

2023 IEEE Power & Energy Society General Meeting (PESGM 2023)

**Orlando, Florida, USA
16-20 July 2023**

Pages 1-708



**IEEE Catalog Number: CFP23POW-POD
ISBN: 978-1-6654-6442-0**

**Copyright © 2023 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP23POW-POD
ISBN (Print-On-Demand):	978-1-6654-6442-0
ISBN (Online):	978-1-6654-6441-3
ISSN:	1944-9925

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

TABLE OF CONTENTS

An Ecological Robustness Oriented Optimal Power Flow for Power Systems' Survivability	1
<i>Hao Huang, Zeyu Mao, Astrid Layton, Katherine Davis</i>	
Integrated Transmission and Distribution System Expansion Planning Under Uncertainty.....	2
<i>Gregorio Muñoz-Delgado, Javier Contreras, José M. Arroyo, Agustin Sanchez De La Nieta, Madeleine Gibescu</i>	
Low-Carbon Economic Dispatch of Bulk Power Systems Using Nash Bargaining Game	3
<i>Xuyang Li, Guangchun Ruan, Haiwang Zhong</i>	
Distributed Optimal Energy Dispatch for Networked Microgrids with Federated Reinforcement Learning	8
<i>Yusen Wang, Ming Xiao</i>	
Multistage Planning Model for Active Distribution Systems and Electric Vehicle Charging Stations Considering Voltage-Dependent Load Behavior	13
<i>Mario A. Mejia, Leonardo H. Macedo, Gregorio Muñoz-Delgado, Javier Contreras, Antonio Padilha-Feltrin</i>	
Variations in Supraharmonic Emission (2-150 kHz) of an EV Fast Charging Station Under Different Supply- And Operating Conditions	14
<i>T. M. H. Slangen, V. Cuk, J. F. G. Cobben, E. C. W. De Jong</i>	
Transmission Line Protection Using Dynamic State Estimation and Advanced Sensors: Experimental Validation	19
<i>Ankur Srivastava, Le Anh Tuan, David Steen, Ola Carlson, Omar Mansour, Dennis Bijwaard</i>	
An Iterative Bidirectional Gradient Boosting Algorithm for CVR Baseline Estimation.....	20
<i>Han Pyo Lee, Lidong Song, Yiyang Li, Ning Lu, Di Wu, Pj Rehm, P. E. Matthew Makdad, P. E. Edmond Miller</i>	
Assessing the Impact of Natural Gas and Hydrogen Blending in Integrated Energy System Modeling	25
<i>Thomas Klatzer, Udo Bachhiesl, Sonja Wogrin, Asgeir Tomasgard</i>	
A Virtual Inertia Compensation Control Technique for DC Microgrid Voltage Stabilization	30
<i>M. Shafiul Alam, Fahad Saleh Al-Ismail, Md Shafiullah, Syed Masiur Rahman, Muhammad Khalid, M. A. Abido</i>	
Control of a Linear Switched Reluctance Motor in Electric Train Application.....	35
<i>Siamak Masoudi, Atif Iqbal, Nasser Al-Emadi, Hasan Mehrjerdi</i>	
Coordinated Reactive Power Control of Hydro Generators in the Nordic Grid.....	40
<i>Emil Ghieh Melfald, Thomas Øyvang</i>	
DER Dynamics Integration Demonstration Using Power Hardware-In-The-Loop (PHIL) Testbed in Southern California Edison (SCE)	45
<i>F. Elyasichamazkoti, A. Momeni, S. Chuangpishit, F. Katiraei, Md Arifujjaman, R. Salas, A. Johnson, J. Araiza</i>	
A Data-Driven Polynomial Chaos Expansion-Based Method for Microgrid Ramping Support Capability Assessment and Enhancement	50
<i>Mohan Du, Xiaozhe Wang</i>	

Multi-Area Distribution System State Estimation Via Distributed Tensor Completion	55
<i>Yajing Liu, Ahmed Zamzam, Andrey Bernstein</i>	
A Post-Event Generator Start-Up Strategy for Renewable Penetrated Transmission System Considering Dynamic Frequency Regulation.....	56
<i>Lizhou Jiang, Zhaohong Bie, Tao Long, Xu Wang, Haipeng Xie, Gengfeng Li</i>	
Relaxing Complementarity Constraints of Energy Storage with Feasibility and Optimality Guarantees	57
<i>Wei Lin, C. Y. Chung, Changhong Zhao</i>	
Predictive Current Control for Three-Level T-Type Based Six-Phase Induction Motor Drive	62
<i>Mohamed Mamdouh, Aboubaker Salem, Mohamed Ali Abido</i>	
Distribution System Topology Identification Via Efficient MILP-Based WLAV State Estimation	67
<i>Thiago Ramos Fernandes, Bala Venkatesh, Madson Cortes De Almeida</i>	
A Real-Time Limit Order Book as a Market Mechanism for Transactive Energy Systems	68
<i>Akshay Sreekumar, Adhithyan Sakthivelu, Rimvydas Baltaduonis, Lynne Kiesling, Seth Hoedl, David P. Chassin</i>	
Optimal Economic Allocation Strategy for Hybrid Energy Storage System Under the Requirement of Wind Power Fluctuation.....	73
<i>Lang Zhao, Yuan Zeng, Dong Peng, Yizheng Li</i>	
Bayesian Energy Disaggregation at Substations with Uncertainty Modeling	78
<i>Ming Yi, Meng Wang</i>	
Differential-Algebraic Equation-Constrained Frequency-Secured Stochastic Unit Commitment	79
<i>Bo Zhou, Ruiwei Jiang, Siqian Shen</i>	
Hybrid Parallel-In-Time-And-Space Transient Stability Simulation of Large-Scale AC/DC Grids.....	84
<i>Tianshi Cheng, Ning Lin, Venkata Dinavahi</i>	
Optimal Dispatch of WT/PV/ES Combined Generation System Based on Cyber-Physical-Social Integration	85
<i>Ziyu Chen, Jizhong Zhu, Hanjiang Dong, Wanli Wu, Haohao Zhu</i>	
Impact of Dynamic Tariffs for Smart EV Charging on LV Distribution Network Operation.....	86
<i>Flore Verbist, Nanda Kishor Panda, Pedro P. Vergara, Peter Palensky</i>	
Characterization of Non-Stationary Signals in Electric Grids: A Functional Dictionary Approach	91
<i>Alexandra Karpilow, Asja Derviškić, Guglielmo Frigo, Mario Paolone</i>	
Faster-Than-Real-Time Hardware Emulation of Extensive Contingencies for Dynamic Security Analysis of Large-Scale Integrated AC/DC Grid	92
<i>Shiqi Cao, Ning Lin, Venkata Dinavahi</i>	
Assigning Shadow Prices to Synthetic Inertia and Frequency Response Reserves from Renewable Energy Sources.....	93
<i>Luis Badesa, Carlos Matamala, Yujing Zhou, Goran Strbac</i>	
Multiple System Function Supports with Inverter-Dominated Virtual Power Plant.....	94
<i>Boda Li, Qianwen Xu</i>	

Effects on Electricity Customers' Welfare Considering Optimal Generation Dispatch and Emission Reduction in Composite Power Systems	99
<i>Pedro N. Vasconcelos, Gabriel F. Alvarenga, A. Zambroni De Souza, Benedito D. Bonatto, Glauco N. Taranto, Bala Venkatesh</i>	
Invertible Neural Network for Consistent State Estimation in Distribution Grid with Unobservability	104
<i>Jingyi Yuan, Yang Weng</i>	
A New Approach to Represent the Corona Effect and Frequency-Dependent Transmission Line Models in EMT-Type Programs	109
<i>Thassio Matias, Maria Cristina Tavares</i>	
Development of a Voltage-Dependent Line Model to Represent the Corona Effect in Electromagnetic Transient Program	110
<i>Thassio Matias, Maria Cristina Tavares</i>	
Non-Cooperative Equilibrium for Heterogeneous Demand-Side Flexible Resources in Retail Electricity Markets	111
<i>Xiaotian Sun, Hanyu Ren, Haipeng Xie, Runfan Zhang, Zhaohong Bie</i>	
VSC-HVDC Traveling Wave Protection Based on the First Current Extremum of the Non-Fault Pole	116
<i>Zhenting Zhao, Yi Zou, Shengyang Wu, Tiantian Chen, Yinhong Li</i>	
A Control Method for Converter-Interfaced Sources to Improve Operation of Directional Protection Elements	121
<i>Zhe Yang, Zhou Liu, Qi Zhang, Zhe Chen, Jose De Jesus Chavez, Marjan Popov</i>	
On the Use of Safety Critical Control for Cyber-Physical Security in the Smart Grid.....	122
<i>Amr Mohamed, Mohsen Khalaf, Deepa Kundur</i>	
Distributed Dispatch of Integrated Electricity-Heat Systems with Variable Mass Flow	127
<i>Weiye Zheng, Jizhong Zhu, Qingju Luo</i>	
Capacity Market for Distribution System Operator – with Reliability Transactions – Considering Critical Loads and Microgrids.....	128
<i>Amr Mohamed, Carlos Sabillon, Bala Venkatesh, Marcos Rider, Ali Golriz, Marina Lavorato</i>	
Deregulated Distribution System Planning - Incremental Capacity Auction Mechanism with Transactive DERs	129
<i>Amr Mohamed, Carlos Sabillon, Bala Venkatesh, Marcos Rider, Ali Golriz, Marina Lavorato</i>	
Reinforcement Learning Based Voltage Control Using Multiple Control Devices	130
<i>Yuling Wang, Vijay Vittal, Xiaochuan Luo, Slava Maslennikov, Qiang Zhang, Mingguo Hong, Song Zhang</i>	
Transmission and Distribution Systems Coordination Using the Design Structure Matrix.....	135
<i>Abdelrahman Ayad, François Bouffard</i>	
Voltage Flicker Evaluation of Distributed Energy Resources Operating at Voltage-Support Modes	140
<i>Masoud Esmaili, Christopher Ritacco</i>	
An Optimal Energy Management Algorithm Considering Regenerative Braking and Renewable Energy for EV Charging in Railway Stations.....	145
<i>Georgina Pierrou, Yannick Zwirner, Gabriela Hug</i>	

