

# Inertial Sensors and Systems – Symposium Gyro Technology 2012

Programme Committee: W. Bernard (Chairman), W. Auch, W. Geiger, E. von Hinüber, J.-F. Wagner

## PROGRAMME

### Tuesday, September 18, 2012

- 08:00 Registration
- 09:00 Welcome
- 09:15 **In Memory of Kurt Magnus:  
An Honouring of a Great Scholar of Gyro Technology**  
*P. C. Müller*  
(University of Wuppertal, GERMANY)
- Session 1: Quartz Vibrating Gyroscopes (CHAIRMAN: W. Bernard)**
- 09:45 **Improved Performance with Quartz Coriolis Vibrating Gyros**  
*J. Guérard, B. Maréchal, O. Le Traon*  
(ONERA, Châtillon, FRANCE)
- 10:15 **Towards North Finding with Quartz Gyroscope Technology**  
*C. Painter, K. Marino*  
(Systron Donner Inertial, Concord, CA, USA)
- 10:45 Break
- Session 2: Vibrating Shell Gyroscopes (CHAIRMAN: W. Geiger)**
- 11:15 **Research on Bell-Shaped Vibratory Angular Rate Gyro's Character of Resonator with Restraining the Natural Frequency Split**  
*N. Liu<sup>(1)2)</sup>, Z. Su<sup>(1)2)</sup>, M. Fu<sup>(2)</sup>, H. Liu<sup>(1)2)</sup>, Q. Li<sup>(1)</sup>, Z. Deng<sup>(2)</sup>, J. Fan<sup>(1)</sup>, X. Ma<sup>(1)</sup>*  
(<sup>(1)</sup>Information Science & Technological University; <sup>(2)</sup>Institute of Technology, Beijing, CHINA)
- 11:45 **HRG and Inertial Navigation**  
*D. Roberfroid, Y. Folope, G. Remillieux*  
(Sagem Défense Sécurité, Paris, FRANCE)
- 12:15 Lunch Break
- Session 3: MEMS Accelerometers (CHAIRMAN: W. Schröder)**
- 14:00 **High Performance, Low Cost Inertial MEMS: a Market in Motion**  
*L. Robin, M. Perlmutter*  
(Yole Développement, Lyon, FRANCE; Skylight Navigation Technology, Sherborn, MA, USA)
- 14:30 **High Performance Inertial Navigation Grade Sigma-Delta MEMS Accelerometer**  
*P. Zwahlen<sup>(1)</sup>, Y. Dong<sup>(1)</sup>, A.-M. Nguyen<sup>(1)</sup>, F. Rudolf<sup>(1)</sup>; P. Ullah<sup>(2)</sup>, V. Ragot<sup>(2)</sup>*  
(<sup>(1)</sup>Colibrys S.A., Neuchâtel, SWITZERLAND; <sup>(2)</sup>Sagem, Argenteuil, FRANCE)
- 15:00 **Inertial Grade Silicon Vibrating Beam Accelerometer**  
*O. Lefort, S. Jaud, R. Quer, A. Milesi*  
(Thales Avionics, Valence, FRANCE)
- 15:30 Break
- Session 4: FOG for Space Application (CHAIRMAN: M. Perlmutter)**
- 16:00 **Radiation Tolerant Optical Fibers for Fiber Optic Gyroscopes**  
*A. Gillooly, T. Hart*  
(Fibercore Limited, Hampshire, ENGLAND)
- 16:30 **Fiber Optic Gyroscopes for Space Applications, in Orbit Heritage**  
*S. Ferrand<sup>(1)</sup>; J. Honthaas<sup>(2)</sup>, G. Cros<sup>(2)</sup>, A. Paveau<sup>(2)</sup>; Ph. Guay<sup>(3)</sup>*  
(<sup>(1)</sup>IXBlue, Marly-le-Roi, FRANCE; <sup>(2)</sup>Astrium, Toulouse, FRANCE; <sup>(3)</sup>CNES, Toulouse, FRANCE)
- Alternative**
- Analysis on a Novel Thermal Compensation Structure of the Resonant Fork Accelerometer**  
*H. Zhuang, W. Wang, Y. Wang*  
(China Academy of Aerospace Electronics Technology, Beijing, CHINA)
- Design, Modelling and Fabrication of a Triple-Axis MEMS Gyroscope**  
*Z. Tingkai, W. Wei*  
(Beijing Aerospace Times Optical-Electronic Technology Co. Ltd., Beijing, CHINA)

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### Wednesday, September 19, 2012

