Symposium Gyro Technology 2009

Programme Committee: W. Bernard (Chairman), W. Auch, W. Geiger, B. Stieler, E. von Hinüber

P R O G R A M M E

Tuesday, September 22, 2009

08:00	Registration
09:00	Welcome

Session 1: MEMS Gyro Technology (CHAIRMAN: W. Geiger)

09:20 **A New Silicon Tuning Fork Gyroscope for Aerospace Applications**
B. Chaumet, B. Le-Verrier, C. Rougeot, S. Bouyat
(Thales Aerospace, Châtellerault Cedex, FRANCE)

09:50 **A Novel Closed-Loop Silicon Micromechanical Gyroscope under Atmosphere**
Y. Wang, W. Wang, Y. Gao
(The Beijing Aerospace Times Optical-electronic Technology Co. Ltd., Beijing, CHINA)

Session 2: Quartz – Based Vibrating Gyroscopes (CHAIRMAN: W. Bernard)

10:20 **A Z-Axis Quartz Tuning Fork Gyroscope**
X. Zheng, X. Liao, J. Yang
(Beijing Automatic Control Equipment Institute, Beijing, CHINA)

10:50 Break

11:20 **Mixed Digital / Analog Electronic Architecture for Coriolis Vibrating Gyro**
J. Guérard, D. Janiaud, S. Masson, O. Le Traon
(ONERA, Chatillon Cedex, FRANCE)

Session 3: Test and Characterisation of Inertial Sensors (CHAIRMAN: D. Loukianov)

11:50 **Application of Wavelet Analysis in Testing of Dynamic Characteristics of Fiber Optic Gyroscope**
X. Li, N. Zhang, W. Gao, Y. Zhang
(College of Automation, Harbin Engineering University, Harbin, CHINA)

12:20 **Testing of MEMS Inertial Sensors**
M. Tschirky, M. Kägi, L. Zana
(ACUTRONIC Switzerland Ltd, Bubikon, SWITZERLAND)

12:50 Lunch Break

Session 4: MEMS Inertial Sensors in Unmanned Vehicles (CHAIRMAN: B. Stieler)

14:00 **Model Helicopter Flight Control**
S. Staiger, R. Lehmann, W. Schröder
(Hochschule Offenburg, Offenburg, GERMANY)

14:30 **Bridging of GPS-Outages in Low-Cost Integrated Navigation Systems**
C-S. Wilkens, S. Martin, T. Martin, P. Vörsmann
(Technische Universität Braunschweig, Braunschweig, GERMANY)

15:00 Break

Session 5: Pedestrian and Indoor Navigation (CHAIRMAN: W. Schröder)

15:30 **Efficient Quaternion Attitude Estimation Algorithm for Particle Filter Based Localisation**
L. Klingbeil, M. Romanovas, R. Reiner, M. Trächtler, Y. Manoli
(HSG-IMIT, Villingen-Schwenningen, GERMANY)
(IMTEK, Freiburg, GERMANY)

16:00 **Combining Laser Range Measurements and a Dual-IMU IPNS for Precise Indoor SLAM**
C. Ascher, C. Kessler, M. Wankerl, G. F. Trommer
(University of Karlsruhe, Karlsruhe, GERMANY)

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Session 6: FOG-Based Stabilisation and Guidance (CHAIRMAN: W. Auch)

08:30 **Performance Evaluation of the Fiber Optic Gyroscopes Integrated into the SOFIA Telescope Assembly**
F. Harms, A. Reinacher, H. Jakob, J. F. Wagner, T. Guettler-Sergeant
(Universität Stuttgart, Stuttgart, GERMANY)
(IXSEA, Marly-le-Roi, FRANCE)

09:00 **Fiber-Optic Gyroscope for Periscope Mirror Stabilization**
T. Erler, S. Büchele, M. Oswald
(Sagem Navigation GmbH, Murr, GERMANY)

09:30 **Prototype Study of a High Performance Inertial Measurement Unit for Use in Inertial Navigation Applications based on NG LITEFs AHRS LCR–100**
O. Deppe-Reibold, H. Böhler, G. Dorner, M. Hafen, A. Rasch, G. Spahlinger
(Northrop Grumman LITEF GmbH, Freiburg, GERMANY)

10:00 Break

Session 7: Aided Inertial Systems (CHAIRMAN: J. Wagner)

10:30 **Modelling and Testing of Terrain Aided Inertial Navigation Algorithms for Land Vehicles**
T. Sönmez, V. Ekutekin
(Tübitak Sage Navigation Division, Ankara, TURKEY)

11:00 **The Research of High Performance Fiber Optic Gyroscope SINS / GPS Integrated Navigation System for Vehicle**
X. He, W. Wang, C. Zheng
(The Beijing Aerospace Times Optical-electronic Technology Co. Ltd., Beijing, CHINA)

11:30 **Integrated GBAS / INS Navigation System – Continuity and Integrity Aspects**
M. Steen, M. Becker, U. Bestmann, M. Kujawska, T. Feuerle, P. Hecker
(Technische Universität Braunschweig, Braunschweig, GERMANY)

12:00 Lunch Break

Session 8: Urban Car Navigation and Crash Testing (CHAIRMAN: E. von Hinüber)

13:30 **High Precision Car Localization in Urban Environments**
A. Sasse, T. Nothdurft, P. Hecker
(Technische Universität Braunschweig, Braunschweig, GERMANY)

14:00 **The Results of Automobile Testing of a Miniature Inertial-Satellite Integrated System in Urban Conditions**
I.V. Semenov, A.P. Stepanov
(CSRI Elektropribor, Saint Petersburg, RUSSIA)

14:30 **MEMS-Based Inertial Navigation in Vehicle Crash Testing**
P. Andersson, P. Björkholm, P. Johannisson, C. Johnsson, J. Stigwall, S. Södermalm
(Imego, Goteborg, SWEDEN)
(Autoliv, Chalmers University of Technology, Saab Automobile, Volvo Cars Corporation)

15:00 Break

Session 9: Performance Evaluation and Market Analysis (CHAIRMAN: M. Perlmutter)

15:30 **Modeling, Design, Analysis, Simulation, and Evaluation (MDASE) for Far-Target Location (FTL) Systems**
W.T. Thodos, N. G. Mathur, C.-F. Lin
(U.S. Army, Night Vision & Electronic Sensors Directorate, Fort Belvoir, USA)
(American GNC Corporation, Simi Valley, USA)

16:00 **Tactical Inertial Components: IMU Market and Promising Applications for Gyroscopes**
L. Robin
(Yole Développement, Lyon, FRANCE)