

# **CPGPS Forum 2017**



## **CPGPS 2017 Forum on Cooperative Positioning and Service**

### **Agenda**

**Harbin, China  
May 19-21, 2017**

# General Information

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## Sessions & Topics

- Session 1: Integrated PNT Technology
- Session 2: GNSS Atmospheric Sounding
- Session 3: New Horizon in GNSS-Method and Models
- Session 4: Advancement in GNSS Applications
- Session 5: Multi-GNSS PPP and PPP RTK
- Session 6: High-precision GNSS
- Session 7: Indoor Positioning and Location-based Services
- Session 8: GNSS Augmentation Systems and Applications

## Sponsors

### Sponsors



**International Association of Chinese  
Professionals in Global Positioning  
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## General Chair's Welcome



As current Chair of CPGPS and Forum General Chair, I warmly welcome everyone to attend the CPGPS Forum 2017 on Cooperative Positioning and Service in the beautiful City of Harbin.

This Forum is one of the major activities of the International Association of Chinese Professionals in Global Positioning Systems (CPGPS) in 2017. It is hosted by Harbin Institute of Technology and technically co-sponsored by IEEE Harbin Section.

CPGPS is an internationally recognised professional body. From its establishment in December 2001, CPGPS member number has been continually increasing and currently it has more than 300 active members around the world. Among CPGPS members, there are many world-leading experts in Global Positioning Systems (GPS) and relevant fields who are driving science and technology innovation and knowledge exchange and their work contributes directly to the advancement of modern satellite positioning and navigation technologies. CPGPS members have made significant contributions to the international community through organisations of seminars, summer schools, symposiums and conferences, publications of original researches and patents, and winning prizes in the major international conferences.

CPGPS strives to: Promote the exchange of ideas among professionals in the field of wireless communications, intelligent mobility and smart cities, sensor networks, remote measurements, satellite navigation and positioning and their engineering and environmental applications; Provide an efficient channel and platform among professionals, through which mutual understanding and cooperation can be nurtured and enhanced; Encourage, bridge, establish and develop co-operative activities among professionals.

From last summer CPGPS has started the preparation of this forum and received extremely positive response from our members overall the world. Without your great support, encouragements and contributions it is impossible to host such an event.

IEEE is the world's largest technical professional organisation and its core purpose is to foster technological innovation and excellence for the benefit of humanity. We appreciate the continuous support from IEEE Harbin Branch.

Navtech as overall industrial sponsor has generously offered their great support to this forum. To encourage the involvements and participations of young researchers Beijing Siwei Spatial Data Tech Co., Ltd. has provided financial support to the best student paper competition. There are many other supporters and advisors or even critics who have offered their assistances from different aspects to the organisation of this forum.

Finally, on behalf of all CPGPS members I would like to express our deep appreciation to the Local Organisation Committee of CPGPS Forum 2017 for their great dedication endeavor to make this forum as a successful event.

I wish you enjoy your stay in Harbin and find the forum useful.

Prof. Xiaolin Meng  
General Chair, CPGPS Forum 2017 and President of CPGPS (2017-Now)  
University of Nottingham, UK.

