56th DGON ISS 2019

Inertial Sensors and Systems

Symposium Gyro Technology

September 10-11, 2019 - Braunschweig, Germany

Technical areas:

- Sagnac effect based inertial sensors
- Coriolis effect based inertial sensors (MEMS, resonator, ...)
- Other inertial sensors
- Inertial sensor manufacturing and calibration
- Aiding sensor technologies and features for hybrid solutions
- Signal processing for navigation, localization, and guidance
- Advanced R&D results on inertial sensors, systems, and applications

Conference Chair:

Peter Hecker, *TU Braunschweig*

Conference Website:

https://iss.iff.ing.tu-bs.de/

For questions please contact the conference administration: *iss-conference@tu-braunschweig.de*

Program Comittee:

Steffen Zimmermann (Chair), *PLC2 Design*
Fabrice Delhaye, Safran - Paris
Thomas Erler, *Murr*
Wolfram Geiger, *Bosch - Stuttgart*
Uwe Herberth, *NG Litef - Freiburg*
Thomas Löffler, *Diehl - Überlingen*
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Oleg Stepanov, *ITMO University*
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Jörg Wagner, *Universität Stuttgart*
Yuanxin Wu, *Shanghai Jiao Tong University*

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Programme Day 1 - 2019 DGON Inertial Sensors and Systems

Tuesday, September 10, 2019

8:30 9:30	Registration - Welcome Coffee **Welcome - Conference Chair**	**Peter Hecker** *TU Braunschweig, Germany*
	Session 1: Inertial Technology - Past & Future - Chair: Mike Perlmutter	
9:50	Gyrolog – Creating a 3-dimensional digital collection of classical gyro instruments	Maria Niklaus *University of Stuttgart, Germany*
10:15	Hybrid inertial sensors – future prospects of inertial sensors based on atom interferometry fused with opto-mechanical accelerometers	Marvin Warner *Center of Applied Space Technology and Microgravity (ZARM), Germany*
10:40	Impact of uncertainties in atom interferometry on strapdown navigation solutions	Benjamin Tennstedt *Leibniz University Hannover, Germany*
11:05	**Coffee Break**	
	Session 2: Coriolis Gyros I - Chair: Ulrich Mangold	
11:30	The generalized Foucault pendulum is a 3D integrating gyroscopes using the three-dimensional precession of standing waves in a rotating spherically symmetric elastic solid	Sergey E. Perelyaev *Ishlinsky Institute , RAS, Russia*
11:55	HRG Crystal™ dual core: rebooting the INS revolution	Yan Lenoir *Safran Electronics & Defense, France*
12:20	**Lunch**	
	Session 3: Coriolis Gyros II - Chair: Andrei M. Shkel	
14:10	Frequency tuning of fused silica cylindrical resonators by chemical etching	Yunfeng Tao National University of Defense Technology, China
14:35	Towards a navigation grade Si-MEMS gyroscope	Stefan Rombach *Northrop Grumman LITEF, Germany*
	Session 4: Fiber Optic Gyros - Chair: Bertrand Morbieu	
15:00	Development of a silicon photonics-based light source for compact resonator fiber optic gyroscopes	Marc Smiciklas *Honeywell Aerospace, USA*
15:25	**Coffee Break**	
	Session 5: Sensor Error Modeling - Chair: Yuanxin Wu	
15:50	Special thermal compensation experiment and algorithm design for inertial navigation system	Chao Zhuo *Beijing Aerospace AC Institute, China*
16:15	Millimeter-level calibration of IMU size effect and its compensation in navigation grade systems	Alexander Kozlov *Lomonosov Moscow S. University, Russia*
17:00 19:00	**Get together „City-Tram Tour' with from Campus Nord to Restaurant Rudas** **Restaurant Rudas - Best Western FOURSIDE - Burgpassage**	

Programme Day 2 - 2019 DGON Inertial Sensors and Systems

Wednesday, September 11, 2019

9:15	**Welcome Coffee**	
	Session 6: Pedestrian Navigation - Chair: Edgar von Hinüber	
9:40	Multi sensor pedestrian navigation system for indoor and outdoor environments	Nicolai Kronenwett *KIT University, Germany*
10:05	**Coffee Break**	
	Session 7: System Aiding - Chair: Oleg Stepanov	
10:30	Observability Analysis of MIMU on continuous rotating base	Haifeng Xing *Tsinghua University, China*
10:55	High precision indoor positioning by means of LiDAR	Eduardo Sanchez Morales *TH Ingolstadt, Germany*
11:20	**Introduction to Posters - Moderation: Peter Hecker**	
12:00	**Lunch**	
	Session 8: Algorithms - Chair: Fabrice Delhaye	
13:30	Attitude determination with the aid of a triple-antenna GNSS receiver without integer ambiguity resolutions integrated with a low-cost inertial measurement unit	Nikolay Vasilyuk *Topcon Positioning Systems, Russia*
13:55	iNavFIter:„Zero Error“ inertial navigation computation	Yuanxin Wu *Shanghai Jiao Tong University, China*
	Session 9: Aircraft Applications - Chair: Jörg Wagner	
14:20	State transformation extended kalman filter for SINS based integrated navigation system	Wenqi Wu *College of. Int. Sc. and Technology, China*
14:45	SkyNaute by Safran – How the HRG technological breakthrough benefits to a disruptive IRS (Inertial Reference System) for commercial aircrafts	*Fabrice Delhaye* *Safran, France*
15:10	**Coffee Break**	
	Session 10: Inertial Reference Systems; Chair: Uwe Herberth	
15:35	Unique IRS (Inertial Reference System), for safety critical applications, ITAR-FREE and based on high performance Fiber Optic Gyroscope (FOG)	Gianluigi Biancucci *Civitanavi Systems, Italy*
16:00	A MIMU/polarized camera/GNSS integrated navigation algorithm for UAV application	Wenqi Wu *College of. Int. Sc. and Technology, China*
16:30	**Closing & Announcement of next DGON ISS 2020**	Peter Hecker *TU Braunschweig, Germany*
16:35	**End of Conference**	