Detailed EMT-Type Load Modeling for Power System Dynamic and Harmonic Studies	150
<i>Maryam Torabi Milani, Bahram Khodabakhchian, Jean Mahseredjian</i>	
Analysis of Periodic Clock Errors in Synchrophasor Ambient Data	151
<i>Chetan Mishra, Luigi Vanfretti, T. J Purcell, Robert Orndorff, Jaime De La Ree, Kevin. D. Jones</i>	
Tri-Sectional Approximation of the Shortest Path to Long-Term Voltage Stability Boundary with Distributed Energy Resources	156
<i>Dan Wu, Bin Wang, Franz-Erich Wolter, Le Xie</i>	
Square Domain Forensic Analysis for Power Systems.....	157
<i>Suresh D. Varwandkar</i>	
Micro Random Forest: A Local, High-Speed Implementation of a Machine-Learning Fault Location Method for Distribution Power Systems	162
<i>Miguel Jimenez-Aparicio, Javier Hernandez-Alvidrez, Armando Y. Montoya, Matthew J. Reno</i>	
Modeling of Time-Delayed Distributed Cyber-Physical Power Systems for Small-Signal Stability Analysis	167
<i>Luo Xu, Qinglai Guo, Zhongguan Wang, Hongbin Sun</i>	
Open-Source Distributed Energy Resource (OpenDER) Model: Harmonizing Accurate Interpretations of IEEE Std 1547-2018	168
<i>Yiwei Ma, Wei Ren, Aminul Huque, Jithendar Anandan, Paulo Radatz, Wenzong Wang, Devin Van Zandt, Brian Seal, Jens C. Boemer</i>	
Extreme Wind Gust Impact on UK Offshore Wind Turbines: Long-Term Return Level Estimation	173
<i>Sara Abdelaziz, Sarah N. Sparrow, Weiqi Hua, David Wallom</i>	
Cost Effective Dynamic Multi-Microgrid Formulation Method Using Deep Reinforcement Learning	178
<i>Yoongun Jung, Minhyeok Chang, Sungwoo Kang, Gilsoo Jang, Hojun Lee, Minhan Yoon, Sungyoon Song, Changhee Han</i>	
Ultra-Short-Term Probabilistic Wind Forecasting: Can Numerical Weather Predictions Help?	183
<i>Feng Ye, Joseph Brodie, Travis Miles, Ahmed Aziz Ezzat</i>	
Reliable Dispatch of Active Distribution Networks Via a Two-Layer Grid-Aware Model Predictive Control: Theory and Experimental Validation.....	188
<i>Rahul Gupta, Antonio Zecchino, Ji-Hyun Yi, Mario Paolone</i>	
Voltage Balancing of Grid-Forming Inverters in Unbalanced, Islanded Microgrids.....	189
<i>Debjyoti Chatterjee, Nicholas G. Barry, Taehyung Kim, Woosung Kim, Surya Santoso</i>	
Reliability Analysis of Power Systems Integrated with High-Penetration of Power Converters	194
<i>Bowen Zhang, Mengqi Wang, Wencong Su</i>	
A Dynamic Internal Trading Price Strategy for Networked Microgrids: A Deep Reinforcement Learning-Based Game-Theoretic Approach	195
<i>Van-Hai Bui, Akhtar Hussain, Wencong Su</i>	
Massively Parallel Modeling of Battery Energy Storage Systems for AC/DC Grid High-Performance Transient Simulation	196
<i>Ning Lin, Shiqi Cao, Venkata Dinavahi</i>	

Adaptive Heterogeneous Transient Analysis of Wind Farm Integrated Comprehensive AC/DC Grids	197
<i>Ning Lin, Shiqi Cao, Venkata Dinavahi</i>	
Actionable Three-Phase Infeasibility Optimization with Varying Slack Sources.....	198
<i>Elizabeth Foster, Timothy McNamara, Amritanshu Pandey, Larry Pileggi</i>	
Constrained Intelligent Frequency Control in an AC Microgrid: An Online Reinforcement Learning Based PID Tuning Approach	203
<i>K. Nosrati, A. Tepljakov, E. Petlenkov, V. Skiparev, J. Belikov, Y. Levron</i>	
Data-Driven Day-Ahead Probabilistic Forecasting of Wind Power Based on Features Sensitivity Analysis and Meteorological Scenario Classification	208
<i>Hao Sun, Changqing Ye, Can Wan, Hui Yao, Kaiming Zhang</i>	
LF Radio Receiver for Substation Intrusion Deterrent and Measurement Validation	213
<i>Roderick Gray, Morris Cohen, Kevin Whitmore, Lukas Graber, Ning A Guo, Raheem Beyah</i>	
Evaluation of Frequency Reliability Standards by Determining Minimal Level of Inertia.....	218
<i>Kyungsang Lee, Seunghyuk Im, Byongiun Lee</i>	
A Distributionally Robust Approach for Day-Ahead Power Procurement by EV Charging Hubs.....	223
<i>Diwas Paudel, Nicolas Bustos, Tapas K. Das</i>	
Per-Unit Modeling Via Similarity Transformation	228
<i>D Venkatramanan, Sairaj Dhople</i>	
Grounding Impulse Impedance Estimation for Vertical Rods Buried in Porous Soil.....	229
<i>Walter Luiz Manzi De Azevedo, Anderson Ricardo Justo De Araújo, José Pissolato Filho</i>	
Parameter Optimization of Virtual Synchronous Generator Control Applied in Energy Storage and Photovoltaic Systems for an Island Microgrid	234
<i>Yi-Syuan Wu, Jian-Tang Liao, Hong-Tzer Yang</i>	
Robust Voltage Control Using Demand-Side Flexibility with Time and Spatial Dependency.....	239
<i>Tetsushi Ono, Tsutomu Kawamura, Shinji Murata</i>	
MISO's Regional Long Range Transmission Planning: A Proactive and Holistic Planning Approach.....	244
<i>Fatou B. Thiam, James Slegers, Jeremy Nash, Tung Nguyen, Matthew Tackett, Joseph Reddoch, Jarred Miland</i>	
Learning to Operate an Electric Vehicle Charging Station Considering Vehicle-Grid Integration.....	249
<i>Zuzhao Ye, Yuanqi Gao, Nanpeng Yu</i>	
Lyapunov Optimization in Online Battery Energy Storage System Control for Commercial Buildings	250
<i>Jie Shi, Zuzhao Ye, H. Oliver Gao, Nanpeng Yu</i>	
Estimation of Transmission System Power Transfer Capability at Competitive Renewable Energy Zones	251
<i>Milad Javadi, Ruchi Singh, Di Wu, Gangan Li, Guomin Ji, John N Jiang</i>	
Identification of Power System Oscillation Modes Using Blind Source Separation Based on Copula Statistic	256
<i>Pooja Algikar, Lamine Mili, Mohsen Ben Hassine, Somayeh Yarahmadi, Almuatazbellah Muataz Boker</i>	

