30-10:15**

**Keynote: Physics-Aware Generative AI for Inertial Sensing: Bridging the Simulation-Reality Gap in Motion Intelligence**

**Speaker:** Mahesh Chowdhary, STMicroelectronics, USA

**Room:** Crystal 3

**Session Chair:** Igor Prikhodko, Analog Devices, USA

**10:15-10:45**

**StethX Coffee Break**

**Room:** Crystal 1 & 2

**10:45-12:45**

**Applications of Inertial Sensors**

**Room:** Crystal 3

**Session Chairs:** Valentina Zega, Politecnico di Milano, Italy  
Dino Smajlovic, Ideal Aerosmith, USA

**10:45**

**4079: Inertial MEMS Sensors for Cardiac, Respiratory and Vascular Health Monitoring**

Farrokh Ayazi

Georgia Tech and StethX Microsystems, United States

**11:15**

**4080: Inertial Sensors in Automotive Applications**

Camille Saint-jean

ST Microsystems, United States

**11:45**

**4049: Performance Analysis of Silicon Micromachined Inclometers on Chandrayaan-3 Lander and Rover**

Gaurav Saxena, Jiju Jhon, Srinivasa M.N, Thamarai V, Madan.M Mehra, Arvind.K Sharma, Karanth S.P, Sriram K.V

Indian Space Research Organisation, India

**12:05**

**4016: M&NEMS Near Nav-Grade Gyroscope for North-Finding Applications**

Andrea Buffoli<sup>{1}</sup>, Cristiano Marra<sup>{1}</sup>, Bertrand Gautheron<sup>{1}</sup>, Vincent Gaff<sup>{1}</sup>, Giacomo Langfelder<sup>{2}</sup>, Philippe Robert<sup>{1}</sup>

<sup>{1}</sup>iNGage SAS, Italy; <sup>{1}</sup>iNGage SAS, France; <sup>{2}</sup>Politecnico di Milano, Italy

**12:25**

**4061: GYTRIX Quartz MEMS Gyro: From Concept to Northfinding Measurements**

Olivier Le Traon, Jeremy Bonhomme, Lucas Hudeley, Maxime Duquesnoy, Camille Duclos, Amandine Andrieux-Ledier, Pierre Lavenus, Jean Guerard, Raphael Levy

ONERA, France

**12:45-13:45**

**Lunch Break**

**Room:** Grand Piazza

**13:45-14:00**

**INERTIAL 2027 Announcement**

**Room:** Crystal 3

## TECHNICAL PROGRAM: MAY 13, 2026

**14:00-15:10**

### **IMUs and inertial systems**

**Room:** Crystal 3

**Session Chairs:** Tobias Hiller, *Bosch, Germany*  
Vincent Gaff, *iNGage, France*

**14:00**

#### **4081: Packaging Challenges in MEMS-based Inertial Measurement Units**

Mike Flaherty

Analog Devices, United States

**14:30**

#### **4025: 0.005 deg/rt-hr and 0.05 deg/hr MEMS IMU**

Victor Akel, Simon Berman, Michael Chavez, Albert Choi, Philip Clark, Harrison Cooper, Farzin Dinyarian, Daniel Fong, Jorge Gutierrez, Omid Haghghi, Christopher Mitchell, Daniel Rampacek, Alexander Trusov, Cole Umemura  
Northrop Grumman Mission Systems, United States

**14:50**

#### **4044: Enhanced Architecture for Skew-Redundant Inertial Systems Using Triaxial Sensors**

Marius Gheorghe, John Neal

Ideal Aeromsmith Inc., United States

**15:10**

#### **4069: Rig with Mass-Volume Epitaxial Polysilicon Process: Lumped-Mass or Radially-Distributed Design?**

Riccardo Nastri<sup>{2}</sup>, Marco Gagni<sup>{2}</sup>, Valentina Zega<sup>{2}</sup>, Davide Pavesi<sup>{2}</sup>, Carolina Viola<sup>{1}</sup>, Pietro Peliti<sup>{1}</sup>, Paolo Frigerio<sup>{2}</sup>, Stefano Zoia<sup>{1}</sup>, Luca Giuseppe Falorni<sup>{3}</sup>, Gabriele Gattere<sup>{3}</sup>, Claudia Comi<sup>{2}</sup>, Giacomo Langfelder<sup>{2}</sup>  
<sup>{1}</sup>Northrop Grumman Italia, Italy; <sup>{2}</sup>Politecnico di Milano, Italy; <sup>{3}</sup>STMicroelectronics, Italy

**15:30-15:50**

### **Conference Adjourns**

**Room:** Crystal 3