

Contents

Part I Electrical Traction and Power Supply of Rail Transportation

1	Hardware-in-the-Loop Simulation for Subway Applications with Onboard Supercapacitor	3
	Wei Wang, Ming Cheng, Ya Wang, Bangfu Zhang, Ying Zhu and Shichuan Ding	
2	Harmonic Power Flow Calculation for High-Speed Railway Traction Power Supply System	11
	Bin Wang, Xu dong Han, Shi bin Gao, Wen Huang and Xiao feng Jiang	
3	Relationship Between Meteorological Factors and Accidents of Traction Power Supply System of High-Speed Railway	27
	Hongbo Cheng, Zhengyou He, Qi Wang and Xiuqin Mu	
4	The Allocation of the Impedance Transformer Capacity of Passenger Dedicated Lines	37
	Fenfen Sun and Hongjun Bi	
5	The Catenary Vibration Response of High-Speed Electrified Railway Considering Horizontal Wind	45
	Zhigang Liu, Yang Song, Ying Wang, Hongrui Wang and Shibin Gao	
6	Fault Diagnosis of PWM Rectifier Based on Wavelet Neural Network	55
	Linghui Meng, Yunxiao Fu, Zhigang Liu, Limin Jia and Lei Wang	
7	The Impact of Contact Lines Wear on Current-Collecting Reliability of Pantograph and Security of Catenary.	67
	Xingshuai Wang, Xiaojun Wang, Jinghan He, Xin Meng and Chao Deng	

8	The Design of Traction Power Battery System for Dual Power Urban Rail Metro	75
	Zeyu Ma, Jiuchun Jiang, Sijia Liu, Zhanguo Wang and Minming Gong	
9	The Vector Analysis of the Traction Motor's Rotor Flux in EMU	87
	Haibo Zhao	
10	Fault Modeling and Fault Diagnosis of Three-Phase Inverter Circuit	95
	Zhaoyang Zhou, Chunmei Xu, Lei Wang and Linghui Meng	
11	Research on Harmonic Suppression of High-Speed Railway Traction Power Supply System Based on a LC Filter Branch	107
	Baishui Ruan, Gang Zhang, Fan Yang and Zhigang Liu	
12	Fault Diagnosis Method of Generator Based on Mutative Scale Chaos Combined Clustering and Feature Fusion	119
	Yucui Wu, Qian Zhao and Wenzong Feng	
13	Research on Beat-Less Control Strategy Based on Frequency-Domain Analysis	129
	Kan Dong, Lijun Diao, Leiting Zhao, Yizhou Chen and Zhigang Liu	
14	Research on Application of Online UPS Topology in Novel Energy Storage Traction Converter	143
	Zheming Jin, Zhigang Liu, Wenhui He, Xiaoguang Jia and Lijun Diao	
15	Research on Beatless Control in Traction Drives	155
	Yizhou Chen, Ruichang Qiu, Kan Dong and Lijun Diao	
16	Research on Dual Series and Parallel Control Schemes for Three-Phase Voltage-Sourced PWM Rectifier	171
	Fan Yang, Zhigang Liu, Gang Zhang and Baishui Ruan	
17	Railway Power Transformer Reliability Evaluation Model Based on Operating Conditions	181
	Juan Zhang and Zhensheng Wu	