- Session 5: FOG and FOG Components (CHAIRMAN: W. Auch)**
- 09:00 **One Nautical Mile per Month FOG-Based Strapdown Inertial Navigation System: a Dream Already within Reach?**  
*Y. Paturel, J. Honthaas, H. Lefevre, F. Napolitano*  
(iXBlue, Marly-le-Roi, FRANCE)
- 09:30 **HiBi Single Polariz@HB-Z Zing (TM) Fibers for Fiber Optic Gyroscopes**  
*J. M. Álvarez, M. Hill, J. Wooler, A. Gillooly*  
(Fibercore Limited, Hampshire, ENGLAND)
- 10:00 **Closed Loop Fiber Optical Gyroscopes for Commercial and Space Applications**  
*Y. Korkishko, V. Fedorov, V. Prilutskii, V. Ponomarev, I. Morev, S. Kostritskii, A. Zuev, V. Varnakov*  
(RPC OPTOLINK, Moscow, RUSSIA)
- 10:30 Break
- Session 6: IMU's in Dynamic Environment (CHAIRMAN: E. von Hinüber)**
- 11:00 **Redundant IMU Borehole Probe for Geological Survey Applications**  
*M. Perlmutter, A. Pizzarulli*  
(Civitanavi Systems Ltd., Zug, SWITZERLAND)
- 11:30 **Application of the Procedure for High-Accuracy IMU Calibration with the Use of a Low-Accuracy Turntable to a Rocking Base**  
*I. Bogatsky, O. Leonets*  
(Kiev, UKRAINE)
- 12:00 Lunch Break
- Session 7: Localisation and Surveying (CHAIRMAN: D. Loukianov)**
- 14:00 **Inertial System for Railway Track Diagnostics**  
*D. Larionov, Y. Filatov, A. Boronachin, L. Podgornaya, E. Bokhman, R. Shalymov*  
(St. Petersburg State Electrotechnical University "LETI", St. Petersburg, RUSSIA)
- 14:30 **Robustness Improvements and Comparisons of Automotive GPS/INS Navigation Filters in Suburban Scenarios Fusing Automotive on-board Sensors**  
*M. Wanker<sup>1</sup>, A. Rauch<sup>2</sup>, F. Klanner<sup>2</sup>, G.F. Trommer<sup>1</sup>*  
(<sup>1</sup>Institute of Systems Optimization, Karlsruhe, GERMANY; <sup>2</sup>BMW Group, München, GERMANY)
- 15:00 Break
- Session 8: Pedestrian Navigation (CHAIRMAN: J.F. Wagner)**
- 15:30 **Novel Heading Correction Methods for a Foot Mounted Inertial Sensor**  
*A. C. Hide, B. J. Pinchin, C. T. Moore*  
(Nottingham Geospatial Institute, Nottingham, ENGLAND)
- 16:00 **Adaptive Indoor Navigation Using Integration of IMU Based Pedestrian Dead Reckoning and RSS Fingerprinting**  
*W. Chai, C. Chen, E. Edwan, J. Zhang, O. Loffeld*  
(Center for Sensorsystems, University of Siegen (ZESS), Siegen, GERMANY)
- 16:30 **A System for Pedestrian Indoor Localization with Foot Mounted IMU and Additional Sensors**  
*M. Romanovas<sup>1</sup>, V. Goridko<sup>1</sup>, L. Klingbeil<sup>2</sup>, M. Bourouah<sup>1</sup>, A. Al-Jawad<sup>1</sup>, M. Trächtler<sup>1</sup>, Y. Manoli<sup>3</sup>*  
(<sup>1</sup>Institute of Microsystems and Information Technology, HSG-IMIT, Villingen-Schwenningen, GERMANY  
<sup>2</sup>Institute of Geodesy and Geoinformation, University of Bonn, Bonn, GERMANY  
<sup>3</sup>Fritz Huettinger Chair of Microelectronics, IMTEK, Freiburg, GERMANY)
- Alternative**
- An Enhanced Heading Estimation Method in Pedestrian Navigation Systems**  
*C. Yu, W. Gao, H. Lan, G. Zhou*  
(College of Automation, Harbin Engineering University, Harbin, CHINA)
- The High Bandwidth's Measurement and its Influence on the Vibration Characteristic of Fiber-Optic Gyroscopes**  
*Y.-B. Yang, W. Wang, X. Wang, J. Wang*  
(Beijing Aerospace Times Optical-Electronic Technology Co. Ltd., Beijing, CHINA)