Co-Optimizing Consumption and EV Charging Under Net Energy Metering	261
<i>Minjae Jeon, Lang Tong, Qing Zhao</i>	
Transactive Energy Systems in Decentralized Autonomous Renewable Energy Communities	266
<i>Riccardo Trevisan, Mario Mureddu, Emilio Ghiani, Marco Galici, Fabrizio Pilo</i>	
Revenue-Based Allocation of Electricity Network Charges for Future Distribution Networks	271
<i>Juan J. Cuenca, Emad Jamil, Barry P. Hayes</i>	
Online Correction of Multi-Scene Load Model Parameters Based on Measured Data	272
<i>Yuan Zeng, Zhenyu Zhang, Junlong Ma, Hongmei Wang</i>	
A Holistic Methodology to Identify Cost-Effective Smooth Routes for Power Transmission Lines	277
<i>João Vilela, Bruno Fanzeres, Rafael Martinelli, Rodrigo Moreno</i>	
Modal Analysis of a Photovoltaic Power Plant in Low Short Circuit Grids Modeled with Generic Models.....	278
<i>Juan J. Sanchez-Gasca, Shruti Dwarkanath Rao, Deepak Ramasubramanian</i>	
Interpretable Detection and Localization of False Data Injection Attacks Based on Causal Learning.....	283
<i>Shengyang Wu, Dongping Hu, Yi Gao, Jingyu Wang, Dongyuan Shi</i>	
Measurement of Losses in Dry-Type Air-Core Reactors Using Infrared Thermography	288
<i>Edson Bortoni, Denison Mesquita, Davi Febba, Roberto Siniscalchi</i>	
Time-Varying Inertia Estimation for Inverter-Based Resources.....	289
<i>Bendong Tan, Junbo Zhao, Daniel Adrian Maldonado, Jason Philhower</i>	
A Novel Method to Compute Multiple Optimal Solutions for ACOPF Problems.....	294
<i>Tengmu Li, Hsiao-Dong Chiang, Zhi-Yuan Wang</i>	
Privacy-Preserving Operation of Interconnected Distribution Networks with Soft Open Points.....	299
<i>Xueyuan Cui, Zhifeng Liang, Yun Chai, Wenjin Chen, Ruoying Yu, Guangchun Ruan</i>	
Probabilistic Scheduling of UFLS to Secure Credible Contingencies in Low Inertia Systems.....	304
<i>Cormac O'Malley, Luis Badesa, Fei Teng, Goran Strbac</i>	
ProtoDINet: End-To-End Interpretable Prototypical Model for Insulator Damage Detection	305
<i>Hooman Vaseli, Nandinee Haq, Jhelum Chakravorty, Antony Hilliard</i>	
Feasible Region for DERs in Unbalanced Distribution Networks with Uncertain Line Impedances.....	310
<i>Bin Liu, Jin Ma</i>	
Synchronization Mechanism Between Power-Synchronized VS and PLL-Controlled CS and the Resulting Oscillations.....	315
<i>Yunpeng Zhou, Jiabing Hu, Wei He</i>	
DeepOPF-FT: One Deep Neural Network for Multiple AC-OPF Problems with Flexible Topology	316
<i>Min Zhou, Minghua Chen, Steven H. Low</i>	
An Effective Zone-3 Supervision of Distance Relay for Enhancing Wide Area Back-Up Protection of Transmission System.....	317
<i>Subhransu Samantaray, Biswajit Sahoo, Bhavesh Bhalja</i>	
Interpretable Probabilistic Price Forecasting for Energy Markets.....	318
<i>Nandinee Haq, Kai Yuan, Xiaoming Feng</i>	

On-Line System Identification of Power System Linear Models	323
<i>J. A. Moreno-Corbea, M. R. A. Paternina, D. Rodales, R. Reyes, F. Zelaya, A. Zamora, C. Toledo, C. Castrillón, A. Sánchez</i>	
Power-Flow Formulation for Inverter-Based Grids.....	328
<i>O. Ajala, T. Roberts, A. D. Domínguez-García</i>	
Comparative Study of Decentralized Grid-Forming Converter Controls for Inverter-Based Microgrids	333
<i>Fadi Kelada, Jérôme Buire, Nouredine Hadjsaid</i>	
DeepOPF-V: Solving AC-OPF Problems Efficiently	338
<i>Wanjun Huang, Xiang Pan, Minghua Chen, Steven Low</i>	
Cyber-Physical Risk Assessment Framework for a Real-Life Automatic Generation Control Systems.....	339
<i>Qiang Lan, Li He, Shuyu Jia, Yuqian Zhang, Bin Wang, Peng Yang</i>	
Automatically Discerning Power System Dynamics in Synchrophasor Measurements Data Spectra	344
<i>Chetan Mishra, Luigi Vanfretti, Jaime De La Ree, Kevin D. Jones</i>	
Neuro-Physical Dynamic Load Modeling Using Differentiable Parametric Optimization	349
<i>Shrirang Abhyankar, Ján Drgona, Aaron Tuor, Andrew August</i>	
Wind Power Scenario Generation Using Graph Convolutional Generative Adversarial Network	354
<i>Young-Ho Cho, Shaohui Liu, Hao Zhu, Duehee Lee</i>	
Modelica Implementation and Validation of Virtual Synchronous Machine Control for a VSC in ePHASORSIM	359
<i>José M. Valles, César Angeles-Camacho, Francisco Gonzalez-Longatt</i>	
A Non-Cooperative Game-Theoretic Approach for the Flexible Operation of Multi-Microgrids.....	364
<i>Soheil Mohseni, Alan C Brent</i>	
Concept and Definition of Dynamic Symmetrical Components with Time-Varying Amplitude and Frequency	369
<i>Yingbiao Li, Jiabing Hu, Weizhong Wen, Qinghua Wang, Shicong Ma, Jianbo Guo</i>	
Priority Chronological Time-Period Clustering for Generation and Transmission Expansion Planning Problems with Long-Term Dynamics.....	370
<i>Álvaro García-Cerezo, Raquel García-Bertrand, Luis Baringo</i>	
Battery Health Prognosis: Discharging Capacity Prediction at All Operating Voltage Levels	371
<i>Chunyang Zhao, Peter Bach Andersen, Chresten Træholt, Seyedmostafa Hashemi</i>	
A Criterion and Stochastic Unit Commitment Towards Frequency Resilience of Power Systems	376
<i>Yang Yang, Chih-Hsien Jimmy Peng</i>	
Development of Hybrid Peer-To-Peer Energy Trading for Distribution System with Multi-Aggregators	377
<i>Nadya Noorfatima, Jounghoon Nam, Jaesung Jung</i>	
Steady-State Security Region Boundary Modification Model: A Hybrid Physical Model-Driven and Data-Driven Approach.....	382
<i>Junzhi Ren, Yuan Zeng, Chao Qin, Bao Li, Ziqiang Wang, Quan Yuan</i>	

Mitigation-Aware Bidding Strategies in Electricity Markets.....	387
<i>Yiqian Wu, Jip Kim, James Anderson</i>	
Insights into Dissipating Energy-Based Source/Sink Characterization of TCSC and STATCOM for Low-Frequency Oscillations.....	392
<i>Kaustav Chatterjee, Sayan Samanta, Nilanjan Ray Chaudhuri</i>	
Load Rejection Overvoltage of Distribution-Connected IBRs.....	393
<i>Alexandre Nassif</i>	
Practical Charts for Sizing Neutral Grounding Elements for Machine-Based Distributed Energy Source Step-Up Transformers	394
<i>Alexandre Nassif, Julio Romero Agüero, Ming Dong</i>	
Energy Allocation of the Community Energy Storage System: A Contribution-Based Incentive Mechanism	395
<i>Akhtar Hussain, Petr Musilek</i>	
Post DC Fault Circulating Current Suppression Control.....	400
<i>Rohan Kamat Tarcar, Ajay Shetgaonkar, Marjan Popov, Mart Van Der Meijden, Wilhelm Winter, Mario Ndreko, Robert Dimitrovski, Matthias Burkhardt, Aleksandra Lekic</i>	
Resilient Power Sharing in a 100% Inverter-Based Power System Under GPS Spoofing Attacks	405
<i>Brady Alexander, Ardavan Mohammadhassani, Ali Mehrizi-Sani</i>	
Natural Gas Short-Term Operation Problem with Dynamics: A Rank Minimization Approach	410
<i>Reza Bayani, Saeed Manshadi</i>	
Optimal False Data Injection Attacks Against Power System Frequency Stability.....	411
<i>Mohamadsaleh Jafari, Mohammad Rahman, Sumit Paudyal</i>	
Towards Optimal Pricing of Demand Response - A Nonparametric Constrained Policy Optimization Approach	412
<i>Jun Song, Chaoyue Zhao</i>	
Mobile Energy Storage System Scheduling at Low Voltage Distribution System	417
<i>He Meng, Tao Xu, Mengchao Li, Wei Wei, Jianhang Sun, Ke Li, Xiaowen Huangfu, Haozheng Yu</i>	
Modified Multi-Tree Clustering for Phase Identification in Distribution Grids with Photovoltaic Systems.....	422
<i>Jiawei Zhu, Katarina Knezovic, Dmitry Shchetinin</i>	
Impact Analysis of Time-Of-Use Pricing Enabled Electric Vehicle Charging to the Uncoordinated Charging on a Distribution Network	427
<i>Muhammad Abeer Sohail, Rashna Khan, Syed Hammad Mukhtar, Ahmad Usman</i>	
Artificial Intelligence and Unmanned Aerial Vehicle Applications on Electrical Power Systems	432
<i>Wilbert Hernandez Torres, Braian Diaz Aquino, Eduardo I. Ortiz Rivera</i>	
Dynamic Evaluation of PV Hosting Capacity for Distribution Network Based on Deep Reinforcement Learning.....	437
<i>Ziyang Yin, Shouxiang Wang, Qianyu Zhao, Zhaoyang Han</i>	