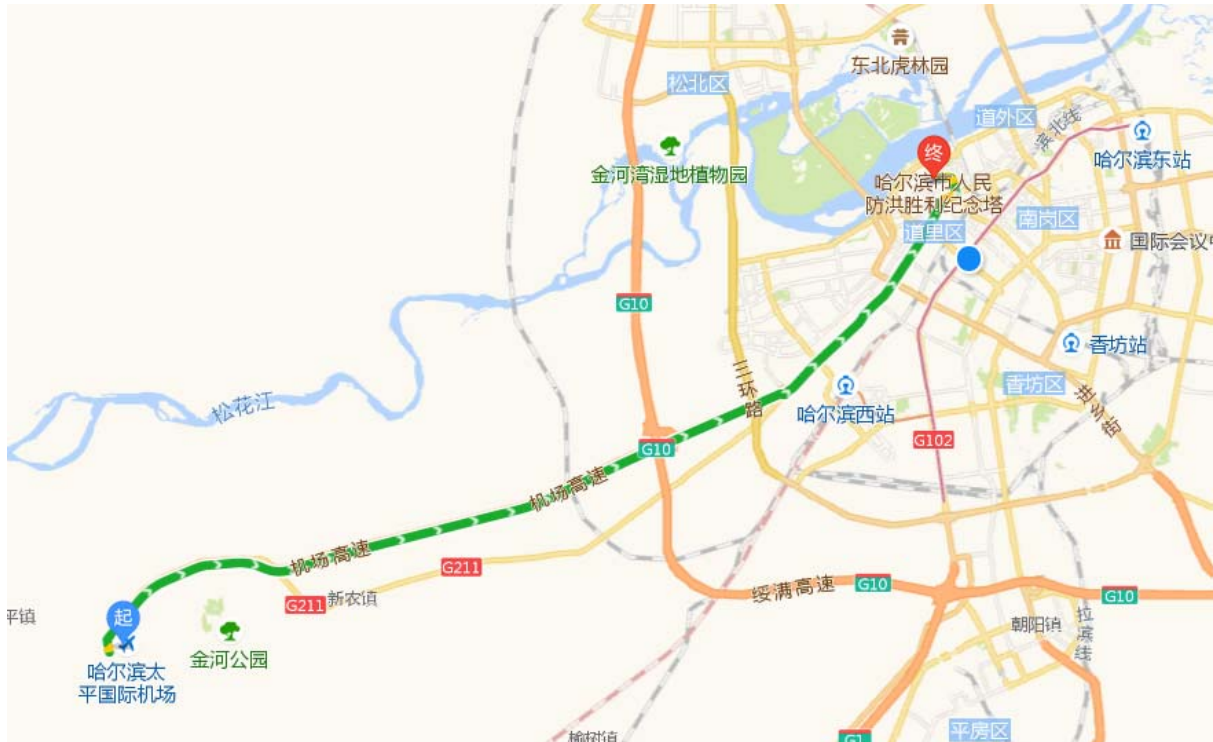
# Location & Hotel

Modern Hotel (马迭尔宾馆)

89 Zhongyang Street, Dao-Li District, Harbin



From Taiping International Airport:



	Duration	Cost	Line
By taxi	45min	100yuan	—
By bus*	2h	20yuan	Airport bus line3

\*Get off at Zhongyang Street Station.

**From Harbin West Railway Station:**



	Duration	Cost	Line
<b>By taxi</b>	<b>25min</b>	<b>25yuan</b>	—
<b>By bus**</b>	<b>1.5h</b>	<b>1yuan</b>	<b>Line 64</b>

**\*\*Get off at Daoli Seven<sup>th</sup> Street Station.**

**From Harbin Railway Station:**



	Duration	Cost	Line
<b>By taxi</b>	<b>10min</b>	<b>10yuan</b>	—
<b>By bus***</b>	<b>40min</b>	<b>1yuan</b>	<b>Line 74</b>

**\*\*\*Get off at Daoli Seven<sup>th</sup> Street Station.**



## Sessions Overview

<b>Friday, 19<sup>th</sup> May, 2017</b>	
<b>Registration: 9:00-21:00 Lobby of Modern Hotel</b>	

<b>Saturday, 20<sup>th</sup> May, 2017</b>		
08:30-09:00	Opening Ceremony	Location: Multifunction (Conference Room) 2 <sup>nd</sup> Floor of Modern Hotel
09:00-09:20	Photo Taking	
09:20-09:50	Plenary Speech I Dr. Guifei Jing, National Remote Sensing Center	
09:50-10:20	Plenary Speech II Prof. Wei Gao, Harbin Institute of Technology	
10:20-10:50	Plenary Speech III Prof. Weiping Jiang, Wuhan University	
10:50-11:20	Plenary Speech IV Prof. Peiliang Xu, Kyoto University	
11:20-11:50	Plenary Speech V Prof. Guochang Xu, Shandong University	
Lunch - Chinese restaurant (3 <sup>rd</sup> floor)		

<b>Saturday, 20<sup>th</sup> May, 2017</b>	
13:30-15:15 Session 1 Location: Conference Room 1 (2 <sup>nd</sup> Floor)	13:30-15:15 Session 2 Location: Conference Room 2 (2 <sup>nd</sup> Floor)
<b>15:15-15:35 Coffee break and Poster session Multifunction (2<sup>nd</sup> Floor Conference Room)</b>	
15:35-17:20 Session 5 Location: Conference Room 1 (2 <sup>nd</sup> Floor)	15:35-17:20 Session 6 Location: Conference Room 2 (2 <sup>nd</sup> Floor)
17:20-18:30 Banquet – Modern Liyuan Restaurant (摩登俪缘餐厅 2 <sup>rd</sup> floor)	

<b>Sunday, 21<sup>st</sup> May, 2017</b>	
08:00-09:45 Session 3 Location: Conference Room 1 (2 <sup>nd</sup> Floor)	08:00-09:45 Session 4 Location: Conference Room 2 (2 <sup>nd</sup> Floor)
<b>9:45-10:05 Coffee break and Poster session Multifunction (2<sup>nd</sup> Floor Conference Room)</b>	
10:05-11:50 Session 7 Location: Conference Room 1 (2 <sup>nd</sup> Floor)	10:05-11:50 Session 8 Location: Conference Room 2 (2 <sup>nd</sup> Floor)
11:50-13:00 Lunch - Chinese restaurant (3 <sup>rd</sup> floor)	

