

# ION GNSS 2012 Best Presentation Awards

## Session A1: Land Based Applications 1

A Comparative Study of Lidar and Camera-based Lane Departure Warning Systems: Jordan Britt, C. Rose, D. Bevly, Auburn University

## Session B1: Preserving the Availability and Integrity of GNSS in Harsh Environments

Authentication of GNSS Position: An Assessment of Spoofing Detection Methods: Y. Bardout, Thales Alenia Space, France

## Session C1: Aviation Applications

Collision Avoidance with Integrity Using Raw Measurements in the Automatic Dependent Surveillance - Broadcast: M. Uijt de Haag, Ohio University; J.L. Farrell, Vigil, Inc.; S. Vana, Ohio University

## Session D1: GNSS and the Atmosphere 1

Multi-Domain Analysis of the Impact of Natural and Man-Made Ionosphere Scintillations on GNSS Signal Propagation: W. Pelgrum, Ohio University; Y. Morton, Miami University; F. van Graas, Ohio University

## Session E1: Precise Point Positioning and RTK

Issues in Ambiguity Resolution for Precise Point Positioning: P. Collins, York University and Natural Resources Canada, Canada; S. Bisnath, York University, Canada

## Session F1: Software Receivers and GNSS Antennas

Wide-band Signal Processing Features for Reference Station use of a PC-based Software Receiver: P(Y), AltBOC and the Inter-frontend Link for up to Eight Frequency Bands: T. Pany, N. Falk, B. Riedl, T. Hartmann, J. Winkel, IFEN GmbH, Germany; G. Stangl, Space Research Institute of the Austrian Academy of Science, Austria

## Session A2: Land Based Applications 2

Odometer-aided Instantaneous Signal Reacquisition for Automotive GNSS Receivers: H-G. Busing, U. Haak, P. Hecker, Technische Universitat Braunschweig, Germany

## Session B2: GNSS Algorithms and Methods

A New Approach of Frequency Offset Correction for Enhancing Sensitivity of GNSS Receivers: M. Sahmoudi, P. Esteves, University of Toulouse, France; L. Ries, G. Artaud, CNES, France; M-L. Boucheret, ENSEEIHT/INPT, France; M. Bousquet, University of Toulouse, France

## Session C2: Receiver & Antenna Technology 1

Multisatellite Tracking GNSS Receivers in Multipath Environments: K. Giger, C. Guenther, Technische Universitaet Muenchen, Germany

## Session D2: Galileo and Other Emerging GNSS (COMPASS, QZSS, IRNS)

Quasi-Pilot Signals: Improving Sensitivity and TTFF without Compromises: M. Paonni, M. Anghileri, B. Eissfeller, University FAF Munich, Germany; T. Pany, IfEN GmbH, Germany

## Session E2: Pedestrian Navigation

Collaborative Pedestrian Mapping of Buildings Using Inertial Sensors and FootSLAM: P. Robertson, German Aerospace Center, Germany; M. Garcia Puyol, German Aerospace Center and University of Malaga, Spain; M. Angermann, German Aerospace Center, Germany

## Session F2: New Product and Commercial Service Announcements

RTX Positioning: The Next Generation of cm-accurate Real-time GNSS Positioning: R. Leandro, H. Landau, M. Nitschke, M. Glocker, S. Seeger, X. Chen, A. Deking, M.B. Tahar, F. Zhang, R. Stolz, N. Talbot, G. Lu, K. Ferguson, M. Brandl, V. Gomez, A. Kipka, Trimble Terrasat GmbH, Germany

## Session A3: Urban and Indoor Navigation Technology (Academic Focus) 1

Comparison in the Performance of the Vector Delay/Frequency Lock Loop and Equivalent Scalar Tracking Loops in Dense Foliage and Urban Canyon: M. Lashley, NTA, Inc.; D.M. Bevly, Auburn University

### **Session B3a: Marine Navigation**

Augmented Reality Precision Navigation: B. Almquist, The Office of Naval Research; T. Zysk, J. Luce, Technology Systems Inc.; J. Cunningham, Naval Surface Warfare Center, Dahlgren Division

Performance Analysis of Software-Based GPS/GLONASS Augmentation System for Maritime DGNSS Service: K-Y. Seo, S-H. Park, W-S. Jang, Korea Ocean R&D Institute, South Korea

### **Session B3b: Advances in Military GNSS Systems and Applications**

Precision Navigation for UAS Critical Operations: A. Brown, D. Nguyen, R. Edwards, NAVSYS Corporation

### **Session C3: Interference and Spectrum Management**

Signal Characteristics of Civil GPS Jammers: R.H. Mitch, R.C. Dougherty, M.L. Psiaki, B.W. O'Hanlon, S.P. Powell, Cornell University

### **Session D3: GNSS Simulation and Testing**

Hybrid Test Bench SINERGHYS "Statistical INERTial GnsS HYbrid in Simulation: S. Gallot, P. Dutot, C. Sajous, French MoD, DGA Information Superiority, France

### **Session E3: Algorithms & Methods 1**

Coherent Multiple Hypotheses Detection and Measurement for Radio Navigation: B. Shayevits, M. Tocker, D. Rosenfeld, CellGuide Ltd., Israel

### **Session F3: Precise Positioning and RTK for Civil Applications**

An Innovative New Approach for Network RTK: X. Chen, T. Allison, W. Cao, K. Ferguson, S. Grunig, V. Gomez, A. Kipka, J. Koehler, H. Landau, R. Leandro, G. Lu, R. Stolz, N. Talbot, Trimble Terrasat GmbH, Germany

