

# 59<sup>th</sup> DGON ISS 2022

## Inertial Sensors and Systems

Symposium Gyro Technology

September 13-14, 2022 - Braunschweig, Germany

Pockelsstraße 4, 38106 Braunschweig



Institute of  
Flight Guidance  
Technische Universität Braunschweig



# Program Day 1 - 2022 DGON Inertial Sensors and Systems

**Tuesday, September 13, 2022**

8:30 9:00	Registration - Welcome Coffee <b>Welcome - Conference Chair</b>	<b>Peter Hecker</b> <i>TU Braunschweig, Germany</i>
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## **Session 1: CVG - Chair: Mike Perlmutter**

9:15	Design and test results of a rad tolerant space qualified CVG	Romain Diram <i>InnaLabs Ltd, Ireland</i>
9:40	Rate-integrating gyroscope operation in the non-linear regime	Daryosh Vatanparvar <i>University of California, USA</i>
10:05	A novel mathematical derivation of the lock-in effect for coriolis vibrating gyroscopes	Jose Luis Gruver <i>Israel Aerospace Industries, Israel</i>

10:30 **Coffee Break**

## **Session 2: HRG - Chair: Andrei M. Shkel**

10:50	Study on the thermal equilibrium characteristics of fused silica hemispherical resonators with different structures	Kaiyong Yang <i>National University of Defense Technology, China</i>
11:15	Investigation on influences of phase delay on performance of resonator gyroscopes	Yao Pan <i>National University of Defense Technology, China</i>

11:40 **Lunch**

## **Session 3: MEMS I - Chair: Uwe Herberth**

12:50	High-end inertial navigation demonstration based on MEMS accelerometers	Alexandre Lenoble <i>Safran Electronics &amp; Defense, France</i>
13:15	EMCORE inertial technology: tactical, navigation and strategic grade sensors and systems	Sergey Zotov <i>Emcore Concord, USA</i>

13:40 **Coffee Break**

## **Session 4: MEMS II - Chair: Thomas Lesage**

13:55	MIMU-M - a high accuracy, miniature INS based on GNSS and multiple MEMS IMUs	Giulia Luciani <i>Civitanavi, Italy</i>
14:20	Small & low cost missile requirements on inertial sensors	Alfons Newzella <i>MBDA-Deutschland GmbH, Germany</i>

14:45 **Technical Tours**

18:30 **Get together Location TRAF0 hub**

# Program Day 2 - 2022 DGON Inertial Sensors and Systems

Wednesday, September 14, 2022

9:30 **Welcome Coffee**

## Session 5: System Performance - Chair: Edgar von Hinüber

9:50 On the influence of sample rate, calibration, and Allan Var params on the accuracy of ZUPT-based PedNav with MEMS IMUs  
Michael Kohl  
*University of Stuttgart, Germany*

10:15 Influence of IMU parameters on navigation performance in network-based collaborative navigation scenarios  
Pia Schuler  
*Northrop Grumman LITEF GmbH, GERMANY*

10:40 **Coffee Break**

## Session 6: System Integrity - Chair: Thomas Löffler

11:10 Navigation sensor failure detection without sensor redundancy  
Philippe Panten  
*TU Braunschweig, Germany*

11:35 GNSS Spoofing detector for GNSS aided inertial system  
Loic Davain  
*Safran Electronics & Defense, France*

12:00 **Lunch**

## Session 7: Algorithms - Chair: Jörg Wagner

13:15 Data-Driven meets navigation: concepts, models, and experimental validation  
Itzik Klein  
*University of Haifa, Israel*

13:40 Motion representation and inertial navigation in Clifford algebras  
Wei Ouyang  
*Shanghai Jiao Tong University, China*

14:05 An alternative autonomous location determining  
Vadym Avrutov  
*National Technical University, Ukraine*

14:30 **Coffee Break**

## Session 8: Precision-Sensor Applications - Chair: Ulrich Mangold

14:55 Challenges for a hybrid CAI-based INS due to trajectory dynamics derived from real inertial datasets  
Nicolai Ben Weddig  
*Leibniz University Hannover, Germany*

15:20 Noise suppression method of dynamic gravity gradiometer based on equivalent source tensor transformation  
Li Da  
*Harbin Engineer University, China*

15:45 **Closing & Announcement of next DGON ISS 2023**  
Peter Hecker  
*TU Braunschweig, Germany*

16:00 **End of Conference**