DC Shipboard Microgrids with Constant Power Loads: A Review of Advanced Nonlinear Control Strategies and Stabilization Techniques	442
<i>Mustafa Alrayah Hassan, Chun-Lien Su, Josep Pou, Giorgio Sulligoi, Dhafer Almakhlis, Daniele Bosich, Josep M. Guerrero</i>	
Hardware Demonstration of Weak Grid Oscillations for IBR with DC-Link Voltage Control.....	443
<i>Li Bao, Lingling Fan, Zhixin Miao</i>	
MANA-Based Load-Flow Solution for Islanded AC Microgrids.....	448
<i>Nasim Rashidirad, Jean Mahseredjian, Ilhan Kocar, Ulas Karaagac, Omar Saad</i>	
Sensitivity Studies on Composite Load Models in PJM System Stability Assessment	449
<i>Xiaokang Xu, Reza Yousefian, Jie Tang, Byoungkon Choi, Lin Huang, Yiming Mao</i>	
Coordinated Control of Three Single-Phase BESS Inverters Using Local Measurements to Mitigate Voltage Unbalance.....	454
<i>Ioannis Mexis, Grazia Todeschini, Zhongfu Zhou</i>	
Multi-Synchrosqueezing Transform-Based Hybrid Method for Frequency Components Detection of Nonstationary Voltage and Current Waveforms	455
<i>Gary Chang, Wei-Yun Huang</i>	
Robust Model Predictive Techno-Economic Control of Active Distribution Networks.....	456
<i>Salish Maharjan, Prashant Tiwari, Rui Cheng, Zhaoyu Wang</i>	
Optimal Microgrid Networking for Maximal Load Delivery in Phase Unbalanced Distribution Grids: A Declarative Modeling Approach	461
<i>David Fobes, Harsha Nagarajan, Russell Bent</i>	
Masked Multi-Step Probabilistic Forecasting for Short-To-Mid-Term Electricity Demand	462
<i>Yiwei Fu, Nurali Virani, Honggang Wang</i>	
Towards Improved Decision Making for the Smarter Grid: Geomagnetic Disturbance Implicit Modeling Uncertainty Quantification.....	467
<i>Arturo Bretas, Kiana Brown, Varoozhan Hartoonian, Tom McDermott, Jeff Dagle</i>	
Sensitivity Analysis on Green Hydrogen as Energy Storage: A Techno-Economic Case Study	472
<i>Rahul R Urs, Assia Chadly, Ahmad Mayyas, Ameena Al Sumaiti</i>	
Cyber-Attack Event Analysis for EV Charging Stations	477
<i>Mansi Girdhar, Junho Hong, Yongsik You, Tai-Jin Song, Manimaran Govindarasu</i>	
Safe Exploration Reinforcement Learning for Load Restoration Using Invalid Action Masking.....	482
<i>Linh Vu, Tuyen Vu, Thanh-Long Vu, Anurag Srivastava</i>	
Stochastic Economic Dispatch Considering Demand Response and Endogenous Uncertainty	487
<i>Nasrin Bayat, Qifeng Li, Joon-Hyuk Park</i>	
Development of an SF ₆ -Free AC HV Dead-Tank Circuit Breaker Rated 145 kV, 63 kA.....	492
<i>Victor F. Hermosillo, Matthias Schirmer, Todd Irwin, Ludovic Darles, Cyril Gregoire</i>	
Data-Driven Approach to Transactive Energy Systems with Commercial Buildings	497
<i>Meghana Ramesh, Jing Xie, Thomas E. McDermott, Monish Mukherjee, Michael Diedesch, Anjan Bose</i>	
Autonomous Voltage Response for Distributed Energy Resources.....	502
<i>Thomas E. McDermott</i>	

Modeling and Real-Time Simulation of Ocean Current Turbines for Grid Integration.....	507
<i>Sasha Fung, Yufei Tang, James Vanzwieten, Gabriel Alsenas</i>	
Probabilistic Individual Short-Term Load Forecasting Using Conditional Variational Autoencoder.....	512
<i>Seyyed Rashid Khazeinyasab, Rajagopal Iyengar, Woei Ling Leow</i>	
Study on Post-Arc Current of DC Current Interruption Using Vacuum Interrupter	517
<i>Takashi Inagaki, Sho Tokoyoda, Motohiro Sato, Taiki Donen</i>	
A Distributed PV Capacity Planning Method Considering the Stage Load Demand and the PV Carrying Potential.....	522
<i>Zhicheng Gu, Leijiao Ge, Bing Sun, Xubin Liu, Junhui Li</i>	
Modeling Spinning Reserve Contribution Using Physical Ramp Rates.....	527
<i>Shubo Zhang, John L. Meyer, Ilro Harjunkoski, Khosrow Moslehi, Pradip G. Kumar</i>	
A Quantitative Methodology for Attack-Defense Analysis of EV Charging Infrastructure	532
<i>Souradeep Bhattacharya, Manimaran Govindarasu, Mansi Girdhar, Junho Hong</i>	
A Utility Use Case: Utilizing Spatiotemporal Data Analytics to Pinpoint Outage Location.....	537
<i>Reddy Mandati, Po-Chen Chen, Vladyslav Anderson, Bishwa Sapkota, Michael Jarrell Warren, Bobby Besharati, Ankush Agarwal, Samuel Johnston</i>	
Impact of the New Grid Codes on the Performance of Central Generation's Generators	542
<i>Michel Rioual, Cristian Jecu, Robert Soler, Kim-Lan Zappellini</i>	
High-Voltage Shore Connection Systems: Grounding Resistance Selection and Short-Circuit Currents Evaluation	547
<i>Fabio D'Agostino, Samuele Grillo, Roberto Infantino, Enrico Pons</i>	
A Global Attention Pooling-Based Graph Learning Scheme for Generator-Level Transient Stability Assessment	548
<i>Huang Jiyu, Guan Lin, Cai Zihan, Chen Liukai, Chen Haoying, Chen Zhiying</i>	
An Energy Efficient Network Reconfiguration in Active Distribution Network by Incorporating Losses from Converter-Based DGs	553
<i>Kasi Vemalaiah, Dheeraj Kumar Khatod, Narayana Prasad Padhy</i>	
Energy Storage Price Arbitrage Via Opportunity Value Function Prediction.....	558
<i>Ningkun Zheng, Xiaoxiang Liu, Bolun Xu, Yuanyuan Shi</i>	
Inverter Current Limit Logic Based on the IEEE 2800-2022 Unbalanced Fault Response Requirements.....	563
<i>W. Wes Baker, Manish Patel, Aboutaleb Haddadi, Evangelos Farantatos, Jens C. Boemer</i>	
Spatial-Temporal Dynamic Frequency Prediction Based on Integrating Model-Driven and Data-Driven.....	568
<i>Xieli Sun, Longyu Chen, Xiaoru Wang</i>	
Distributed Software-Defined Network Architecture for Smart Grid Resilience to Denial-Of-Service Attacks	573
<i>Dennis Agnew, Sharon Boamah, Reynold Mathieu, Austin Cooper, Janise McNair, Arturo Bretas</i>	
A Unique Energy Management Scheme for Harnessing Electric Vehicle Potential to Improve Grid Resiliency	578
<i>Diksha Singh, Mukesh Maurya, M. V. Gururaj, Laxmidhar Behera</i>	

A Practical On-Line Framework for a Modified Energy Detector by Whitening Ambient PMU Data	583
<i>Zikai Xu, Jim Follum, John W. Pierre</i>	
Supervised Federated Neural Architecture Search and Its Application in Power System Forecasting.....	588
<i>Amirhossein Dolatabadi, Jhelum Chakravorty, Xiaoming Feng</i>	
Coordinated System Reliability Assessment and Production Cost Simulation in Transmission Planning of Eastern Interconnection.....	593
<i>Xiaokang Xu, Reza Yousefian, Jie Tang, Rui Bo, John P. Buechler, Jordon Bakke, Zheng Zhou</i>	
Enhancing Grid Integration and Design of Low Speed PMSGs by Exploiting SRF-PLL-Based Sensorless Control and Holistic Modeling	598
<i>José Ramos-Guerrero, Gabriel Mejia-Ruiz, Mario Paternina, Javier De La Cruz, Alejandro Zamora-Mendez</i>	
An Asymptotic Stability Guaranteed Droop-Free Control Scheme for Normalized Power Consensus in Microgrids	599
<i>Kunyu Zuo, Lei Wu</i>	
Black Start with Inverter-Based Resources: Hardware Testing	604
<i>Hannah Burroughs, Cecilia Klauber, Chih-Che Sun, Megan Culler</i>	
A New Iterative Mixed Integer Linear Programming Algorithm for Energy Management in Active Unbalanced Distribution Networks	609
<i>Subho Paul, Gururaj Mirle Vishwanath, Narayana Prasad Padhy</i>	
Methodology for Comparing the Performance of DER Coordination Schemes in Providing Frequency Regulation.....	614
<i>Hani Mavalizadeh, Mads R. Almassalkhi</i>	
Advisory Tool for Managing Failure Cascades in Systems with Wind Power	619
<i>Siyu Liu, Marija Ilic</i>	
Blackstart Capability and Survivability of Wind Turbines with Fully Rated Converters.....	624
<i>Hugo Villegas, Vahan Gevorgian</i>	
Uncertainty Error Modeling for Non-Linear State Estimation with Unsynchronized SCADA and μ PMU Measurements.....	625
<i>Austin Cooper, Arturo Bretas, Sean Meyn, Newton G. Bretas</i>	
Transient Stability and Active Protection of Power Systems with Grid-Forming PV Power Plants	630
<i>Soumya Roy, Hugo N Villegas Pico</i>	
Tightening SOCP Relaxation of AC Optimal Power Flow with Linearized Arc-Tangent Constraints.....	631
<i>Anamika Tiwari, Abheejeet Mohapatra, Soumya Ranjan Sahoo</i>	
Blackstart and Fault Ride-Through Capability of DFIG-Based Wind Turbines.....	636
<i>Hoang P. Dang, Hugo N. Villegas Pico</i>	
A Study on the Impact of Forced Oscillations on Critical Clearing Time	637
<i>Arnav Bagga, Amarsagar Reddy Ramapuram Matavalam</i>	
Optimal Inverter-Based Resources Placement in Low-Inertia Power Systems	642
<i>Atinuke Ademola-Idowu, Baosen Zhang</i>	

