

Contents

Part I BDS/GNSS Navigation Applications

1 Accuracy Assessment of the Doppler Frequency and Pseudorange Model Based on GPS/LEO Radio Occultation	3
Xian-Sheng Xu, Yan Liu, Ye Li and Xu Xu	
2 Application of BeiDou Navigation Satellite System on Attitude Determination for Chinese Space Station	13
Sihao Zhao, Cai Huang, Xin Qi and Mingquan Lu	
3 Feasibility Analysis of High-Precision Deformation Monitoring Using BeiDou Navigation Satellite System	27
Ruijie Xi, Yugang Xiao, Xingwei Liu and Kaihua Wang	
4 Analysis on Velocity Measurement Precision of High Dynamic GPS Receiver Carrier Tracking Loop	35
Xudong Liu, Guangjun Liu, Qiang Li and Haiying Luo	
5 Theoretical Study of Bare Soil Parameters' Effects on GPS Multipath Observables	45
Xuerui Wu, Shuanggen Jin and Ye Li	
6 Satellite-Ground TT&C United Scheduling Methods of GNSS Constellation Based on Nodes Constraint	55
Li Jing, Zhang Tianjiao and Ye Gangqiang	
7 Realization of Real Time Kinematic Positioning Software Based on Kalman Filter	67
Dangwei Wang and Yi Lai	

8 Analysis of BeiDou Satellite Orbit Prediction Based on ERP Prediction Errors Impact 77
Xiusong Ye, Hai Guo, Jie Yang, Chao Li and Canyou Liu

9 The Repeatability Test of BDS Baseline Processing 85
Yanguo Liu, Jinzhong Bei, Dehai Li, Hu Wang and Xiaying Wang

10 A System Developed for Monitoring and Analyzing Dynamic Changes of GNSS Precipitable Water Vapor and Its Application 95
Li Li, Zhimin Yuan, Ping Luo, Jun Shen, Sichun Long, Liya Zhang and Zongli Jiang

11 Multifunctional Satellite Navigation and Communication Mast Antenna Based on Mobile Platform. 107
Jia Zhang, Ximing Liang and Haiguang Zhang

12 Optimal Satellite Selecting Algorithm in GPS/BDS Navigation System and Its Implementation 117
Zhuoxi Ma, Li Yang, Xiaolin Jia, Dan Zhang and Shuai Liu

13 An Improved Method to Accelerate the Convergence of PPP-RTK with Sparse CORS Stations’ Augmentation 129
Shoujian Zhang, Jiancheng Li and Lei Zhao

14 Research on GEO Satellite Global Monitoring and Control Based on BeiDou Navigation Satellite System. 141
Yue Zhao, Xianqing Yi, Zhenwei Hou and Tao Zhong

15 The Optimal Distribution Strategy of BeiDou Monitoring Stations for GEO Precise Orbit Determination. 153
Longping Zhang, Yamin Dang, Shuqiang Xue, Hu Wang, Shouzhou Gu and Chuanyang Wang

16 Analysis and Comparison of Non-coherent and Differential Acquisition Integration Strategies 163
Dandan Zeng, Songlin Ou, Jinhai Li, Jinhai Sun, Yuepeng Yan and Haofeng Li

17 A New Method Based on QSE Processing for Interferometric GNSS-R Ocean Altimetry 177
Chenghui Yu, Chundi Xiu, Weiqiang Li and Dongkai Yang

18	Analysis of GNSS Signals with Application to Lunar Navigation	187
	Xiaoliang Wang, Longlong Li, Xingyuan Han, Yansong Meng and Lin Wu	
19	Experiment and Result of Precise Kinematic Orbit Determination for LEO Satellite	195
	Rengui Ruan, Laiping Feng and Xianbing Wu	
20	A GNSS Anti-spoofing Method Based on the Cooperation of Multiple Techniques	205
	Huiqi Tao, Hong Li and Mingquan Lu	
21	Based on Singular Spectrum Analysis in the Study of GPS Time Series Analysis	217
	Ronghai Qiu, Yingyan Cheng, Hu Wang and Xiaoming Wang	
22	Initial Performance Assessment of BDS Real-Time Relative Positioning with Triple-Frequency Observations	227
	Min Wang, Hongzhou Cai, Jun Liu and Anmin Zeng	
23	Unified Estimation Model of Multi-system Biases Including BDS/GPS/GLONASS/Galileo	241
	Changhui Xu, Hu Wang, Yamin Dang, Hao Chen and Longping Zhang	
24	The Study on Ocean Ice Intensity Surveyed by GNSS-R Signal on the Coast	251
	Fuyang Ke, Fangyuan Chen and Yunchang Cao	
25	Research on Tracking Technology of High Sensitive BD Signals	261
	Zheng Zhao and Li Li	
26	Characteristic Analysis for Regional Traffic Data Using Random Matrix Theory	273
	Haichun Liu, Changchun Pan, Genke Yang, Chunxia Zhang and Robert C. Qiu	
27	Impact Analysis of Differential Code Biases of GPS Satellites on the Kinematic Precise Point Positioning	283
	Shoujian Zhang and Lei Zhao	