18	A Simplified SVPWM Method for T-type Three-Level Inverter Applied to Traction Drive	193
	Ying Wang, Zhigang Liu, Xiuqing Mu, Fuqiang Fan and Shibin Gao	
19	A Study on the Temperature Relationship Between Electrical Connecting Clamp and Dropper Clip in Overhead Contact System.	203
	Tingyu Xin, Jinghan He, Guomin Luo, Xin Meng and Xingshuai Wang	
20	The Control Strategy Research of Hybrid EMU Energy Storage System.	213
	Wenhui He, Xiaoguang Jia, Zheming Jin, Lijun Diao and Zhigang Liu	
21	The Control Strategy of Network-Side Converter in Dual-Power Electric Multiple Units.	223
	Lichenxin Jiang, Gang Zhang, Baishui Ruan and Zhigang Liu	
22	Research and Analysis of Transient Process of Locomotive Passing Neutral Section Based on Habedank Arc Model	233
	Fuqiang Fan, Zhigang Liu, Ying Wang, Xiuqing Mu and Shibin Gao	
 Part II System Safety and Emergency Management		
23	Optimizing Slack Time Allocation in Train Timetable: A Two-Stage Stochastic Recourse Model	245
	Yong-tao Niu and Ling-yun Meng	
24	A Study of the Three-Dimensional Visualization of Soil Microstructure Based on MATLAB	253
	Yukun Guo and Zhonghong Wang	
25	Modeling and Prediction Using Process Reliability of Wire Rope	263
	Xingbin Ma, Cuiping Jiang and Baiqing Diao	
26	The Design and Development of High-Speed Railway Infrastructure Detection Data Access System.	273
	Junqing Tang, Limin Jia, Honghui Dong, Haijian Li, Yong Qin, Shaohuang Pang and Jianxiao Chen	

27 Research of Subway Tunnel Crack Recognition Algorithm Based on Image Processing 283
 Yangyang Zhao, Genying Wang and Yun Liu

28 Research on Fault Detection Method and Device of EMU Traction Motors 293
 Jiangang Cao, Hongju Cui and Ning Li

29 Real-Time Evaluation Model of Urban Rail Train Communication Network 303
 Yin Tian, Honghui Dong, Limin Jia, Yong Qin and Shao huang Pang

30 A Guided Wave Based Online Health Monitoring Technique for High-Speed Train Bogie Structures. 311
 Qiang Wang, Ming Hong, Zhongqing Su and Jing Xu

31 Statistical Model’s Application in the Gross Error Recognition of Deformation Monitoring Data of Dam 321
 Guang Yang, Yuntao Wang and Hezhi liu

32 Study on Real-Time Vehicle Scheduling Problem to Rescue Victims in Chemical and Biological Terrorist Attacks 331
 Zhonghua Liu, Juyun Wang, Hua Yu and Degang Liu

33 On Simulation of Urban Rail Vehicle Electro-Pneumatic Braking Systems. 347
 Xiukun Wei, Ming Cheng, Li Min Jia, Hai Liu, Minzheng Yuan and Guangwu Liu

34 Improved Delay-Dependent Stability Criterion for T-S Fuzzy Systems with Time Delay 357
 Hongqian Lu and Yingchun Zhang

35 Research on Construction of Urban Logistics Information Platform 365
 Kai Liu, Honghui Dong, Jun Bi and Zhibin Lu

36 Application of Fault Tree Analysis in Software Safety Integrity Level Allocation of Train 373
 Lina Zhang, Tienan Li and Yang Xu

37 Safety Analysis of ZPW-2000A/K Track Circuit System Based on Risk Estimation 383
 Ju Zhang, Huibing Zhao, Guo Zhou and Hongyu Quan

Part III Rail Transportation Computer Technology

38 A Novel Family-Size Model by Family Names Study 395
 Ying Hong Ma and Jian Ping Li

39 Multi-tracking Channels' Hardware Simulation for GNSS Integrity Receiver Design in Transport Field 403
 Zhaodong Xing

40 A Spatial Domain Error Concealment Method Based on Statistics 413
 Xiang Yu, Huan Wang and Rong Wang

41 Design of Urban Rail Vehicle Sensor Network Data Transmission Simulation System 425
 Xianpeng Xia, Honghui Dong, Yin Tian, Limin Jia, Yong Qin, Shaohuang Pang and Jianxiao Chen

42 Design and Development of High-Speed Railway Infrastructure Detection Database 433
 Na Chen, Limin Jia, Honghui Dong, Yong Qin, Shaohuang Pang and Jianxiao Chen

