

# Inertial Sensors and Systems – Symposium Gyro Technology 2013

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

## PROGRAMME

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### Tuesday, September 17, 2013

08:00 Registration

09:00 Welcome

09:10 **History of the Sagnac Effect: From Aether to Relativity**

*H. Lefèvre*

*(iXBlue, Marly le Roi, France)*

#### Session 1: MEMS Gyroscopes (CHAIRMAN: W. Geiger)

09:40 **Compensation of MEMS gyroscope drift based on amplitude primary oscillation measurement**

*Ya.A. Nekrasov, N.V. Moiseev, R.G. Liukshonkov, A.A. Belogurov*

*(State Research Center of the Russian Federation; Concern CSRI Elektropribor, Saint Petersburg, RUSSIA)*

10:20 **A new GNSS/INS integration for challenging environments**

*A. Filipe, J. Chinal, G. Dumas, M. Vincent, R. Signoretti, L. Ribetto, C. Kergueris*

*(Tronics Group, Crolles, FRANCE)*

10:50 Break

#### Session 2: FOG Components (CHAIRMAN: W. Auch)

11:20 **Optimisation of Coating Package Design for PM Fibers Used in High Performance Fiber Optic Gyroscopes**

*Dr. Chris Emslie*

*(Fibercore Limited, Southampton, United Kingdom)*

11:50 **Developments of Truly Radiation-Hardened Fiber Light Sources, and Highly Reliable Sensing Modules for Space-Grade FOGs**

*R. Liu*

*(National Space Organization (NSPO, Hsinchu, TAIWAN – CHINA)*

12:20 **Design and Validation of Photonic Crystal Fiber for Fiber-Optic Gyroscopes**

*J. Li, W. Wang, Z. Zhang, X. Yang*

*(Beijing Aerospace Times Optical-Electronic Technology Co. Ltd., Beijing, CHINA)*

12:50 Lunch Break

#### Session 3: Nuclear Spin and Coriolis Effect Gyros (CHAIRMAN: D. Lukianov)

14:00 **Nuclear Magnetic Resonance Gyroscope for Inertial Navigation**

*D. Meyer, Dr. M. Larsen*

*(Northrop Grumman, Woodland Hills, UNITED STATES)*

14:30 **High-grade CVG for Stabilization Control Systems and Tactical Grade Systems**

*J. Beitia, C. Fell, A. Barabashov*

*(Innalabs Ltd. Dublin, IRELAND)*

15:00 Break

#### Session 4: Inertial Measurement Units (CHAIRMAN: M. Perlmutter)

15:30 **Frequency Modulated MEMS IMU for Precision Inertial Sensing in a Dynamic Environment**

*S.A. Zotov, B.R. Simon, I.P. Prikhodko, A.A. Trusov, A.M. Shkel*

*(Micro Systems Laboratory, Irvine, UNITED STATES)*

16:00 **Half-liter, north-finding-grade, IMU**

*F. Guattari, T. Robin, N. Grossard, H. Lefèvre*

*(iXBlue, Marly le Roi, France)*

#### Alternate:

**Selecting the optimum inertial sensor for each specific application - a comprehensive guide based on analytic criteria and experimental data across several sensors and technologies**

*R. Senatore, A. Pizzarulli, Enrico Quatraro, L. de Luca, F. D'Angelo, M. Perfetti, M. Perlmutter, M. Catasta*

*(Sivitanavi Systems S.r.l, Civitanova Marche (MC, ITALY)*

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### Wednesday, September 18, 2013

- Session 5: Integrated Systems (CHAIRMAN: S. Zimmermann)**
- 08:30 **PNT-data generation as basis for guidance systems in inland water traffic**  
*A. Born, P. Zachhuber, Z. Dai, I.D. Herrera Pinzón, M. Hoppe, L. Brumisova, J. Zimmermann, A. Heidrich, F. Richter, O. Michler*  
(German Aerospace Center (DLR), Neustrelitz, GERMANY)
- 09:00 **Performance of a Tightly-Coupled GNSS/INS System using the Latest Generation MEMS Sensors**  
*R. D. Eng, J. Houghton, K. Bahan*  
(NovAtel Inc, Calgary, CANADA)
- 09:30 **HRG and Land Navigation**  
*V. Cournou, T. Serriere, Y. Follope*  
(Sagem Défense Sécurité, Paris-Cedex, FRANCE)
- 10:00 Break
- Session 6: Pedestrian and Indoor Navigation (CHAIRMAN: W. Bernard)**
- 10:30 **DCM Based Attitude Estimation with INS/Visual-gyroscope Integration for Indoor Navigation**  
*W. Chai, C. Chen, E. Edwan, Y. Zhang, O. Loffeld*  
(Center of Sensorsysteme (ZESS), University of Siegen, Siegen, GERMANY)
- 11:30 **Research on Integrated Navigation Technology of the Pedestrian Navigation System Based on MIMU/Magnetometer**  
*F. Yu, C. Yu, Y. Ge, S. Yuan*  
(College of Automation, Harbin Engineering University, Harbin, CHINA)
- 12:00 Lunch Break
- Session 7: Algorithms and Integration Methods (CHAIRMAN: J.-F. Wagner)**
- 14:00 **Aspects of IMU signal processing and its impact on tracking performance in COTS inertial navigation sensors**  
*A. Vydhyathan, G. Bellusci, K. Velt, B. Kooi*  
(Xsens Technologies B.V., Enschede, NETHERLANDS)
- 14:30 **A new GNSS/INS integration for challenging environments**  
*J.B. Lacambre, J.M. Louge, Y. Paturel*  
(iXBlue, Marly le Roi, France)
- 15:00 **Integrity of GNSS / Inertial Navigation System**  
*B. Deleaux, M. Destelle, C. Chaligne*  
(Sagem Défense Sécurité, Paris-Cedex, FRANCE)
- 15:30 Break
- Session 8: Surveying Applications (CHAIRMAN: von Hinueber)**
- 16:00 **The hybrid inclinometer using the fiber optical gyroscopes**  
*K.O. Baryshnikov, A.I. Balandin, M.I. Koptenkov*  
(Branch of the Center for Ground-Based Space Infrastructure Facilities Operation "Scientific & Research Institute for Applied Mechanics, Moscow, RUSSIA)
- 16:30 **Measurement –While-Drilling System based on Inertial Sensors for Guided Drilling and Resurveying Applications**  
*U. Probst, Dr. A. Dahlhoff, Dr. H. Fischer, Dr. C. Lenski, N. Jaskulski, Dr. H. Krenn, M. Schmidt*  
(Northrop Grumman LITEF GmbH, Freiburg, GERMANY)
- Alternate:**
- Research on the irradiation characteristic of erbium-doped fiber source for high precision fiber-optic gyroscope**  
*Z. Binxin, W. Wei, W. Xuefeng, L. Jing*  
(Beijing Aerospace Times Optical-Electronic Technology Co Ltd, Beijing, CHINA)
- Bandwidth improved closed-loop thermal accelerometer**  
*A. Deblonde, A. Giani, M. Basarab, P. Combette, A. Garraud, B. Sorli*  
(Institut d'Electronique du Sud – Université Montpellier 2, Montpellier, FRANCE)