Part II BDS/GNSS Test and Assessment Technology

28 Performance Improvements of Combined Satellites Navigation System with System Time Offset 293
 Longxia Xu, Ye Ren, Xiaohui Li and Dandan Li

29 Modeling and Multi-state Analysis for Availability of a Navigation Monitor Network 305
 Zhuopeng Yang, Feng Xue, Jinjing Wang and Heng Zheng

30 A GNSS Multipath Detecting Method Based on Antenna Arrays 319
 Min Li, Wei Zhao, Liang Yuan and Qinli Liu

31 Reliability Allocation Method of Satellite Navigation System Based on Dynamic Simulation 331
 Heng Zheng, Haisheng Li, Chang Li, En Xue, Zhuopeng Yang and Peipei Gong

32 A Study on Measuring Channel Bias in GNSS Receiver 343
 Hailong Chen, Wen Li, Xin Liu and Wenhai Jiao

33 The Development, Test and Application of New Technology on Beidou/GPS Dual-Mode Pseudolites 353
 Xingli Gan, Baoguo Yu, Lei Chao and Shi Liu

34 Study on Judgment Method of Signal Correlation Performance Based on Complex Correlation Vector 365
 Ying Wang, Zhe Su, Yansong Meng and Xiaoxia Tao

35 The Analysis of GNSS SIS Accuracy 375
 Shuai Liu, Xiaolin Jia and Zhuoxi Ma

36 BeiDou Satellite Multipath Characteristics Research-From the “Micro” Parameters Point of View 387
 Xin Chen, Xiaoran Fang, Yuze Wang, Yanhong Kou, Le Cai, Peilin Liu and Wenxian Yu

37 Analysis and Evaluation Method of Multiple-Access Interference in Navigation Satellite Communication System 403
 Chenglong He and Baoguo Yu

38 Research Progress on TWSTFT Mobile Calibration Station 415
 Guoyong Wang, Ya Liu, Xiaohui Li and Chen Shi

39 Analysis of BeiDou Signals on the Accuracy of Common-View Time Transfer 425
 MeiJun Guo, Hua Lu, Yun Xiao, YiJun Mo and XiaoGang Liu

40 Assessment of BDS Signal-in-Space Accuracy and Standard Positioning Performance During 2013 and 2014 437
 Gucang Chen, Zhigang Hu, Guangxing Wang, Guo Chen, Zhaoying Liu and Qile Zhao

41 Design and Implementation of Distributed Simulation Testbed for GNSS Experimentation 455
 Long Yang, Yufei Yang and Jinping Chen

42 High Precision and Difference Measurement of Inter-element Amplitude and Phase Bias Errors Based on Channel Multiplexing 467
 Ke Zhang, Huaming Chen, Xiangwei Zhu and Guangfu Sun

43 A High-Precision and Flexible Array Antenna Signal Simulator Based on VFD Filter 479
 Hai Sha, Han Mu and Hui Zhang

44 New Generation Signal Structure Evaluation System for GNSS 491
 Jianlei Yang, Tian Jin, Zhigang Huang and Honglei Qin

45 Research of Satellite Receiver Anti-replay Attack Techniques 503
 Mengjiang Liu, Zhixin Deng and Li Jun

46 Detect Techniques and Test Analysis on Navigation Signal Code Correlation Peak 517
 Xiaochao Feng, Yongheng Fu, Lei Gong and Jiancheng Liu

47 Research on Time Synchronization Method of Ground-Based Navigation System 529
 Xiye Guo, Yongbin Zhou and Jun Yang

48 BDS/GPS Stochastic Model Refinement and Assessment Using Satellite Elevation Angle and SNR 537
 Yan Li, Huang Dingfa, Li Meng and Zhu Dongwei

Part III BDS/GNSS User Terminal Technology

49 A GLONASS Navigation Data Verification Algorithm Under High Bit-error Rates 553
 Jian Hu, Aishui Rao, Long Zhang and Yimei Sun