43 A Novel Iris Verification System Based on Feature Extraction . . . 441
 Jin Liu, Ting ting Liu and Bin ru Chen

44 Overhead Hoist Transporter System Utilization, Simulation, and Analysis for Computer-Integrated Manufacturing in Food Process Business 451
 Yu-Chuan Liu, Shih-Ming Yang, Hong-Mei Gao and Chun-Yung Chuang

45 Single Face Image Super Resolution Reconstruction Based on Block-PCA 461
 Dan Liu and Lin Cao

46 A Track Circuit Signal Simulation System for Interlocking Test 469
 WeiQing Li and DingChang Yong

47 Topological Structure Analysis Focusing on Riding Comfort Detection Network 479
Dongyao Jia and Po Hu

48 Information Hiding Based on Morphological Component. 491
Linlin Zhang and Jianjun Wang

49 Extensible Software Architecture for Simulating Cockpit Display and Control System 501
Huaxing Wu, Kai Qiu, Wei Huang and Fengju Kang

Part IV Rail Transportation and Automatic Control

50 Analyzing Railway Accidents Based on Complex Network and Cascading Failure 513
Ziyan Luo, Keping Li, Xin Ma and Jin Zhou

51 The Evaluation Method and Index System for High-Speed Railway Train Operation Plan 519
Zixi Bai, Leishan Zhou, Jin Wang and Bin Guo

52 The Optimization Model and Algorithm for High-Speed Railway Station Operation Based on Lagrangian Relaxation 527
Zixi Bai and Leishan Zhou

53 An Empirical Study of Evaluation of Urban Rail Transit Operation Efficiency in China 535
Yingjie Song and Cuicui Lv

54 Research on Determination of High-Speed Rail Operation Mode 545
Quan Huang and Zhenhuan He

55 A Multi-objective Timetable Optimization Model for Subway Systems 557
Le Zhao, Keping Li and Shuai Su

56 A New Control Method of Automatic Train Operation in Urban Rail Transit Based on Improved Generalized Predictive Control Theory 567
Wentian Zhao and Chunhai Gao

57 Hybrid Timed Event Graph Model for Networked Train Operation Simulation and Timetable Stability Optimization 575
 Xuelei Meng, Limin Jia, Yong Qin and Jie Xu

58 The Computation Model of ATO-Level Profile 583
 Zexi Hua and Ying Lin

59 Path Choice for Passengers of Subway Station During Peak Hour 597
 Xiaomin Xin, Jie Xu, Jianyuan Guo, Limin Jia, Yong Qin and Yashu Kang

60 The Evaluation for Tianjin Metro Operation. 605
 Wenfei Bai, Futian Wang and Yiqi Shao

61 Research of Passenger Train Spare Parts Procurement Model 613
 Lingli Guo, Xi-an Sun and Ruixia Wang

62 Delay-Range-Dependent Stability for Stochastic Systems with Time-Varying Delay 621
 Tao Liu

63 Research on Different Speed Combinations’ Influence on Carrying Capacity on Mix Organization Pattern of Passenger Dedicated Line 629
 Jianghua Gao, Jie Xu, Fei Dou, Guoxing Han and Kai Yan

64 Research on the Coordination Control on Phase Designing and Timing Setting of the Close-Continuous Intersections 639
 Dudu Guo, Bing Wang, Yuchun Ma and Xiong Qin

65 Study on Moment of Inertia and Modal Analysis of Track Wheel for Roller Test Rig. 645
 Xingqiao Ai, Jintian Wang, Wanxiu Teng and Dequan Cui

Erratum to: A Study of the Three-Dimensional Visualization of Soil Microstructure Based on MATLAB E1
 Yukun Guo and Zhonghong Wang



<http://www.springer.com/978-3-642-53777-6>

Proceedings of the 2013 International Conference on
Electrical and Information Technologies for Rail
Transportation (EITRT2013)-Volume I

Jia, L.; Liu, Z.; Qin, Y.; Zhao, M.; Diao, L. (Eds.)

2014, XV, 652 p. 350 illus., Hardcover

ISBN: 978-3-642-53777-6