<b>Sunday, 21<sup>st</sup> May, 2017</b>		
13:00-13:20	Invited Talk I: Prof. Wu Chen, The Hong Kong Polytechnic University, Hong Kong	Location: Multifunction (Conference Room) 2 <sup>nd</sup> Floor of Modern Hotel
	Invited Talk II: Prof. Jianguo Wang, York University, Canada	
13:20-13:40	Invited Talk III: Prof. Jian Wang, China University of Mining and Technology, China	
13:40-14:00	Invited Talk IV: Prof. Yidong Lou, Wuhan University, China	
14:00-14:20	Invited Talk V: Prof. Xingxing Li, Wuhan University, China	
14:20-14:40	Invited Talk VI: Mr. Baolong Xu, Beijing Siwei Spatial Data Technology Co., Ltd	
<b>Closing Ceremony: 15:00-16:00 Multifunction (2<sup>nd</sup> Floor Conference Room)</b>		

# Plenary Speeches

## Plenary Speech I: XIHE's view of GNSS innovation and possible new business space



**Speaker's bio:** Dr. Guifei Jing, got PH. D. from Beijing Normal University, the speciality is Geography, now he is the Deputy Director-General of National Remote Sensing Center (NRSCC), Ministry of Science and technology of China.

He got the Bachelor and Master Degree in Peking University in 1991 and 1994, then became a lecturer in the Institute of Remote Sensing and GIS of Peking University. From 1997 to 2004, he worked as a project manager in Division of Information Technology of Department of High Tech Development and Industrialization of Ministry of Science and Technology of China. From 2004 to nowadays, he worked in NRSCC and focused on the management of national S&T programmes in fields of EOS, GIS and GNSS.

## Plenary Speech II: Ship deformation measurement method based on FOG strapdown inertial system



**Speaker's bio:** Prof. Wei Gao received his bachelor and doctor degrees from Harbin Engineering University in 2000 and 2004, respectively. He was a professor and Ph.D. supervisor in College of Automation, Harbin Engineering University from 2008 to 2014.

Now he is a professor and Ph.D. supervisor in School of Electrical Engineering & Automation, Harbin Institute of Technology and the director of Navigation Instrument Research Institute. His research interests are Fiber Optic Gyroscope (FOG) and inertial navigation technology.

## Plenary Speech III: Challenge and Opportunity of GNSS Continuously Operating Reference Station Network



**Speaker's bio:** Prof. Weiping Jiang, born in June 1972, works at GNSS research center of Wuhan University and is the director of this center. He received his PhD degree in Wuhan University in June 2001, and He was post-doctoral research associate with Nordic Volcanological Center in Iceland from August 2003 to August 2004. He was a visiting Professor in Stuttgart University from March to December 2007. He has been a Professor of Wuhan University since 2005.

His current research interests are the theory of satellite geodesy and its applications. He gave the new algorithm of integrated large-scale GNSS network analysis, and made a precise environment loading model to correct the non-linear variations in coordinate time series. He established a new dynamic model to monitor the deformation of plate boundary using GNSS technology, determined firstly the velocity field of Iceland by GNSS, and discussed the coupling mechanism between post-glacial rebound and global warming in Iceland. He

proposed a set of methods for processing multi-mission satellite altimetry data, and developed global mean sea surface height model. He also determined the rising velocity and acceleration of global mean sea level quantitatively over the last 60 years.

Up to now, he has published more than 130 papers, and is the Principal Investigator of 35 sponsored research projects. He won twice the second class prizes of China National Science and Technology Progress Award, and was also awarded the first class prize of Provincial Science and Technology Progress Award for eight times. He was also supported by the “China National Hundred, Ten Thousand Talents Project” and the Program for Changjiang Scholars of the ministry of education of China. Meanwhile, he won the Twelfth Youth Science and Technology Prize of China, and the National Science Foundation for Distinguished Young Scholars of China.

#### **Plenary Speech IV: 地空观测的数学挑战**



**Speaker's bio:** Dr. Peiliang XU, theoretical geodesist from Kyoto University, obtained his PhD degree in geodesy from Wuhan University, China in 1989. He has done research since then at Delft University of Technology, The Netherlands, Stuttgart University, Germany, The University of Calgary, Canada and Kyoto University, Japan. He was the chairman of the theoretical geodesy committee in IAG (2003-2007) and the delegate of IUGG (2003-2007). He was also the editorial board member of Journal of Geodesy (1999-2007, 2015-present) and International Journal on Geomatics (2011-2016). He has

published more than 80 papers covering high frequency GNSS, satellite gravity, inverse problems, Mathematical geodesy, global optimization, statistics, perturbation theory, mathematical geophysics and seismology. And more than 60 published papers has been indexed by SCI and cited more than 1000 times. He has been supported by the Alexander von Humboldt Foundation twice and awarded the best paper from IAG in 1999 and the Tsuboi prize from geodetic society of Japan. He was elected as the fellow of IAG in 2003.

#### **Plenary Speech V: Challenge in PNT**



**Speaker's bio:** Prof.h.c. Dr.-Ing. Guochang Xu, State distinguished Professor of Shandong University 2014-, 1000 Talents Expert of Chinese Academy of Space Technology 2010-, Research Scientist of QianXueSen Laboratory 2012-, Prof. h.c. of South-West JiaoTong University 2011-, former Senior Scientist of GFZ-Potsdam 1993-2014. Work on satellite navigation, remote sensing, celestial mechanics and space technology research. Books GPS 2003, 2007, 2011, 2014, 2016, Orbits 2008, 2013. Created Navigation and Remote Sensing studying area at Shandong University 2014-.

