

ION GNSS+ 2014

GNSS+ Other Sensors in Today's Marketplace

ION GNSS+ 2014 Best Presentation Awards

Session A1: High Accuracy Products and Solutions

The Triple-frequency Multi-system RTK Engine for Challenging Environments: J. Van Hees, F. Boon, P. Jacobs, F. Kleijer, J. Viana, B. Durinck, A. Simsky, Septentrio Satellite Navigation, Belgium

Session B1: Applications Using Consumer GNSS

Mobile Mapping Using Smartphone: N. El-Sheimy, A. Al-Hamad and A. Moussa, University of Calgary, Canada

Session C1: Atmospheric Effects 1

Tropospheric Monitoring over the Ocean using Shipborne GNSS Receiver: M. Fujita, JAMSTEC/RIGC, Japan; A. Wada, Hitachi Zosen Corporation, Japan; T. Iwabuchi, C. Rocken, GPS Solutions Inc., Boulder

Session D1: Advances in Positioning Using Radio and Other Signals

Multipath Assisted Positioning using a Single Antenna with Angle of Arrival Estimations: C. Gentner, T. Jost and A. Dammann, German Aerospace Center (DLR), Germany

Session E1: GNSS Vulnerabilities 1: Interference

Overview of Weak Interference Detection and Localization Techniques for the GNSS Environmental Monitoring System (GEMS): E. Cetin, University of New South Wales, Australia; M. Trinkle, The University of Adelaide, Australia; A. Bours, ENSTA ParisTech, France; G. Gabelli, University of Bologna, Italy; R.J.R. Thompson, A.G. Dempster, University of New South Wales, Australia; G.E. Corazza, University of Bologna, Italy

Session B2: High Precision GNSS

Optimized Precise-Point-Positioning Service for Natural Hazard Monitoring: Y. Bar-Sever, W. Bertiger, M. Garcia Fernandez, N. Harvey, L. Romans, J. Weiss, Jet Propulsion Laboratory, California Institute of Technology

Session C2: Atmospheric Effects 2

GPS and Ionosonde Data Fusion for Local Ionospheric Parameterization: K.Q.Z. Chiang and M.L. Psiaki, Cornell University

Session D2: Inertial Sensors, Algorithms and Integration

Broad Motion Mode Recognition for Portable Navigation: M. Elhoushi, Trusted Positioning Inc. and Queen's University, Canada; J. Georgy, Trusted Positioning Inc., Canada; M. Korenberg, Queen's University, Canada; A. Noureldin, Royal Military College of Canada and Queen's University, Canada

Session E2: Next Generation GNSS Positioning

Combined GPS+BDS+Galileo+QZSS for Long Single-baseline RTK Positioning: R. Odolinski, Curtin University, Australia; P.J.G. Teunissen, Curtin University, Australia and Delft University of Technology, The Netherlands; D. Odijk, Curtin University, Australia

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Session F2: Alternatives and Backups to GNSS for Navigation 1

From L-Band Measurements to a Preliminary Channel Model for APNT: N. Schneckenburger, D. Shutin, T. Jost, M. Walter, T. Thiasiriphet, A. Filip, M. Schnell, German Aerospace Center (DLR), Germany

Session A3: MEMS

The Limits of In-run Calibration of MEMS and the Effect of New Techniques: H. Martin, P. Groves, University College London, UK; M. Newman, BAE Systems Advanced Technology Centre, UK

Session B3b: Aviation and Marine Applications 1

Arctic Navigation: Detection and Classification of Sea Ice: T. Reid, P. Enge, T. Walter, Stanford University; A. Fowler, RIEGL Laser Measurement Systems GmbH, Austria

Session C3a: Remote Sensing; Space Applications; Timing and Scientific Applications 1

Robust GPS Timing for PMUs: A Position-Information-Aided Vector Tracking Approach: D. Chou, L. Heng and G.X. Gao, University of Illinois Urbana-Champaign

Session D3: Enhancing GNSS with Sensors, Mapping and Cooperation

Development of a Positioning Tool for the Navigation of Visually Impaired People: P. Hafner, K. Huber, T. Moder, M. Wieser, Graz University of Technology, Austria; G. Hollinger, C. Strauß, Strauß & Hollinger, GeoIT OG

Session E3: GNSS Error Models

GPS Scintillation Modeling and Receiver Design Strategies for Low-latitude Regions: F. Ghafoori and S. Skone, University of Calgary, Canada

Session F3a: Modernization of GNSS Systems, Compatibility, Interoperability, Service Performance 1

GALILEO in Orbit Validation Open Service and Search And Rescue Positioning Performance: S. Binda, G. Lopez-Risueño, M. Albertazzi, G. Galluzzo, F. Gonzalez, D. Blonski, I. Stojkovich, E. Breeuwer, J. Hahn, M. Falcone, European Space Agency, The Netherlands; M. Gasbarra, M. Eleuteri, F. Paggi, Thales Alenia Space Italy; A. Nuckelt, D. Oskam, Airbus Defence and Space