Electric Vehicle Aggregator as an Automatic Reserves Provider Under Uncertain Balancing Energy Procurement.....	647
<i>Hrvoje Pandzic, Tomislav Capuder, Ivan Pavic</i>	
A Machine Learning-Based Short-Term Load Forecasting Method for Behind-The-Meter DERs	648
<i>Aydin Zaboli, Junho Hong, Vo-Nguyen Tuyet-Doan, Yong-Hwa Kim</i>	
A New Robust Control Strategy for Grid-Forming Voltage Source Converters.....	653
<i>Saeed Ouni, S. Mahdi Ale Emran, S. Milad Hoseinizadeh, Houshang Karimi</i>	
A Highly Discriminative Detector Against False Data Injection Attacks in AC State Estimation	658
<i>Gang Cheng, Yuzhang Lin, Junbo Zhao, Jun Yan</i>	
Implementation of a Solar-Wind Hybrid Charging Station for Electric Vehicles.....	659
<i>Ravikant Yadav, Mukesh Maurya, Gururaj Mv, Ankush Shanna</i>	
Decentralized Coordination and Stabilization of Hybrid Energy Storage Systems in DC Microgrids.....	664
<i>Mengfan Zhang, Qianwen Xu, Chuanlin Zhang, Lars Nordström, Frede Blaabjerg</i>	
Inverter Voltage Support for Ac Heating and Fast Charging of Electric Vehicles	665
<i>Luis E. Guillén Montenegro, Hugo N. Villegas Pico</i>	
Equivalent Circuits for a Hybrid DC/AC System.....	670
<i>Rabi Kar, Zhixin Miao, Lingling Fan</i>	
Cyber-Physical Framework for System Frequency Response Using Real-Time Simulation Phasor Measurement Unit Based on ANSI C37.118	675
<i>Jesús Castro Martínez, Francisco Gonzalez-Longatt, José Luis Rodríguez Amenedo, Gioacchino Tricarico</i>	
Grid-Forming Control of Three-Phase and Single-Phase Converters Across Unbalanced Transmission and Distribution Systems	680
<i>Shahin Nudehi, Dominic Gross</i>	
Coordinative Control of Hydropower Plant and Industrial Thermostatically Controlled Loads for Frequency Response.....	681
<i>Yunfan Cai, Xiandong Xu, Jing Liu, Xiaodan Yu, Hongjie Jia</i>	
Coordination of Power and Transportation Networks: An Inverse Optimization Based Pricing Approach	686
<i>Ke Li, Chengcheng Shao, Xifan Wang, Mohammad Shahidehpour</i>	
Load-Altering Attacks Against Power Grids Under COVID-19 Low-Inertia Conditions	691
<i>Subhash Lakshminarayana, Juan Ospina, Charalambos Konstantinou</i>	
Deep Hedged LSTM Network for Short Term Offshore Wind Power Forecasting	692
<i>Chunyang Pan, Shuli Wen, Huili Ye, Miao Zhu, Sheng Jiang</i>	
A Fast Frequency Control Based on Model Predictive Control Taking into Account of Optimal Allocation of Power from the Energy Storage System.....	697
<i>Kuo Lung Lian</i>	
Robust Data-Driven Sparse Estimation of Distribu-Tion Factors Considering PMU Data Quality and Renewable Energy Uncertainty - Part I: Theory	698
<i>Yingqi Liang, Junbo Zhao, Dhivya Sampath Kumar, Ketian Ye, Dipti Srinivasan</i>	

Model Predictive Control with Adaptive Compensation for Power Management in Fuel Cell Hybrid Electric Vehicles	699
<i>Qiuyu Li, Hengzhao Yang, Qian Xun, Marco Liserre</i>	
On the Interplay Between Water and Power Grids: Desalination Plants for Demand Response.....	704
<i>Khaled Alshehri, Ali T. Al-Awami</i>	
Data-Driven HVAC Control Using Symbolic Regression: Design and Implementation.....	709
<i>Yuki Ozawa, Dafang Zhao, Daichi Watari, Ittetsu Taniguchi, Toshihiro Suzuki, Yoshiyuki Shimoda, Takao Onoye</i>	
Closed-Loop Aggregated Baseline Load Estimation Using Contextual Bandit with Policy Gradient	714
<i>Yufan Zhang, Qiuwei Wu, Qian Ai, João P. S. Catalão</i>	
Dynamic Analysis and Modeling of the Natural Gas Pipeline Using the Electrical Analogy	715
<i>Ruikai Song, Yue Xia, Songhuai Du</i>	
A Cournot Modeling Framework to Test Alternative Market Design Options for Decarbonization	720
<i>Adam Suski, Deb Chattopadhyay</i>	
Hybrid Symbolic-Numeric Framework for Power System Modeling and Analysis.....	725
<i>Hantao Cui, Fangxing Li, Kevin Tomsovic</i>	
A Framework for Monte Carlo Power-Plant Parameter Estimation	726
<i>Ronald Hruban, Daniel Trudnowski, Joshua Wold</i>	
A Method for Parallelized Fast Dynamic Cascading Failure Simulation of Power System	731
<i>Sina Gharebaghi, Nilanjan Ray Chaudhuri, Ting He, Thomas La Porta</i>	
Ensemble Methods for Probabilistic Solar Power Forecasting: A Comparative Study	736
<i>Tawsif Ahmad, Ning Zhou</i>	
Separation and Identification of Sources of Supraharmonic Signals Using Complex ICA.....	741
<i>Ivo Silva Lopes Tebexreni, Carlos Augusto Duque, José Manoel De Seixas</i>	
Neural Network Based Predictive Algorithm for Peak Shaving Application Using Behind the Meter Battery Energy Storage System	746
<i>Nicolas Mary, Yohann Geli, Huan Liu, Louis-A. Dessaint</i>	
Decentralized Divergence-Free Projection Method for Community-Driven Peer-To-Peer Energy Sharing	751
<i>Meiyi Li, Javad Mohammadi</i>	
Feature-Driven Economic Improvement for Network-Constrained Unit Commitment: A Closed-Loop Predict-And-Optimize Framework.....	756
<i>Xianbang Chen, Yafei Yang, Yikui Liu, Lei Wu</i>	
Pitfalls of Zero Voltage Values in Optimal Power Flow Problems	757
<i>Frederik Geth</i>	
A Joint Optimization Framework for Integration of Shared Electric Vehicles and Microgrids.....	762
<i>Wei Wang, Hengzhao Yang</i>	
Hydropower Evaluation Framework for Wildfire Resilient Microgrids.....	767
<i>Bikash Poudel, S M Shafiul Alam, Anudeep Medam, Fernando Gallego-Dias, Timothy McJunkin</i>	