### **Session A4: Geodesy and Surveying**

The Accuracy Potential of Galileo E5/E1 Pseudoranges for Surveying and Mapping: I. Colomina, C. Miranda, M.E. Pares, Institute of Geomatics, Spain; M. Andreotti, C. Hill, University of Nottingham, UK; P.F. Silva, J.S. Silva, DEIMOS Engenharia, Portugal; J.F. Galera Monico, P.O. Camargo, UNESP, Brazil; J. Diez, J. Palomo, DEIMOS Space, Spain; S.E. Barbin, USP; J. Moreira, OrbiSat; G. Streiff, Santiago e Cintra; E.Z. Granemann, MundoGeo; C. Aguilera, European GSA

### **Session B4: Robust Navigation in GNSS-Denied & GNSS-Challenged Environments 1**

Performance of Deeply Integrated GPS/INS in Dense Forestry Areas: A. Soloviev, University of Florida; C. Toth, D.A. Grejner-Brzezinska, Ohio State University

### **Session C4: GNSS Space Based Augmentation Systems (SBAS)**

Evolving WAAS to Serve L1/L5 Users: T. Walter, J. Blanch, R.E. Phelts, and P. Enge, Stanford University

### **Session D4: GNSS and the Atmosphere 2**

GNSS Imaging-derived Dynamics of Ionospheric Storm Transition Regions: S. Datta-Barua, San Jose State University; G.S. Bust, ASTRA, LLC

### **Session E4: Next Generation GNSS Integrity 1**

An Evaluation of the Vestigial Signal Defense for Civil GPS Anti-Spoofing: K. Wesson, D. Shepard, J. Bhatti, T. Humphreys, University of Texas at Austin

### **Session F4: Multi-Constellation User Receivers**

LION Navigator-GPS/Galileo Receiver for Spacecraft Navigation: E. Gottzein, C. Kuehl, H. Fillippi, A. Barrios-Montalvo, P.A. Krauss, J. Heim, Astrium GmbH, Germany

### **Session A5: Urban and Indoor Navigation Technology (academic focus) 2**

Multipath Mitigation Using Omnidirectional Infrared Camera for Tightly Coupled GPS/INS Integration in Urban Environments: T. Suzuki, M. Kitamura, Y. Amano, T. Hashizume, Waseda University, Japan

### **Session B5: Timing and Scientific Applications**

Flight Characterization of New Generation GNSS Satellite Clocks: O. Montenbruck, DLR/GSOC, Germany; P. Steigenberger, Technical University of Munich, Germany; E. Schonemann, Technical University Darmstadt, Germany; A. Hauschild, DLR/GSOC, Germany; U. Hugentobler, Technical University Munich, Germany; R. Dach, University of Bern, Germany; M. Becker, Technical University Darmstadt, Germany

**Session C5: GNSS Ground Based Augmentation Systems (GBAS)**

Real-Time Detection of Cross-Correlation for a Precision Approach Ground Based Augmentation System: T. Houston, F. Liu, M. Brenner, Honeywell International, Aerospace

**Session D5: GPS and GLONASS Modernization**

GNSS, an Evolving Technology. Current Systems Evolutions and Future Perspectives: M.M. Romay, M.D. Lainez, J.R. Martin, M. Toledo, GMV, Spain

**Session E5a: Remote Sensing with GNSS & Integrated Systems**

Observing Tsunamis in the Ionosphere Using Ground and Space-Based GPS Measurements: D.A. Galvan, A. Komjathy, NASA Jet Propulsion Laboratory, California Institute of Technology; M. Hickey, Embry-Riddle Aeronautical University

**Session E5b: Next Generation GNSS Integrity 2**

Multi-Constellation Integrity Performance Expectations for Today's Dual Frequency ARNS/RNSS Bands: V. Kropp, P. Mendes, B. Eissfeller, University FAF Munich, Germany

**Session F5a: Portable Navigation Devices**

Commercial GPS in the Stratosphere: Cell Phone GPS Receiver Performance on a High Altitude Weather Balloon: J. Carroll, B. Chan, C. Harner, T. Reid, P. Tarantino, T. Yu, Stanford University

**F5b: Alternatives and Backups to GNSS (Consumer/Commercial Focus)**

A High-Precision Local Navigation System Extending GNSS Limitations: V. Oehler, J. Steffes, M. von Voithenberg, D. Dragon, S. Schlotzer, EADS Astrium GmbH, Germany

**Session A6: Alternatives and Backups to GNSS (Academic Focus)**

RFID Indoor Positioning and Navigation Using a Regularized Particle Filter Integrated with a Probability Model: H. Tang, D. Kim, University of New Brunswick, Canada

**Session B6: Robust Navigation in GNSS-Denied & GNSS-Challenged Environments 2**

Image Aided Relative Navigation for Air Vehicles Using a Passive, Statistical Predictive Rendering Approach: J.M. Howard, M.J. Veth, Air Force Institute of Technology

**Session C6: Receiver & Antenna Technology 2**

A Bavarian Initiative Towards a Robust Galileo PRS Receiver: A. Ruegamer, I. Suberviola, F. Foerster, G. Rohmer, Fraunhofer IIS, Germany; A. Konovaltsev, N. Basta, M. Meurer, German Aerospace Center, Germany; J. Wendel, M. Kaindl, EADS Astrium, Germany; S. Baumann, IABG, Germany

**Session D6: GNSS Compatibility, Interoperability and Services**

Breaking the Ice: Navigating in the Arctic: G.X. Gao, L. Heng, and T. Walter, Stanford University

**Session E6: Algorithms & Methods 2**

Integrity Risk of Kalman Filter-Based RAIM: M. Joerger, B. Pervan, Illinois Institute of Technology

**Session F6: Urban Navigation Technology & Location Based Services (Commercial Focus)**

Three Dimensional Positioning with Two GNSS Satellites and DSRC for Vehicles in Urban Canyons: N. Alam, University of New South Wales, Australia