Tuesday, September 22, 2015

08:00  Registration
09:00  Welcome
09:05  The ISS Symposium Turns 50: Trends and Developments of Inertial Technology during Five Decades
       Jörg F. Wagner¹, [M. Perlmutter²]
       (¹University of Stuttgart, Deutsches SOFIA Institut, Stuttgart, GERMANY,
       ²Civitanavi Systems Ltd, Sherborn, MA, USA)

Session 1:  Accelerometers  (CHAIRMAN: S. Zimmermann)
09:30  Quartz Pendulous Accelerometers for Navigation and Tactical Grade Systems
       Jose Beleta¹, [A. Clifford, C. Fell, P. Loisel]²
       (¹INNALABS Ltd, Blanchardstown Industrial Park, Blanchardstown, Dublin, IRELAND)
10:00  A New High Performance Sigma-Delta MEMS Accelerometer for Inertial Navigation
       Philippe Uilah¹, [V. Ragot]², [P. Zwahlen, F. Rudolf]²
       (¹Sagem, Argenteuil, FRANCE,
       ²Colibrys, Yverdon-les-Bains, SWITZERLAND)
10:30  Coffee Break
11:00  Control and Damping Imperfection Compensation for a Rate Integrating MEMS Gyroscope (Alternate)
       Zhenyu Hu¹, [Barry Gallacher]²
       (¹Newcastle University, School of Mechanical & System Engineering, Newcastle upon Tyne, UNITED KINGDOM)

Session 2:  Gyroscopes  (CHAIRMAN: W. Geiger)
11:30  Development and Evaluation of a Navigation Grade Resonator Fiber Optic Gyroscope
       Glen Sanders¹, [Earl Benser]², [M. Smicklias, J. Wu]³, [L. Strandjord]²
       (¹Honeywell International, Aerospace Advanced Technology, Phoenix, AZ, USA
       ²Honeywell International, Aerospace Advanced Technology, Plymouth, MN, USA

12:00  Electromechanical and process design of a 3 axis piezoelectric MEMS gyro in GaAs
       Adrien Piot¹, [B. Bourgeteau, O. Le Traon, R. Levy, P. Lavenus, J. Guérard]²,
       [J. Roland, N. Isaac, A. Bosseboeuf]²
       (¹Onera – The French Aerospace Lab, Sensors and Microtechnology Unit, Physics and Instrumentation Department, Châtillon, FRANCE,
       ²Université Paris Sud, Institut d’Electronique Fondamentale, UMR 8622, Orsay, FRANCE)
12:30  Lunch Break (90min)
14:00  A New Versatile Hardware Platform for Closed-Loop Gyro Evaluation
       Ahmed Omar¹, [A. Ismail]², [Elshennawy, M. Nagib, M. Elmala, A. Elsayed]³
       (¹Si-Ware Systems, ASIC Solutions Business Unit, Heliopolis, Cairo, EGYPT)
14:30  Continuous-Time Lowpass and Bandpass ΔΣ-Modulators for Closed-Loop Readout Circuits of Capacitive MEMS Gyrosopes
       Stefan Rombach¹, [M. Maurer, Y. Manoli]², [Y. Manoli]²
       (¹University of Freiburg, Fritz Huettinger Chair of Microelectronics, Department of Microsystems Engineering (IMTEK),
       Freiburg, GERMANY,
       ²HSG-IMIT, Villingen-Schwenningen, GERMANY)
15:00  Coffee Break

Session 3:  Sensor Fusion  (CHAIRMAN: G. Trommer)
15:30  A Closed-loop Procedure for the Modeling and Tuning of Kalman Filter for FOG INS
       Andrea Pizzaruill¹, [Fabrizio D’Angelo]¹, [A. Benini, D. Orsini, R. Senatore, M. Verola, M. Perlmutter]¹
       (¹Civitanavi Systems S.r.l., Civitanova Marche (MC), ITALY)
17:20  Come together @ Meeting Point (Statue of Fridericiana)
17:45  Karlsruhe celebrates 300 anniversary: Guided Tour in Karlsruhe - starting at the Schlossplatz
19:30  End Tour – Dinner at the “Festsaal im Studentenhaus” – The ballroom of the University.