## Session Details

### Saturday Afternoon Oral Sessions

<b>Session 1-Conference Room 1 (2<sup>nd</sup> Floor)</b> <b>Chair: Prof. Wei Gao; Co-chair: Prof. Jinling Wang</b>	
13:30-13:50	<p style="text-align: center;"><b>Compensation Method for Temperature Error of Fiber Optic Gyroscope Based on Support Vector Machine</b></p> <p style="text-align: center;">Fei Yu, Shiwei Fan, Ya Zhang, Pengfei Wu, Jiachong Chang <i>Harbin Institute of Technology</i></p>
13:50-14:10	<p style="text-align: center;"><b>Plug-and-Play Measurement Fusion Using Low-Cost Nonlinear Optimization for Integrated Navigation System</b></p> <p style="text-align: center;">Lingxiao Zheng, Xingqun Zhan, Xin Zhang <i>Shanghai Jiaotong University</i></p>
14:10-14:15	<p style="text-align: center;"><b>An Unconventional GPS and Multiple Low-cost IMU Integration Strategy with Individual Model for Systematic Error and Measurement</b></p> <p style="text-align: center;">Fei Yu, Minghong Zhu, Jianguo Wang, Shu Xiao <i>Harbin Engineering University</i></p>
14:15-14:20	<p style="text-align: center;"><b>The Influence of Heat-Transfer Rate on the Thermally Induced Nonreciprocal Error</b></p> <p style="text-align: center;">Pengfei Wu, Dezhi Duan, Guochen Wang, Runfeng Zhang, Bo Zhao <i>Harbin Institute of Technology</i></p>
14:20-14:25	<b>Break</b>
14:25-14:45	<p style="text-align: center;"><b>Adaptive Multi-Position Sensor Information Fusion Method Based on AR Model</b></p> <p style="text-align: center;">戴海发, 卞鸿巍, 马恒, 王荣颖 <i>中国人民解放军海军工程大学</i></p>
14:45-15:05	<p style="text-align: center;"><b>A Swing Online Calibration Method of Ship-based FOG-IMU</b></p> <p style="text-align: center;">Jiachong Chang, Dezhi Duan, Fei Yu, Ya Zhang, Shiwei Fan <i>Harbin Institute of Technology</i></p>
15:05-15:10	<p style="text-align: center;"><b>An Approach for the Deeply Coupled GNSS/INS Software Defined Receiver Based on Matlab</b></p> <p style="text-align: center;">Baoyu Liu, Xingqun Zhan, Maolin Chen, Jinyu Liu <i>Shanghai Jiao Tong University</i></p>
15:10-15:15	<p style="text-align: center;"><b>Research on Underwater Sound Velocity Calculation, Error Correction and Positioning Algorithms</b></p> <p style="text-align: center;">Ruru GAO, Tianhe XU <i>长安大学</i></p>

**Session 2-Conference Room 2 (2<sup>nd</sup> Floor)**  
**Chair: Prof. Kefei Zhang; Co-chair: Prof. George Liu**

<b>13:30-13:50</b>	<p align="center"><b>Multi-observational Tropospheric Tomography and Its Application in Detecting Water Vapor Variability During Heavy Precipitation Event</b></p> <p align="center">陈必焰, 刘志赵 香港理工大学</p>
<b>13:50-14:10</b>	<p align="center"><b>Influence of Higher-Order Ionospheric on the Precipitable Water Vapor from GPS/GLONASS</b></p> <p align="center">刘智敏, 李洋洋, 李斐, 郭金运 山东科技大学</p>
<b>14:10-14:15</b>	<p align="center"><b>A Modified Forecast Method of Ionosphere VTEC Series Based on ARMA Model</b></p> <p align="center">孔豫龙 信息工程大学</p>
<b>14:15-14:20</b>	<p align="center"><b>Comparison of the Ionospheric Peak Parameters Retrieved from COSMIC RO and Ionosondes under Geomagnetic Disturbed Conditions</b></p> <p align="center">Jia Luo, Fangfang Sun, Xiaohua Xu Wuhan University</p>
<b>14:20-14:25</b>	<b>Break</b>
<b>14:25-14:45</b>	<p align="center"><b>Seasonal Variations of Stratospheric Gravity Waves over the Globe Derived from COSMIC RO Data</b></p> <p align="center">Xiaohua Xu, Daocheng Yu, Jia Luo 武汉大学</p>
<b>14:45-15:05</b>	<p align="center"><b>A New Regional Tropospheric Delay Correction Model based on BP Neural Network</b></p> <p align="center">Yuguo Yang, Tianhe Xu 长安大学</p>
<b>15:05-15:10</b>	<p align="center"><b>An Effective Method to Suppress Accumulation of Strapdown Solution Error in GPS Signal Failure</b></p> <p align="center">申庆辉, 郭承军 电子科技大学</p>
<b>15:10-15:15</b>	<p align="center"><b>试验卫星自主定轨初步结果</b></p> <p align="center">Xiaoyong Song, Yue Mao, Xiaolin Jia, Rengui Ruan, Yuxi Liu 西安测绘研究所</p>