Session F3b: Alternatives and Backups to GNSS for Navigation 2

Using Indoor Maps to Enhance Real-time Unconstrained Portable Navigation: T. Lin and J. Georgy, Invensense Canada

Session A4: New Consumer Products and Applications: Phones, Tablets, Wearables, Automotive

An Analysis of the Accuracy of Bluetooth Low Energy for Indoor Positioning Applications: R. Faragher and R. Harle, University of Cambridge, UK

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Session B4: Aviation and Marine Applications 2

Spoofing Mitigation, Robust Collision Avoidance, and Opportunistic Receiver Localisation Using a New Signal Processing Scheme for ADS-B or AIS: R. Faragher, University of Cambridge, UK; P.F. MacDoran, M.B. Mathews, Loctronix® Corporation, USA

Session C4: Software Receivers

GNSS-SDRLIB: An Open-Source and Real-Time GNSS Software Defined Radio Library: T. Suzuki and N. Kubo, Tokyo University of Marine Science and Technology, Japan

Session E4: High Precision GNSS Positioning

A Real-time World-wide Ionospheric Model for Single and Multi-frequency Precise Navigation: A. Rovira-Garcia, J. M. Juan, J. Sanz, Technical University of Catalonia (UPC), Spain

Session F4a: GNSS Augmentation Systems and Integrity 1

Challenging EGNOS on the LPV 200 Vertical Accuracy Tail Requirements: F. Bauer, Thales Alenia Space, France; E. Tapias, Consultant for Thales Alenia Space, France; C. López de Echazarreta, European Space Agency, France

Session F4b: Modernization of GNSS Systems, Compatibility, Interoperability, Service Performance 2

GNSS Time Offset Monitoring & Time Synchronization Testing and Assessment: B. Yu, J. Li and C. Wu, China Electronics Technology Group, China

Session A5: Multi-Constellation in Commercial Products

A quad-Constellation Monolithic GNSS Receiver: C. Norman and A. Warloe, Broadcom

Session B5: Land Based Applications

Deriving Bearing Measurements from Video Images using Haar-Like Features for Vehicle-to-Vehicle Navigation: E. Amirloo Abolfathi and K. O'Keefe, University of Calgary, Canada

Session C5: Remote Sensing; Space Applications; Timing and Scientific Applications 2

Analysis of Error Sources in Phase Rate Measurements in GPS Radio Occultation for the CICERO Pathfinder Mission: E. Barlow, P. Axelrad, University of Colorado Boulder; P. Withnell, Laboratory for Atmospheric and Space Physics; D. Nuding, University of Colorado Boulder

Session D5: Next Generation Multisensor Integration

An Advanced Real-Time Navigation Solution for Cycling Applications Using Portable Devices: H-W. Chang, J. Georgy, Trusted Positioning Inc., Canada; N. El-Sheimy, University of Calgary, Canada

Session E5a: GNSS Receiver Technology – Software and Algorithms 1

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Exploiting Quasi-periodicity in Receiver Dynamics to Enhance GNSS Carrier Phase Tracking: S. Bhaskar, University of Calgary, Canada

Session F5a: Interference and Spectrum Issues

Nonstationary Jammer Excision for GPS Receivers using Sparse Reconstruction Techniques: M.G. Amin and Y.D. Zhang, Villanova University

Session F5b: GNSS Augmentation Systems and Integrity 2

A Practical Approach to Optimal Estimator Design in RAIM: M. Joerger and B. Pervan, Illinois Institute of Technology

Session A6: Simulation and Testing

The Importance of Human Motion for Simulation Testing of GNSS: K. Voutsis, P. Groves, University College London, UK; C. Ford, M. Holbrow, Spirent Communications plc, UK

Session B6: Precise Point Positioning and L-band Services

Real-time PPP with Ambiguity Resolution – Determination and Application of Uncalibrated Phase Delays: K. Huber, Graz University of Technology, Institute of Navigation, Austria; F. Hinterberger, Vienna University of Technology, Austria; R. Lesjak, Graz University of Technology, Institute of Navigation, Austria; R. Weber, Vienna University of Technology, Austria

Session C6: GNSS Urban and Indoor Positioning and Navigation

The Potential of Electromyography to Aid Personal Navigation: T. Moore, C. Hill, J. Pinchin, G. Smith, University of Nottingham, UK; I. Loram, MMU Institute for Biomedical Research into Human Movement and Health, UK

Session D6: Navigation Using Environmental Features

Assured Vision Aided Inertial Localization: A. Soloviev, Qunav; C. Yang, Sigtem Technologies; M. Veth, QuNav; C. Taylor, AFRL

Session E6a: GNSS Receiver Technology – Software and Algorithms 2

Implementation and Performance Analysis of a Multi-frequency GPS Vector Tracking Algorithm: H. Yin, Y. (Jade) Morton, M. Carroll, Miami University (Ohio)

Session E6b: GNSS Vulnerabilities 2: Spoofing and Authentication

Cooperative GPS Signal Authentication from Unreliable Peers: L. Heng, D. Chou, and G.X. Gao, University of Illinois at Urbana-Champaign