Alternate:
2. The Development and Evaluation of a Two-Axis Indexing NFFDLG INS for Marine Navigation
       Songtao Han¹, [B. Yuan, J. Tang, G. Lu, Z. Fan]³
       (¹National University of Defense Technology, College of Opto-Electronic Science and Engineering, Changsha, CHINA)
2015 DGON Inertial Sensors and Systems (ISS)
Program Committee: S. Zimmermann (Chairman), W. Auch, W. Geiger, T. Löffler, E. von Hinüber, J.-F. Wagner

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Session 3 cont.: Sensor Fusion

9:00 Using the principle of measurement reproduction in federated filters for navigation data processing
Viktor A. Tupyshev1, Yuliya A. Litvinenko2
1Concern CSRI Electropribor, JSC, St. Petersburg, RUSSIA
2ITMO University, Concern CSRI Electropribor, JSC, St. Petersburg, RUSSIA

9:30 Sensor fusion based vibration estimation using inertial sensors for a complex light-weight structure
Prashant Kaswekar1, J.-F. Wagner2
1University of Stuttgart, Deutsches SOFIA Institut, Stuttgart, GERMANY

10:00 Development of Mapping Position and Orientation Systems with Commercial Grade MEMS
Val Varavva1, J. Hutton, A. Lambert2
1Applanix Corporation, Richmond Hill, Ontario, CANADA

10:30 Coffee Break

11:00 A laser and image based navigation and guidance system for autonomous outdoor-indoor transition flights of MAVs
Manuel Popp1, G. Scholz, S. Prophet, G. F. Trommer2
1Karlsruhe Institute of Technology, Institute of Systems Optimization, Karlsruhe, GERMANY

Session 4: Simulation and Testing

11:30 On the generation of realistic simulated inertial measurements
M. Eulàlia Parés1, J. A. Navarro2, I. Colomina2
1CTTC - Geomatics Division, Castelldefels - Barcelona, SPAIN
2Geonumerics, Castelldefels - Barcelona, SPAIN

12:00 Multi-Sensor vehicle testing: Recording Inertial Sensors via CAN bus in Combination with Recorded GNSS RF signals
Karen von Hünerbein1, P. Argent, T. Schulze2
1Applanix Corporation, Richmond Hill, Ontario, CANADA
2Spirent Communications plc, Paignton, Devon, UNITED KINGDOM

12:30 Lunch Break (90min)

Session 5: Applications

14:00 Development of a Modular Inertial Sensor Package and its Application for Improvement of Handheld Grenade Launcher Accuracy
Alfons Newzella1, M. Weidacher, J. Schoder, F. Gathmann2
1MBDA-Deutschland GmbH, OPE2-E1, Schrobenhausen, GERMANY

14:30 Dedicated algorithm for line of sight stabilization and orientation
Loïc Davain1, Thomas Erler2
1Sagem Défense Sécurité, Avionics Division, Eragny, FRANCE
2Sagem Navigation, Murr, GERMANY

15:00 Coffee Break

15:30 A Study of Different Types of IMU Errors in Strapdown Airborne Gravimetry
David Becker1, M. Becker2
1Technische Universität Darmstadt, Physical and Satellite Geodesy, Darmstadt, GERMANY

16:00 Tuning Fork MEMS Gyroscope for Precision Northfinding
Burgess Johnson1, K. Christ, D. Endean2, B. Mohr, R. Supino3, H. French4, E. Cabuz2
1Honeywell International, Aerospace Advanced Technology, Plymouth, MN, USA
2Honeywell International, Aerospace Advanced Technology, Golden Valley, MN, USA
3CorTech, LLC, (Formerly of Honeywell International, Aerospace Advanced Technology), Plymouth, MN, USA
4Honeywell International, Aerospace Advanced Technology (Formerly), Plymouth, MN, USA

Alternate:

1. Sensor Fusion and Transfer Alignment Concept for Pointing and Target acquisition
Andrea Pizzarulli1, Fabrizio D'Angelo, Gianluigi Biancucci, Roberto Senatore, Massimo Verola, Michael Perlmutter1
1CIVITANAVI Srl, Civitavecchia Marche (MC), ITALY

Mihailas Romanovas1, R. Ziebold, L. Lança
1German Aerospace Centre (DLR), Institute of Communications and Navigation, Department of Nautical Systems, Neustrelitz, GERMANY

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