<b>Session 5-Conference Room 1 (2<sup>nd</sup> Floor)</b> <b>Chair: Prof. Xiaohong Zhang; Co-chair: Prof. Jianghui Geng</b>	
<b>15:35-15:55</b>	<b>Estimation of vTEC and Satellite DCB Using Single-frequency PPP</b> Baocheng Zhang, Yunbin Yuan <i>Institute of Geodesy and Geophysics</i>
<b>15:55-16:15</b>	<b>The Analysis of Inter-system Bias in Multi-GNSS Precise Point Positioning</b> 王进, 杨元喜, 张勤, 黄观文, 韩军强 <i>长安大学</i>
<b>16:15-16:20</b>	<b>Ambiguity Resolution with Inertial Aiding for Precise Point Positioning</b> Feng Zhu <i>武汉大学</i>
<b>16:20-16:25</b>	<b>Particle Swarm Adaptive Satellite Clock Error Prediction Model Based on Grey Theory</b> 李源 <i>上海交通大学</i>
<b>14:20-14:25</b>	<b>Break</b>
<b>16:30-16:50</b>	<b>The Implementation of Multi-GNSS Real-time Precise Point Positioning Service System: GPS/GLONASS</b> Shaoming Xin, Xiaotao Li, Jianghui Geng, Enming Jiang, Qiang Wen <i>Wuhan University</i>
<b>16:50-17:10</b>	<b>GLONASS Precise Point Positioning Considering the Influence of Code Inter-Frequency Biases</b> Zongpeng Pan, Hongzhou Chai, Yang Chong, Yulong Kong, Rui Wang, Xiaodong Pan <i>信息工程大学</i>
<b>17:10-17:15</b>	<b>PPP Augmentation with Current Galileo Constellation</b> Nan Zang, Bofeng Li, Yunzhong Shen <i>Tongji University</i>
<b>17:15-17:20</b>	<b>Ionospheric Modeling and Differential Code Bias Estimation with Multi-GNSS Observations</b> 解为良, 李星星, 任晓东, 张小红 <i>武汉大学</i>

<b>Session 6-Conference Room 2 (2<sup>nd</sup> Floor)</b> <b>Chair: Prof. Bofeng Li; Co-chair: Prof. Tianhe Xu</b>	
15:35-15:55	<b>Single-Frequency BDS/GPS RTK with Low-Cost Ublox Receivers</b> Tianxia Liu, Bofeng Li <i>Tongji University</i>
15:55-16:15	<b>Polar Motion Prediction Based on Adaptive Filtering of Variable Forgetting Factor</b> 加松, 徐天河, 杨红雷 <i>长安大学</i>
16:15-16:20	<b>Multi-Frequency BeiDou Cycle Slip and Data Gap Repair with Geometry-Based Model</b> Yannan Qin, Bofeng Li, Lizhi Lou <i>Tongji University</i>
16:20-16:25	<b>A Bayesian Method of GNSS Cycle Slips Detection Based on ARMA Model</b> Guochao Zhang, Qingming Gui, Songhui Han, Jun Zhao <i>信息工程大学</i>
14:20-14:25	<b>Break</b>
16:30-16:50	<b>GNSS 3D Attitude Measurement System Based on Dual-Antenna Receiver with Common Clock</b> Xiang Ji, Chao Yu, Wen Chen, Danan Dong <i>华东师范大学</i>
16:50-17:10	<b>A Reference Satellite Selection Method Based on Maximal Elevating Angle during the Observation Period</b> Zhengsheng Chen, Qinghua Zhang, Runtao Zhang, Xuerui Li, Jinlong Chen <i>火箭军工程大学</i>
17:10-17:15	<b>SLR Data Quality Analysis and Assessment Based on Zero-Difference Kinematic Orbit of GRACE Satellite</b> Honglei Yang, Tianhe Xu <i>长安大学</i>
17:15-17:20	<b>Preliminary Analysis of Frequency Jumps in BDS Satellite Clock</b> 王彬, 陈俊平 <i>上海天文台</i>
<b>Dinner</b>	