50 The Design and Implementation of an Acquisition Scheme for Weak GNSS Signal 563
 Linfeng Zhang, Hairong Guo, Chong Zheng and Haibo He

51 Adaptive Notch Filter Design Based on Krylov Subspace 575
 Zhaoliang Duan, Guangwei Fan and Yi Luo

52 A Novel High Dynamic Carrier Tracking Algorithm Based on the Gaussian Particle Filter 587
 Qize Chen, Gengmin Li and Ao Peng

53 Research on the Mast Antenna System for Communications Compounds Satellite Navigation 599
 Haiguang Zhang, Ximing Liang and Jia Zhang

54 Research on the Satellite Navigation Independent Compound Receiving and Transmitting Array Concept 611
 Ximing Liang, Haiguang Zhang and Jia Zhang

55 A Framework of Mathematic Model and Performance Evaluation for Conjunct GNSS Spoofing Detection. 635
 Dingbo Yuan, Hong Li and Mingquan Lu

56 A Near-Far Effect Mitigation Method of Pseudolites Based on Array Signal 647
 Libin Shen, Lixin Li, Huisheng Zhang and Tao Bao

57 A Fast Positioning Method for Hot Start in GNSS Receiver 657
 Xiaohui Ba, Shidong Luo, Haiyang Liu, Qing Yuan, Yun Wang and Jie Chen

58 A New Iterative Method for Multipath Mitigation 667
 Yan Gao, Wei Li, Jinli Li, Hongliang Qu and Xiang Shi

59 An Improved Practical Anti-jamming Technique for GNSS Receivers Based ADP in Frequency Domain. 677
 Tianqiao Zhang, Yao Wang, Yang Gao and Hongbing Wang

60 A Robust Dynamic Satellite-Searching Algorithm for Multi-constellation GNSS Receivers 695
 Hengwei Zhou, Zheng Yao and Mingquan Lu

61 A High-Dynamic Null-Widen GNSS Anti-jamming Algorithm Based on Reduced-Dimension Space-Time Adaptive Processing 707
 Lu Ge, Dan Lu, Wenyi Wang, Lu Wang, Qiongqiong Jia and Renbiao Wu

62 Interference Suppression with L1-Norm Constraint for Satellite Navigation Systems. 717
 Wenyi Wang, Qingrong Du, Renbiao Wu, Dan Lu, Lu Wang and Qiongqiong Jia

63 A Spoofing Mitigation Algorithm Based on Subspace Projection for GNSS Receiver 727
 Lei Chen, Shuai Han, Weixiao Meng and Zijun Gong

64 A Quick A-BDS Location Method Based on Characteristics of GEO Satellite and Ridge Estimate 739
 Shourang Jing, Wenxiang Liu, Ling Yong and Guangfu Sun

65 Feasibility Analysis of GNSS Multi-constellation Positioning for Lunar Spacecraft 749
 Lei Chen, Yangbo Huang, Wenxiang Liu and Gang Ou

66 Spoofing Interference Suppression for GNSS Based on Estimating Steering Vectors 765
 Yaotian Zhang, Lu Wang, Wenyi Wang, Dan Lu, Qiongqiong Jia and Renbiao Wu

67 Satellite Navigation Anti-jamming Algorithm Based on Extended Array 773
 Fusheng Li, Wenyi Wang, Dan Lu, Lu Wang, Qiongqiong Jia and Renbiao Wu

68 Performance Assessment of Signal Quality Monitoring Based GNSS Spoofing Detection Techniques 783
 Yichen Yang, Hong Li and Mingquan Lu

69 Robust SFAP Anti-jamming Algorithm Based on Generalized Sidelobe Cancellation. 795
 Long Liu, Zhaolin Zhang and Ling Wang

70 Research on the BDS Inter-Satellite-Type Carrier Phase Bias Introduced by Different NH Code Sign Conventions 805
Zuohu Li, Hailing Wu, Liduan Wang and Hui Liu

71 A Position Calibration Algorithm of Antenna Arrays 817
Jiachi Wang and Zhongjun Chen

72 Performance Analysis of a Dual-Frequency Software-Defined BeiDou Receiver with B1 and B2 Signals 827
M. Zahidul H. Bhuiyan, Stefan Söderholm, Sarang Thombre, Laura Ruotsalainen and Heidi Kuusniemi



<http://www.springer.com/978-3-662-46637-7>

China Satellite Navigation Conference (CSNC) 2015

Proceedings: Volume I

Sun, J.; Liu, J.; Fan, S.; Lu, X. (Eds.)

2015, XX, 839 p. 494 illus. in color., Hardcover

ISBN: 978-3-662-46637-7