Enhancing Cyber Resilience of Networked Microgrids Using Vertical Federated Reinforcement Learning	772
<i>Sayak Mukherjee, Ramij R. Hossain, Yuan Liu, Wei Du, Veronica Adetola, Sheik M. Mohiuddin, Qiuhua Huang, Tianzhixi Yin, Ankit Singhal</i>	
A Multi-Criteria Approach for Evaluating Voltage Regulation Characteristics Facilitating Flexible Operations of Fossil-Fueled Power Generators	777
<i>Nuo Xu, Xiaodong Chu</i>	
Load-Shifting Scheduling Based on Manufacturing Process for Demand Response with Bidding Probability	782
<i>Jounghoon Nam, Nadya Noorfatima, Jaesung Jung</i>	
Tie-Line Security Region Considering Time Coupling	787
<i>Wei Lin, Zhifang Yang, Juan Yu, Kaigui Xie, Xuebin Wang, Wenyuan Li</i>	
Sig2Vec: Dictionary Design for Incipient Faults in Distribution Systems	788
<i>Qiushi Cui, Yang Weng, Muhao Guo</i>	
Distributed Damping Evaluation for Series-Compensated DFIG-Based Wind Farms During the SSCI	793
<i>Jiangbei Han, Chengxi Liu</i>	
Integration of PV Generation and Battery Energy Storage System into Hybrid AC and MTDC Networks	798
<i>Mojtaba Ahanch, Haodong Yang, Roy McCann, Alan Mantooth</i>	
Robust Data-Driven Sparse Estimation of Distribution Factors Considering PMU Data Quality and Renewable Energy Uncertainty - Part II: Scalability and Applications	803
<i>Yingqi Liang, Junbo Zhao, Dhivya Sampath Kumar, Ketian Ye, Dipti Srinivasan</i>	
Manage Real Time Power Imbalance with Renewable Energy: Fast Generation Dispatch Or Adaptive Frequency Regulation?	804
<i>Ningchao Gao, Xin Fang</i>	
Passivity-Based Control of Grid Forming and Grid Following Converters in Microgrids.....	805
<i>Yonghao Gui, Yaosuo Xue</i>	
Combined Detection and Localization Model for High Impedance Fault Under Noisy Condition.....	810
<i>Imtiaj Khan, Hongbo Sun, Kyeong Jin Kim, Jianlin Guo, Daniel Nikovski</i>	
On the Decomposition of Locational Marginal Hydrogen Pricing.....	815
<i>Qi An, Gengyin Li, Jianxiao Wang, Yiyang Song, Xuanyuan Wang, Zhen Liu, Guannan He</i>	
A Novel Single-Ended Fault Location Algorithm for Digital Distance Relays Based on a New FPGA Design.....	820
<i>Tzu-Chiao Lin, Bawoke Simachew, Ming-Yuan Cho</i>	
Analytical Modeling and Control of Grid-Scale Alkaline Electrolyzer Plant for Frequency Support in Wind-Dominated Electricity-Hydrogen Systems	825
<i>Chunjun Huang, Yi Zong, Shi You, Chresten Træholt</i>	
Safe Deep Reinforcement Learning for Power System Operation Under Scheduled Unavailability	826
<i>Xavier Weiss, Saeed Mohammadi, Parag Khanna, Mohammad Reza Hesamzadeh, Lars Nordström</i>	

Probabilistic Lifecycle Costing Evaluation for Configuration of Transformers in High-Speed Railway Based on Optimal KDE.....	831
<i>Ruizhang Yang, Wei Xiong, Yunhe Hou</i>	
Distribution Locational Marginal Pricing (DLMP) for Unbalanced Three-Phase Network, IEEE Transaction on Power Systems.....	836
<i>Saeed Mohammadi, Mohammad Reza Hesamzadeh, Derek W. Bunn</i>	
Green Smart Port Energy System Design: Optimal Sizing.....	837
<i>F. D'Agostino, D. Kaza, F. Silvestro, F. Conte, R. Rrukaj, M. Zadeh</i>	
Enhanced Distributed Self-Healing System for Electrical Distribution Networks Using ADMM.....	842
<i>Juan Camilo López, E. T. Marco Gerards, Johann L. Hurink, Marcos J. Rider</i>	
Value and Effects of Adopting Residential Flexibility in the European Power System.....	847
<i>R. Alonso Pedrero, V. Vincent De Lestrade, J. Specht, P. Crespo Del Granado</i>	
A Graph Scale Reduction Method for Graph Deep Learning-Based Transient Stability Assessment After Stability Controls	852
<i>Zihan Cai, Lin Guan, Jiyu Huang, Siting Zhu, Shiyang Li, Huanhuan Yang</i>	
Wide Area Backup Protection for Network Integrated with Large-Scale Solar Photovoltaic Plant	857
<i>Pratim Kundu</i>	
Optimal Energy Storage Scheduling for Wind Curtailment Reduction and Energy Arbitrage: A Deep Reinforcement Learning Approach	862
<i>Jinhao Li, Changlong Wang, Hao Wang</i>	
Graph Attention Network Based Reinforcement Learning Method for Optimal Distributed Frequency Control of an Islanded AC Microgrid	867
<i>Rudai Yan, Yan Xu, Rui Zhang</i>	
Frequency Quality in Low-Inertia Power Systems.....	872
<i>Taulant Kërçi, Manuel Hurtado, Mariglen Gjergji, Simon Tweed, Eoin Kennedy, Federico Milano</i>	
Integrating IoT Devices with Distribution Energy Management System by Harmonizing Their Logical Models Using IEC Standards 61970/61968 and 61850.....	877
<i>Jonatas Boas Leite, Mladen Kezunovic</i>	
Demand Response by Aggregates of Domestic Water Heaters with Adaptive Model Predictive Control.....	882
<i>Francesco Conte, Stefano Massucco, Federico Silvestro, Diego Cirio, Marco Rappizza</i>	
A Data-Driven Framework for Sparse Impedance Identification of Power Converters in DC Microgrids	887
<i>Ali Hosseinipour, Javad Khazaei, Rick S. Blum</i>	
Methodology for Identifying Regional Inertia Issues in Future Power Grids	892
<i>Georgios Misyris, Brian Graham, Parag Mitra, Deepak Ramasubramanian, Vikas Singhvi</i>	
F-Gas Free Switchgear - A Real Alternative to SF6 Gas Insulated Switchgear.....	897
<i>Karthik Reddy Venna, Corral Lopez Guillermo Luis, Florian Wolfrum</i>	
Fault Ride Through Capability Enhancement of Grid-Connected DFIG-Based Wind Power Generation During Voltage Dips	902
<i>Tahaguas Woldu, Christian Ziegler, Martin Wolter</i>	

Towards Real-Time Distinction of Power System Faults and Cyber Attacks.....	907
<i>Ali Abedi, Vetrivel S. Rajkumar, Alexandru Stefanov, Peter Palensky</i>	
A Probabilistic Graphical Model for Predicting Cascade Failures of Electric Vehicle Charging Networks Caused by Hurricanes	912
<i>Tianze Zhang, Pengyu Fan, Difei Tang</i>	
Modeling of DC-Side Dynamics in PV/Battery Grid-Forming Inverter Systems	917
<i>Xi Luo, Alexandros G. Paspatis, Abhinav Kumar Singh, Nikolaos Hatziargyriou, Efstratios I. Batzelis</i>	
Short-Circuit Analysis Models for Unbalanced Inverter-Based Distributed Generation Sources and Loads	922
<i>Insu Kim</i>	
Fast-Frequency Response from Wind Generators – Empirical Data from a Type 4 Wind Farm.....	923
<i>Eldrich Rebello, Marianne Rodgers, David Stanford, Markus Fischer, Mouhcine Akki</i>	
Measurement-Based Voltage Control Coordinating Inverter-Based Resources and Traditional Resources - New York State Grid Case Study	928
<i>Chengwen Zhang, Yi Zhao, Yilu Liu, Lin Zhu, Evangelos Farantatos, Aboutaleb Haddadi, Mahendra Patel, Atena Darvishi, Hossein Hooshyar</i>	
Thermal Mapping of the Hydrogenerator’s Reactive Power Boosting Ability at Various Time Windows.....	933
<i>Dany Josue Tome-Robles, Jonas Kristiansen Nøland, Frédéric Maurer, Thomas Øyvang</i>	
On the Impact of Data-Driven Stochastic Load Models on Power System Dynamics.....	938
<i>Muhammad Adeen, Federico Milano</i>	
Optimization of Inspection, Testing and Maintenance (ITM) of Transformers.....	943
<i>Sujit Purushothaman</i>	
High Penetration of Inverter Based Resources Assessment on Stability and System Strength	948
<i>A. Zapata, D. Santos, Di Wu, D. Rodríguez</i>	
On the Emulation of Synchronous Machine Dynamics by Converter-Interfaced Generators	953
<i>Georgios Tzounas, Federico Milano</i>	
The Shuffled Conic Power Flow Equations: An Improved Angle-Inclusive Conic Model	958
<i>Natalia-Maria Zografou-Barredo, Meltem Peker, David M. Greenwood</i>	
Refining the Concepts of Small and Large Disturbances for Stability Analysis of Power Systems.....	963
<i>Mikhail Y. Borodulin</i>	
Transient Stability Preventive Control Via Tuning the Parameters of Virtual Synchronous Generators	968
<i>Xiaoge Huang, Joon-Young Gwak, Lei Yu, Ziang Zhang, Hantao Cui</i>	
Physics-Constrained Backdoor Attacks on Power System Fault Localization	973
<i>Jianing Bai, Ren Wang, Zuyi Li</i>	
Cost Sharing Mechanism with Statistical Learning for Peer-To-Peer Energy Trading.....	978
<i>Tomas Valencia Zuluaga, Shmuel S. Oren</i>	