## Sunday Morning Oral Sessions

<b>Session 3-Conference Room 1 (2<sup>nd</sup> Floor)</b> <b>Chair: Prof. Yang Gao; Co-chair: Prof. Shaojun Feng</b>	
8:00-8:20	<b>A Computer Vision Aided Inertial Navigation System</b> Simon Roberts, Xiaolin Meng <i>The University of Nottingham</i>
8:20-8:40	<b>GNSS Vulnerability Assessment Method Based on ARAIM User Algorithm</b> 梅浩, 战兴群, 张欣 <i>上海交通大学</i>
8:40-8:45	<b>Analysis of Bridge Deformations Using Real-time BDS Measurements</b> Ruijie Xi, Weiping Jiang, Qusen Chen, Xiaolin Meng <i>The University of Nottingham</i>
8:45-8:50	<b>A Fast Acquisition Algorithm of GNSS Receiver Based on SFFT</b> Dingjie Xu, Sida Chen, Feng Shen, Guochen Wang, Yue Zhang <i>哈尔滨工业大学</i>
8:50-8:55	<b>Break</b>
8:55-9:15	<b>Mapping Effects on Single-Frequency PPP</b> Yan Xiang, Gao Yang <i>University of Calgary</i>
9:15-9:35	<b>Loosely Coupled Image-Aided Inertial Integrated Navigation Using Discrete EKF with Pairwise Time Correlated Measurements</b> Nilesh Gopaul, Jianguo Wang, Baoxin Hu <i>York University</i>
9:35-9:40	<b>Survey on Cyber Security of CAV</b> Qiyi He, Xiaolin Meng <i>University of Nottingham</i>
9:40-9:45	<b>Modeling of Generalized Code Bias for Multi-frequency and Multi-GNSS</b> Fei Guo, Xiaohong Zhang, Jinling Wang <i>Wuhan University</i>

<b>Session 4-Conference Room 2 (2<sup>nd</sup> Floor)</b> <b>Chair: Prof. Yanming Feng; Co-chair: Prof. Wu Chen</b>	
<b>8:00-8:20</b>	<b>An Improved Model and Simulator Design of GNSS Ocean Reflected Signals</b> 李博闻, 张波, 杨东凯, 祁永强 <i>北京航空航天大学</i>
<b>8:20-8:40</b>	<b>Soil Moisture Variations Estimated from GPS-IR Using FFT and LS</b> Xiaolei Wang, Qin Zhang, Shuangcheng Zhang <i>Chang'an University</i>
<b>8:40-8:45</b>	<b>A Power Distributing Strategy of GNSS Spoofing Signal Under Dual-Threshold</b> Sen Huang, Shuxin Chen, Kun Chen, Zhuowei Liu, Jianhua Chen, Hao Wu <i>Information and Navigation College, Air Force Engineering University</i>
<b>8:45-8:50</b>	<b>Method of the GPS/BDS/GLO/GAL Integrated Positioning Based on DCB correction</b> Jue Zhao, Shuguo Pan <i>东南大学</i>
<b>8:50-8:55</b>	<b>Break</b>
<b>8:55-9:15</b>	<b>A Detecting and Compensation Method for The Errors from Broken Groud Control Points at The Application of Direct Geo-Referencing</b> 刘通, 闫文林, 许国昌, 徐天河 <i>山东大学</i>
<b>9:15-9:35</b>	<b>Noise Correlation in the Time Series of GPS Stations in the North China Plain</b> Jun Ma, Zhou Boye <i>武汉大学</i>
<b>9:35-9:40</b>	<b>Human Factors Considerations for Cooperative Positioning. Using Positioning, Navigational and Sensor Feedback to Calibrate Trust in CAVs</b> George Filip, Xiaolin Meng, Gary Burnett, Catherine Harvey <i>The University of Nottingham</i>
<b>9:40-9:45</b>	<b>Study on Application Status and Standard System of BDS in Transportation</b> Xiaodong Wu, Xun Wang <i>中国交通通信信息中心</i>

**Session 7-Conference Room 1 (2<sup>nd</sup> Floor)**  
**Chair: Prof. Ruizhi Chen; Co-chair: Prof. Jian Wang**

<b>10:05-10:25</b>	<b>A High Resolution Time-Reversal-Based Approach for Indoor Localization Using Commodity WiFi Devices</b> Binjie Hu, Lili Zheng, Haoxiang Chen <i>华南理工大学</i>
<b>10:25-10:45</b>	<b>A New Method of Automatic Modulation Recognition based on Dimension Reduction</b> Hui Wang, Lili Guo <i>Harbin Engineering University</i>
<b>10:45-10:50</b>	<b>Research on the IGPS Device Error and Its Influence of Positioning Accuracy</b> Qiang Hao, Hongliang Yin, Dingjie Xu <i>Harbin Institute of Technology</i>
<b>10:50-10:55</b>	<b>Recognition Method of Pedestrian Activity Based on Smart Phone Sensors</b> Wei Sun, Wei Ding, Huifang Yan <i>辽宁工程技术大学</i>
<b>10:55-11:00</b>	<b>Break</b>
<b>11:00-11:20</b>	<b>A Method for SINS Initial Alignment of Large Misalignment Angles Based on Simplified Sage-Husa Filter with Parameters Resetting</b> Haobo Li, Jian Wang, Xixiang Liu, Shida Wang <i>中国矿业大学</i>
<b>11:20-11:40</b>	<b>Foot-mounted INS and Selected Geomagnetic Information Constraint for Individual Localization</b> 王铎 <i>国防科学技术大学</i>
<b>11:40-11:45</b>	<b>Simulation Study on Cooperative Localization</b> Xiaogang Qi, Xingcheng Liu, Haijun Dong, Lifang Liu <i>School of Mathematics and Statistics</i>
<b>11:45-11:50</b>	<b>Research on Indoor Pedestrian Location Based on Miniature Inertial Measurement Unit</b> 郭铮, 王秋滢, 张明惠 <i>Harbin Engineering University</i>

