

ION GNSS+ 2015

BEST PRESENTATION/PAPER AWARDS

BEST PRESENTATION AWARDS

Session A1: Mobile Platform Location Fusion Technologies

Speed and Velocity Estimation Using a Smartphone Camera: Amr Al-Hamad, Bashir Kazempur, Jacques Georgy, Zainab. Syed, Chris Goodall, InvenSense, Canada

B1: Land Based Applications

Optimal Selection of an Inertial Sensor for Cycle Slip Detection by Considering INS Output Errors: Younsil Kim, Junesol Song, Changdon Kee, Byungwoon Park, *Seoul National University, South Korea*

Session B2: GNSS Integrity

URA/SISA Analysis for GPS-Galileo ARAIM Integrity Support Message: Santiago Perea Diaz, Michael Meurer, Markus Rippl, Boubeker Belabbas, *German Aerospace Center (DLR), Germany*; Mathieu Joerger, Boris Pervan, *Illinois Institute of Technology*

Session C2: Alternatives and Backups to GNSS for Navigation

Impact of the DME Interference on the LDACS1 Ranging Performance: Thanawat Thiasiriphet, Nicolas Schneckenburger, Michael Schnell, *German Aerospace Center (DLR), German*

Session A3: Commercial MEMS: Sensors, Integration and Applications

Sensor Augmented Indoor Navigation and Positioning: Marcellino Gemelli and Keith Nicholson, *Bosch Sensortec*

Session B3: UAV Navigation

A Navigation and Guidance System for Autonomous Flights of MAVs into Buildings: Manuel Popp, Silvia Prophet, George Scholz, Gert F. Trommer, *Karlsruhe Institute of Technology, Germany*

Session C3: GNSS Augmentation Systems and Integrity 1

Overbounding False-Alarm Probability for a Chi-Square Monitor with Natural Biases: Jason Rife, *Tufts University*

Session A4a: Multi-Constellation and Multi-Function Chipsets in Consumer Products

GGTO: Stability and Impact on Multi-constellation Positioning: Ciro Gioia and Daniele Borio, *European Commission, Joint Research Centre (JRC), Italy*

Session B4: Aviation and Marine Applications

Operational Scenarios for Maritime Safety in the Baltic Sea: Heidi Kuusniemi, Sarang Thombre Stefan, Söderholm, Liang Chen, Robert Guinness, *Finnish Geospatial Research Institute, National Land Survey of Finland*; Zbigniew Pietrzykowski, Piotr Wolejsza, *Maritime University of Szczecin, Poland*

Session C4a: Interference and Spectrum Issues

Quantitative Assessment of the Impact of GNSS Threats on Governmental Applications and Receivers (QUASAR): Mark Dumville, William Roberts, *NSL, UK*; Jim Hammond, Mick Trosh, *Association of Chief Police Offices (ACPO), UK*; Chaz Dixon, Steve Hill, *Satellite Applications Catapult Centre, UK*; Pete Lindsay, *UK Space Agency, UK*

Session C4b: GNSS Augmentation Systems and Integrity 2

QZSS as a Platform for SBAS in the Arctic: Tyler Reid, Todd Walter, Per Enge, *Stanford University, USA*; Takeyasu Sakai, *Electronic Navigation Research Institute, Japan*

Session A5: Applications Using Consumer GNSS

Dual-antenna Spoofing Detection System Using GNSS Commercial Receivers: Daniele Borio and Ciro Gioia, *European Commission, Joint Research Centre (JRC), Italy*

Session C5: Modernization of GNSS Signals

GNSS Nominal Signal Distortions – Estimation, Validation and Impact on Receiver Performance: Steffen Thaelert, Mariano Vergara, Christoph Enneking, Matteo Sgammini, Felix Antreich, *Germany Aerospace Center (DLR), Germany*; Michael Meurer, *Germany Aerospace Center (DLR) & RWTH Aachen University, Germany*; Catalina Rodriguez, Daniel Brocard, *CNES, France*

Session B6: Precise Point Positioning and L-Band Services

Real-Time Single-Frequency Precise Point Positioning on the Road, and on Track: Peter F. de Bakker and Christian C.J.M. Tiberius, *Delft University of Technology, The Netherlands*

Session C6: Modernization of GNSS-Systems

GPS Space Segment Science & Technology Investment at the Air Force Research Laboratory: Donna Cowell Senft, Kevin Slimak and Lawrence (Robbie) Robertson, *AFRL Space Vehicles Directorate*

BEST PAPER AWARDS

Session D1: Next Generation Multisensor Applications and Techniques

Kalman Filter with Hard and Soft Constraints for the Integration of Multiple Pedestrian Navigation Systems: Haiyu Lan, *University of Calgary, Canada / Harbin Engineering University, China*; Chunyang Yu, *University of Calgary, Canada*; You Li, *University of Calgary, Canada Wuhan University, China*; Yuan Zhuang and Naser El-Sheimy, *University of Calgary, Canada*

Session E1: Advanced Technologies in High Precision GNSS Positioning 1

Fault Free Integrity of Mid-Level Voting for Triplex Differential GPS Solutions: G. Nathan Green, *University of Texas at Austin*; Martin King *NAVAIR*; Todd Humphreys, *University of Texas at Austin*

Session F1: GNSS Vulnerabilities and Anti-jamming:

A Comparative Analysis of Adaptive Notch Filtering and Wavelet Mitigation Against Jammers Interference: Luciano Musumeci, *Politecnico di Torino, Italy*; James T. Curran, *Joint Research Center (JRC), European Commission, ISPRA, Italy*; Favio Dovis, *Politecnico di Torino, Italy*

Session D2: Navigation Using Environmental Features

Multipath Assisted Positioning for Pedestrians: Christian Gentner, Robert Pöhlmann, Markus Ulmschneider, Thomas Jost, Armin Dammann, *German Aerospace Center (DLR), German*

Session E2a: Next Generation GNSS Positioning

Multi-Constellation ARAIM Exploiting Satellite Geometry Change: Mathieu Joerger and Boris Pervan, *Illinois Institute of Technology*

Session E2b: Advanced Technologies in High Precision GNSS Positioning 2

The Effect of Correlator and Front-end Design on GNSS Pseudorange Biases for Geodetic Receivers: André Hauschild and Oliver Montenbruck, *German Space Operations Center (GSOC) German Aerospace Center (DLR), Germany*

Session F2: GNSS Authentication and Anti-Spoofing

A Network-based GNSS Structural Interference Detection, Classification and Source Localization: Ali Broumandan, Ali Jafarnia-Jahromi, Saeed Daneshmand, Gérard Lachapelle, *University of Calgary, Canada*

Session E3: GNSS Receiver Technologies and Processing for Constrained Environments

Signal-level Integrity and Metrics Based on the Application of Quickest Detection Theory to Multipath Detection: Daniel Egea-Roca, Gonzalo Seco-Granados, José A. López-Salcedo, *Universitat Autònoma de Barcelona, Spain*; Carlos Moriana, Maciej Jerzy. J. Pańnikowski, Enrique Domínguez, *GMV, Spain*; L. Enrique Aguado, David Lowe, *NSL, UK*; Denis

Naberzhnykh, *TRL, UK*; Favio Dervis, *Politecnico di Torino, Italy*; Juan Pablo Boyero and Ignacio Fernandez, *European Commission, Belgium*

Session F3a: Remote Sensing; Space Applications; Timing and Scientific Applications 1

Multi-Receiver Position-Information-Aided Vector Tracking for Robust GPS Time Transfer to PMUs: Yuting Ng and Grace Xingxin Gao, *University of Illinois at Urbana-Champaign*

Session F3b: Atmospheric Effects 1

Probing the Large-Scale Structure and Dynamics of the Ionosphere: An Analysis of Low-Latitude TEC: Abraham C. Stern, Eric Altshuler, *Sequoia Research Corporation*; Patricia H. Doherty and Cesar E. Valladares, *Institute for Scientific Research, Boston College*

Session D4: Urban and Indoor Positioning and Navigation

DiPLoc: Direct Signal Domain Particle Filtering for Network Localization: Siwei Zhang, Emanuel Staudinger, Wei Wang, Christian Gentner, Armin Dammann and Erik Sandgren, *Germany Aerospace Center (DLR) Institute of Communications and Navigation, Germany*

Session F4: GNSS Receiver Technologies

Simultaneous BOC Subcarrier Ambiguity Fixing Using the LAMBDA Method: Jan Wendel, Frank Max Schubert, Ioana Gulie, *Airbus DS GmbH, Germany*; Alexander Rugamer, *Fraunhofer-Institut fuer Integrierte Schaltungen IIS, Germany*

Session D5: Enhancing GNSS with Sensors, Mapping and Cooperation

Optimal Receiver Placement for Collaborative Mapping of Signals of Opportunity: Joshua J. Morales and Zaher M. Kassas, *University of California, Riverside*

Session E5: GNSS Receiver Signal Processing for Degraded Signal Conditions

Signal Quality Monitoring for Discrimination between Spoofing and Environmental Effects, Based on Multidimensional Ratio Metric Tests: Esteban Garbin Manfredini, Fabio Dervis, *Politecnico di Torino, Italy*; Beatrice Motella, *Istituto Superiore Mario Boella, Italy*

Session F5: Atmospheric Effects 2

GPS Multi-Frequency Carrier Phase Characterization During Strong Equatorial Ionospheric Scintillation: Dongyang Xu, Yu (Jade) Morton, *Colorado State University*; Dennis Akos, *University of Colorado, Boulder*; Todd Walter, *Stanford University*

Session D6: Smartphone Applications and Multisensor Navigation

GNSS Photo Matching: Positioning using GNSS and Camera in Urban Canyon: Taro Suzuki, *Waseda University, Japan*; Nobuaki Kubo, *Tokyo University of Marine Science and Technology, Japan*

Session E6: Advances in Software Receivers

NAVSDR: A GPU-based Modular GNSS Software Receiver: Liangchun Xu, *Wuhan University, China*; Nesreen I. Ziedan, *Zagazig University, Egypt*; Wenfei Guo and Xiaoji Niu, *Wuhan University, China*

Session F6: Remote Sensing; Space Applications; Timing and Scientific Applications 2

A Comparative Study of SBAS Systems for Navigation in Geostationary Orbit: Erin Kahr, *University of Calgary, Canada*; Oliver Montenbruck, *German Aerospace Center (DLR), Germany*; Kyle O'Keefe, *University of Calgary, Canada*