Passivity-Based Decentralized Criteria for Small-Signal Stability of Power Systems with Converter-Interfaced Generation	983
<i>Kaustav Dey, Anil Kulkarni</i>	
A Data-Driven Method for Prediction of Post-Fault Voltage Stability in Hybrid AC/DC Microgrids	984
<i>Younes Seyedi, Houshang Karimi, Jean Mahseredjian</i>	
Curriculum-Based Reinforcement Learning for Distribution System Critical Load Restoration.....	985
<i>Xiangyu Zhang, Abinet Tesfaye Eseye, Bernard Knueven, Weijia Liu, Matthew Reynolds, Wesley Jones</i>	
Findings from Design and Operation of Connected Neighborhoods.....	986
<i>Eve Tsybina, Chris Winstead, Justin Hill, Helia Zandi</i>	
A Multi-Objective Microgrid Assessment and Sizing Framework for Economic and Resilience Benefits.....	991
<i>Yanyan Zhu, Xu Ma, Di Wu, Joseph Do</i>	
Real-World Experience with Residential Demand Response Baselines.....	996
<i>William W. Franklin, Sarah Howerter, Matthias Huels, Paul D. H. Hines</i>	
Case Study: Amesbury #5 Substation Power Transformer Emergency Relocation.....	1001
<i>Carli Gavin</i>	
Electromechanical Wave Propagation for Disturbance Arrival Time Assessment in Power Systems	1006
<i>Somayah Yarahmadi, Pooja Algikar, Lamine Mili</i>	
Feeder Power Disaggregation: A Data-Efficient Matrix Completion Approach.....	1011
<i>Yue Chen, Ahmed Zamzam, Andrey Bernstein</i>	
Strategic Storage Operation in Energy and Reserve Markets: An AC-Based Bilevel Approach.....	1016
<i>Peiyao Guo, Zhao Yuan, Thomas Hamacher, Vedran S. Peric</i>	
Harmonic Phasor Estimation Based on Substation Edge Device Philosophy	1021
<i>Tiago Da Silva Lomar, Leandro Rodrigues Manso Silva, Guilherme Márcio Soares, Carlos Augusto Duque, Paulo Fernando Ribeiro</i>	
Optimal Dynamic Economic Dispatch for Microgrid Using Pontryagin's Minimum Principle.....	1026
<i>Mingxuan Mao, Alessandro Astolfi</i>	
A Data-Driven SVM-Based Method for Detection and Capacity Estimation of BTM PV Systems	1031
<i>Bruno P. Cancian, José C. G. Andrade, Walmir Freitas</i>	
Small Modular Reactor (SMR) Based Hybrid Energy System for Electricity & District Heating	1036
<i>Bikash Poudel, Ramakrishna Gokaraju</i>	
Quantum Annealing for Distribution System Restoration Via Resilient Microgrids Formation	1037
<i>Nima Nikmehr, Peng Zhang, Honghao Zheng, Yacov A. Shamash</i>	
Second and Higher-Order Diagonal Padé Methods: Accuracy and Applicability for Stability Studies of Large Power Systems	1042
<i>Mikhail Y. Borodulin</i>	
The Design and Deployment of Splitting Control.....	1047
<i>Ming Jin</i>	

Siamese Convolutional Neural Network-Based Anomaly Detection for Distributed PV Inverter	1052
<i>Liming Liu, Naihao Shi, Salish Maharjan, Zhaoyu Wang</i>	
Grid Services by Behind-The-Meter Distributed Energy Resources: NY State Grid Case Study	1057
<i>Hossein Hooshyar, Rahul Kadavil, Victor Paduani, Aboutaleb Haddadi, Ahm Jakaria, Aminul Huque, George Stefopoulos</i>	
Developing VSC-HVDC Oscillation Damping Control Constraints in Unit Commitment.....	1062
<i>Mingjian Tuo, Jiazi Zhang, Leonardo Rese, Xiaofei Wang</i>	
Dual-Port Grid-Forming Control of MMCs and Its Applications to Grids of Grids.....	1067
<i>Dominic Gross, Enric Sanchez-Sanchez, Eduardo Prieto-Araujo, Oriol Gomis-Bellmunt</i>	
Validation of the Fault Ride-Through Response of a Generic EMT Inverter Model by Laboratory Testing	1068
<i>W. Wes Baker, Deepak Ramasubramanian, Aminul Huque, Jens C. Boemer, Vahan Gevorgian, Przemyslaw Koralewicz, Emanuel Mendiola</i>	
Mitigating Equipment Overloads Due to Electric Vehicle Charging Using Customer Incentives.....	1073
<i>Feng Li, Ilhan Kocar, Antoine Lesage-Landry</i>	
Pulse Compression Probing for Tracking Distribution Feeder Models	1078
<i>Nicholas Piaquadio, N. Eva Wu, Morteza Sarailoo, Jianzhuang Haung</i>	
Frequency Versus Speed Feedback for Transient Stability Control Via Energy Storage	1083
<i>Tam Nguyen, Daniel Trudnowski, Ryan Elliott, Hyungjin Choi</i>	
Stochastic Look-Ahead Commitment: A Case Study in MISO	1088
<i>Bernard Knueven, M. Nazif Faqiry, Manuel Garcia, Yonghong Chen, Roger Treinen, Trevor Werho, Junshan Zhang, Vijay Vittal, Long Zhao, Anupam Thatte, Shengfei Yin</i>	
Unsupervised Clustering of Disturbances in Power Systems Via Deep Convolutional Autoencoders.....	1093
<i>Md Maidul Islam, Md Omar Faruque, Joshua Butterfield, Gaurav Singh, Thomas A. Cooke</i>	
Model-Free Probabilistic Forecasting of Nodal Voltages in Distribution Systems.....	1098
<i>Marija Markovic, Bri-Mathias Hodge</i>	
Neighbourhood Batteries and Virtual Power Plants: A Comparison of Potential Benefits for the Grid and for Households	1103
<i>Shan He, Louise Bardwell, Marnie Shaw</i>	
Deep Reinforcement Learning-Based Operation of Distribution Systems Using Surrogate Model.....	1108
<i>Van-Hai Bui, Sina Zarrabian, Wencong Su</i>	
Data-Driven Battery Modeling Based on Koopman Operator Approximation Using Neural Network	1113
<i>Hyungjin Choi, Valerio De Angelis, Yuliya Preger</i>	
Learn Dynamic Hosting Capacity Based on Voltage Sensitivity Analysis	1118
<i>Jiaqi Wu, Jingyi Yuan, Yang Weng, Raja Ayyanar</i>	
Online Power System Event Detection Via Bidirectional Generative Adversarial Networks	1123
<i>Yuanbin Cheng, Nanpeng Yu, Brandon Foggo, Koji Yamashita</i>	
Dynamic Equivalents of Nonlinear Active Distribution Networks Based on Hammerstein-Wiener Models: An Application for Long-Term Power System Phenomena.....	1124
<i>Luis David Pabon Ospina, Valeria Usuga Salazar, Daniel Pabon Ospina</i>	

LVRT Strategy of Grid-Forming PMSG Wind Turbine Considering Transient Stability of DC-Link Voltage.....	1125
<i>Deokki You, Sungwoo Kang, Heejung Seo, Gilsoo Jang, Seungmin Jung, Yeuntae Yoo</i>	
Rotor Angle Transient First-Swing Stability Analysis of Synchronous Condensers Near Wind Farms.....	1130
<i>Bingfang Li, Songhao Yang, Yiwen Hu, Zhiguo Hao, Huan Xie, Tianqi Zhao</i>	
A Wind Power Prediction Model Based on Optimized N-BEATS Network with Multivariate Inputs.....	1135
<i>Jun Li, Tao Lin, Hui Du, Qingyan Li, Xiyue Fu, Xialing Xu</i>	
Geolocating On-Ground Distribution System Assets Using AMI Data.....	1140
<i>Shammya Shananda Saha, Karen Montano-Martinez, Jouni Peppanen, Matthew Rylander, Luke O'Mahony</i>	
Method for Assessing the Risk of Subsynchronous Oscillations in DFIG-Based Wind Parks.....	1145
<i>Andrés Arguello, Ricardo Torquato, Walmir Freitas</i>	
A Data-Driven Technique for Network Line Parameter Estimation Using Gaussian Processes	1146
<i>A. G. Priyanka, Antonello Monti, Ferdinanda Ponci</i>	
Challenges and Learning in Grid Operation During High Renewable Energy Scenario- A Case Study.....	1151
<i>Santosh Kumar Jain, Rajeev Porwal, Somara. Lakra, Shailendra Meena, Rahul Negi, Indupu Vara Devi Prasad</i>	
Properties of Nonlinear Power System Models that Are Symmetrically Configured in the Narrow Sense.....	1156
<i>Elior Segev, Ron Ofir, Yoash Levron, Juri Belikov</i>	
Concept of a Split-Core HFCT with Air Gap Control for Partial Discharge Measurements.....	1161
<i>Martin Fritsch, Martin Wolter</i>	
Online Prediction of Photovoltaic Power Considering Concept Drift.....	1166
<i>Le Zhang, Jizhong Zhu, Kwok Cheung, Jialin Zhou</i>	
Optimized Tuning for Flexible and Resilient Control of Zonal DC Microgrids on Ships.....	1171
<i>Andrea Alessia Tavagnutti, Daniele Bosich, Giorgio Sulligoi</i>	
Analytical Expression of Short Circuit Current for Virtual Synchronous Generator with Improved Low Voltage Ride Through Control Strategy	1176
<i>Yuchao Zheng, Tong Wang, Shuwei He, Yingzi Wu, Yiqun Kang, Dan Liu</i>	
Integration of Synchronous Condensers into the Transmission System.....	1181
<i>Klaus Vennemann, Martin Lösing, Rüdiger Kutzner</i>	
Distribution Grid Optimal Power Flow (D-OPF): Modeling, Analysis, and Benchmarking.....	1186
<i>Rahul R Jha, Adedoyin Inaolaji, Biswajit Dipan Biswas, Arun Suresh, Anamika Dubey, Sumit Paudyal, Sukumar Kamalasadana</i>	
On the Relationship Between Ultra Low Frequency Oscillation and Power System Inertia.....	1187
<i>Janne Seppänen, Matti Lehtonen, Mikko Kuivaniemi, Liisa Haarla</i>	
State Estimation in LV European-Type Distribution Grids Using Smart Meters and Advance Supervisors.....	1192
<i>Yamen Alsyoufi, Bassam Mohamed, Pablo Arboleya</i>	