**Session 8-Conference Room 2 (2<sup>nd</sup> Floor)**  
**Chair: Prof. Chuang Shi; Co-chair: Prof. Dongkai Yang**

<b>10:05-10:25</b>	<b>Single-epoch Real-time Differential Positioning with BDS Triple-frequency Wide-lane Combination</b> 王彦恒, 潘树国, 张瑞成 东南大学
<b>10:25-10:45</b>	<b>Rear-End Collision Detection Based on GNSS/compass Fusion and Adaptive Neuro Fuzzy Inference System</b> Rui Sun, Dabin Xue, Yucheng Zhang <i>Nanjing University of Aeronautics and Astronautics</i>
<b>10:45-10:50</b>	<b>Error Analysis of Space Debris Orbit Determination in GPS Orbit</b> Yihan Guo, Xingqun Zhan, Maolin Chen, Jiaxun Tu <i>上海交通大学航空航天学院</i>
<b>10:50-10:55</b>	<b>Positioning Performance Analysis and Assessment for BDS B1 Frequency Based on Simulation</b> Fucheng Song, Shuangshuang Shi, Peng Gao <i>Linyi University</i>
<b>10:55-11:00</b>	<b>Break</b>
<b>11:00-11:20</b>	<b>GNSS for Real-time Monitoring of Bridge Dynamic Responses</b> Qusen Chen, Weiping Jiang, Xiaolin Meng, Boxiao Ju, Wenlan Fan <i>武汉大学测绘学院</i>
<b>11:20-11:40</b>	<b>GNSS Spoofing Localization Based on Differential Code Phase</b> 张禛君, 战兴群, 张炎华 上海交通大学
<b>11:40-11:45</b>	<b>New Algorithm for Multiple Satellite Faults Detection and Exclusion Based on Time Series Prediction</b> Lang Qin, Qianqian Zhang <i>Institute of Aerospace Surveying and Mapping</i>
<b>11:45-11:50</b>	<b>The Design of Intelligent Car Tracking Based on Fuzzy- PID Strategy</b> Zongzhou Wen, Lu Li <i>Xi'an Polytechnic University</i>

## Sunday Afternoon Invited Talks

<b>Invited Talk -Conference Room 2 (2<sup>nd</sup> Floor)</b> <b>Chair: Prof. Xiaohong Zhang, Co-Chair: Prof. Wei Gao</b>	
13:00-13:20	<b>Simultaneous Location and Mapping (SLAM) with commercial RGB-D sensors</b> Prof. Wu Chen <i>The Hong Kong Polytechnic University, Hong Kong</i>
13:20-13:40	<b>On error analysis and station monitoring of GNSS RTK networks</b> Prof. Jianguo Wang <i>York University, Canada</i>
13:40-14:00	<b>Emergence positioning Technologies for hazard response</b> Prof. Jian Wang <i>China University of Mining and Technology, China</i>
14:00-14:20	<b>BDS Wide-area Real-time Precise Positioning and Performance Analysis</b> Prof. Yidong Lou <i>Wuhan University, China</i>
14:20-14:40	<b>Multi-GNSS real-time precise positioning service and initial assessment of BDS-3</b> Prof. Xingxing Li <i>Wuhan University, China</i>
14:40-15:00	<b>SSW 移动测量技术保障无人驾驶</b> Mr. Baolong Xu, <i>Beijing Siwei Spatial Data Technology Co., Ltd</i>

<b>Closing Ceremony - Multifunction Conference Room (2<sup>nd</sup> Floor)</b> <b>Chair: Prof. Wei Gao, Co-Chair: Prof. Xiaohong Zhang</b>	
15:00-16:00	<b>Closing Ceremony</b>

## Poster Sessions

1	<p><b>A New Method of Automatic Modulation Recognition Based On Dimension Reduction</b> Hui Wang, LiLi Guo <i>哈尔滨工程大学</i></p>
2	<p><b>An Algorithm for Global Tropospheric Delay Using the Combination of GPT/UNB3m and Classic Models</b> Guoyan Liu <i>Nanjing Institute of Industry Technology</i></p>
3	<p>一种针对瞬态电离层异常的数据处理方法 思琪 喻 <i>武汉大学</i></p>
4	<p><b>An Optimal Weighed Least Squares RAIM Algorithm</b> Hongyu Zhu <i>中国交通通信信息中心</i></p>
5	<p><b>An Adapted RAIM Algorithm for Urban Canyon Environment</b> Li Zhang, Tao Cui, Junping Li, Shuo Liu <i>中国电子科技集团公司第十五研究所</i></p>
6	<p><b>A Position Errors Self-Calibration Method in Multilateration</b> Yunsong Lin, Liangfu Peng <i>Southwest University for Nationalities</i></p>
7	<p><b>Human Factors Considerations for Cooperative Positioning. Using Positioning, Navigational and Sensor Feedback to Calibrate Trust in CAVs</b> George Filip, Xiaolin Meng, Gary Burnett, Catherine Harvey <i>University of Nottingham</i></p>
8	<p><b>Feasibility analysis of low-cost GNSS receivers for achieving required positioning performance in CAV applications</b> Yijian Cui, Xiaolin Meng, Qusen Chen, Yang Gao, Chang Xu, Simon Roberts, Yiting Wang <i>Nottingham Geospatial Institute</i></p>
9	<p><b>Noise Analysis of Common Mode Error in CMONOC GPS Coordinate Time Series</b> Zhaohan Zhu, Xiaohui Zhou, Jingyu Liu <i>Wuhan University</i></p>
10	<p><b>USE OF RTK-BASED TECHNOLOGY TO STUDY DISPERSION IN SHALLOW WATER</b> Yanming Feng, Charles Wang, Kabir Suara <i>Queensland University of Technology</i></p>
11	<p><b>BeiDou code bias correction and application in precise positioning</b> 昕 李 <i>武汉大学测绘学院</i></p>
12	<p><b>A New Method of Automatic Modulation Recognition Based On Dimension Reduction</b> Hui Wang, LiLi Guo <i>哈尔滨工程大学</i></p>

13	<p style="text-align: center;"><b>A method for automatic modulation recognition based on dimension reduction</b> Yun Lin 哈尔滨工程大学</p>
14	<p style="text-align: center;"><b>GNSS-R Software Receiver and Its Preliminary Experimental Results</b> Shiwei Wang, Shuzhu Shi 武汉大学</p>
15	<p style="text-align: center;"><b>The Application of MEMS GPS Receiver in APOD Precise Orbit Determination</b> Jianfeng Cao, Xie Li, Shushi Liu, Haijun Man, Geshi Tang 北京航天飞行控制中心</p>

## Optional Lists

1	<p><b>Real-time Precise Timing Using GNSS Carrier Phase Observation from Single Receiver</b>                  Pengfei Zhang, Rui Tu, Yuping Gao, Na Liu, Chengshi Zhao                  中国科学院国家授时中心</p>
2	<p><b>Application of the 2nd-Order Smooth Variable Structure Filter Algorithm for SINS Initial Alignment</b>                  陈帅, 史震                  哈尔滨工程大学</p>
3	<p><b>Research on underwater sound velocity calculation, error correction and positioning algorithms</b>                  Ruru GAO, Tianhe XU                  长安大学</p>
4	<p><b>Application Of Neural Network aided GPS/SINS Integrated Navigation</b>                  向俊霖                  电子科技大学电子科学与技术研究院</p>
5	<p><b>Nonmonotone projected Barzilai-Borwein method for compressed sensing</b>                  包颜颜                  西安电子科技大学 数学与统计学院</p>
6	<p><b>Design and Implementation of Community's Safety Management-Oriented Public Information Platform for Smart City</b>                  YaLan Liu, Linjun Yu, Banghui Yang, Xiaojing Yao, Xin Zhang, Yuhuan Ren                  中国科学院遥感与数字地球研究所</p>
7	<p><b>Visibility Analysis of Different GPS Transmitting Antenna Characteristics</b>                  Maolin CHEN, Xingqun ZHAN, Baoyu LIU, Wenhan YUAN                  上海交通大学</p>
8	<p><b>Simulation and analysis of Ballistic Target Interception Based on ellipsoidal model and earth rotation</b>                  Ying Hao, Xiaolin Meng                  University of Nottingham</p>
9	<p><b>顾及伪距频间偏差影响的 GLONASS PPP 方法</b>                  潘宗鹏, 柴洪州, 种洋, 孔玉龙, 王瑞                  信息工程大学</p>
10	<p><b>Quality analysis of observation data of the new Beidou II Navigation satellites</b>                  高余婷, 王利, 张勤, 黄观文, 薛康                  长安大学</p>
11	<p><b>Performance of Linearly Interpolated GPS Clock Corrections</b>                  Xingyu Chen                  GNSS Research Center, Wuhan University</p>



12	<p align="center"><b>An iBeacon based Indoor and Outdoor Positioning Integrated System for Fire Emergency Command</b>  Linjun Yu, YaLan Liu  中国科学院遥感与数字地球研究所</p>
13	<p align="center"><b>Research on Beidou Navigation System in the application of precision agriculture</b>  向俊霖  电子科技大学电子科学与技术研究院</p>
14	<p align="center"><b>The design and implementation of intelligent car tracking based on fuzzy- PID system</b>  Zongzhou WEN, Lu LI  Xi'an Polytechnic University</p>