Distributed Real-Time OPF and State Estimation Architecture for Active Distribution Networks.....	1197
<i>Karim Elfeky, Geber Villa, Pablo Garcia, José M. Cano</i>	
A Resilience Assessment Framework for Coupled Power and Communication Infrastructure.....	1202
<i>Mohamed Lotfi, Mathaios Panteli, II Linton Wells, Kathryn Blackmond Laskey, John W. Van De Lindt, Yair Amir, Amy Babay, Imes Chiu</i>	
An Enhanced Ideal Transformer Method to Integrate Low-Voltage Power Hardware in Arbitrary Voltage Levels.....	1207
<i>Julian Richter, Simon Resch, Gert Mehlmann, Matthias Luther</i>	
Optimal Scheduling Model for Renewable Energy Source-Assisted Electric and Hydrogen Vehicle Charging Station in HPS Market.....	1212
<i>Hyeon Woo, Yongju Son, Sungyun Choi</i>	
Modeling of Solid Oxide -Electrolyzer and -Fuel Cell for Nuclear-Renewable Integrated Energy Systems.....	1217
<i>Srijana Pandey, Sadab Mahmud, Sravya Katikaneni, Ahmad Javaid, Michael J. Heben, Victor Walker, Zonggen Yi, Tyler Westover, Raghav Khanna</i>	
Practical Lessons Learned from an Installed Grid-Edge Microgrid.....	1222
<i>Keaton A. Wheeler, Jia Guo, Kathryn Paterson, Graeme Edwards, Elizabeth Lee, Michael Simone, Peter Zhou</i>	
Unexpected Transformer Tripping Provides Insight on Circulating Inrush Current.....	1227
<i>P. E. Neeraj Karnik, P. E. Jeremy Kupcho</i>	
Network Pricing for Multienergy Systems Under Long-Term Load Growth Uncertainty.....	1232
<i>Shuang Cheng, Chenghong Gu, Xinhe Yang, Shuangqi Li, Lurui Fang, Furong Li</i>	
Battery Systems for VAR Support in Distribution Substations.....	1233
<i>Mohamed K. Kamaludeen, Yusef Esa, Kirn Zafar, Elihu Nyemah, Ahmed Ali A. Mohamed, Tamer Ibrahim, Simon Odie</i>	
Safety Concerns and Recommendations During Work in the Vicinity of Energized Lines.....	1239
<i>Dávid Szabó, László Gyergyádesz, Bálint Németh, Eduardo Ramirez-Bettoni</i>	
Advanced Approach for Stability Assessment of PHIL Setups Coupled by Clarke-Park Transform.....	1244
<i>Tran T. Hoang, Nirmal-Kumar C. Nair</i>	
Security-Constrained Unit Commitment Considering Locational Frequency Stability in Low-Inertia Power Grids.....	1249
<i>Mingjian Tuo, Xingpeng Li</i>	
An Accelerated-Decomposition Approach for Security-Constrained Unit Commitment with Corrective Network Reconfiguration.....	1250
<i>Arun Venkatesh Ramesh, Xingpeng Li</i>	
An Extended Model for Ecological Robustness to Capture Power System Resilience.....	1251
<i>Hao Huang, Katherine R. Davis, H. Vincent Poor</i>	
Bisection Method for Fairness-Aware Distributed PV Curtailment in Power Distribution Systems.....	1256
<i>Rabayet Sadnan, Shiva Poudel, Monish Mukherjee, Tylor E. Slay, Andrew P. Reiman</i>	
Embedding Dependencies Between Wind Farms in Distributionally Robust Optimal Power Flow.....	1261
<i>Adriano Arrigo, Jalal Kazempour, Zacharie De Grève, Jean-François Toubreau, François Vallée</i>	

MIMO Model Predictive Control for Demand Management in Islanded Water-Energy Microgrids	1262
<i>Saskia A Putri, Menglin Jiang, Faegheh Moazeni, Javad Khazaei</i>	
Day-Ahead Estimation of Renewable Generation Uncertainty Set for More Efficient Market Clearing	1267
<i>Alexander Wasilkoff, Panagiotis Andrianesis, Michael Caramanis</i>	
A Practical Approach for Distribution Transformer Loss of Life Assessment Considering Electric Vehicles Penetration	1272
<i>Hafiz M. Usman, Ramadan Elshatshat, Ayman H. El-Hag</i>	
High-Performance Computing Based EMT Simulation of Large PV Or Hybrid PV Plants	1277
<i>Suman Debnath, Jongchan Choi, Harry Hughes, Kuldeep Kurte, Phani Marthi, Steven Hahn</i>	
A Test Bed for Conducting Monte Carlo Power Plant Model Validation Experiments	1282
<i>Rayce McCord, Daniel Trudnowski, Ron Hruban</i>	
Solving Optimal Transmission Switching Problem Via DC Power Flow Approximation.....	1287
<i>Juncheng Li, Trivikram Dokka, Guglielmo Lulli</i>	
Dynamic-State-Estimation-Based Cyber Attack Detection for Inverter-Based Resources.....	1292
<i>Avinash Kumar, Yuzhang Lin, Heqing Huang, Xiaonan Lu, Yue Zhao</i>	
Dynamic Analysis of a Conceptual McMaster University Campus Microgrid	1297
<i>Chi Tang</i>	
Control and Operation Evaluation of Grid-Forming Inverters with L, LC, and LCL Filters.....	1302
<i>Md Nurunnabi, Shuhui Li, Himadry Shekhar Das</i>	
Measurements-Feedback Linear Power Flow Model Considering Distribution System Parameter Errors.....	1307
<i>Yitong Liu, Junbo Zhao</i>	
A Novel Multi-Cayley Transform for Judging Small Signal Stability of Large-Scale Power Systems.....	1312
<i>Yulei Cao, Chongtao Li, Jinjie He</i>	
Hybrid DC Circuit Breaker Proactive Control Evaluation	1317
<i>Giancarlo C. Prezotto, Renato M. Monaro</i>	
Simulation of Internal Faults in Variable-Speed Synchronous Generators Connected to Three-Level Neutral Point Clamped Converters.....	1322
<i>Rodolfo V. Rocha, Renato M. Monaro</i>	
Investigating Piecewise Linear Energy Storage Models for Optimization in Power Systems	1327
<i>Lysandros Tziovani, Lenos Hadjidemetriou, Stelios Timotheou</i>	
Voltage Stability Constrained Unit Commitment in Power Systems with High Inverter-Based Generator Penetration.....	1332
<i>Zhongda Chu, Fei Teng</i>	
Computation of the Minimum Voltage Stability Margin Considering Loading Uncertainties and Contingency Analysis.....	1333
<i>Matheus R. Nascimento, Flávio A. Ramos, Lucas C. Almeida, Natali V. C. Gonçalves, Ahda P. Grilo-Pavani, Rodrigo A. Ramos</i>	

Determination of Flexible Availability for Management and Operation of Electric Vehicle Charging Stations	1338
<i>Aérton P. Medeiros, Hércles E. O. Farias, Camilo A. S. Rangel, Luciane N. Canha, Vinícius J. Garcia, Rodrigo B. Dos Santos</i>	
A GMM-Based Phase Group Identification for Residential Low Voltage Networks	1343
<i>Eshan Karunarathne, Angela Simonovska, Luis F. Ochoa, Tansu Alpcan</i>	
Real-Time Charging Scheduling for Electric Vehicle Aggregators in the Ancillary Service Market	1348
<i>Izaz Zunnurain, Yuanrui Sang</i>	
Power Network Fault Location Based on Voltage Magnitude Measurements and Sparse Estimation	1353
<i>Yuxuan Zhu, Yixiong Jia, Yu Liu, Dayou Lu</i>	
Emergency Asset Positioning for Resilient Transmission Grid Operation	1358
<i>Ignas Satkauskas, Jonathan Maack, Matthew Reynolds, Devon Sigler, Kinshuk Panda, Wesley Jones</i>	
Secondary Frequency Control for Reconfigurable Interconnecting Microgrids.....	1363
<i>Eran Schweitzer, Francis K. Tuffner</i>	
Data-Driven Techno-Economic and Resilience Analysis of Community Energy Storage	1368
<i>Rodrigo D. Trevizan, Tu A. Nguyen, Alvaro F. Bastos, Henry Guan, Stanley Atcitty, Alexander J. Headley</i>	
Deep-Learning-Powered Cyber-Attacks Mitigation Strategy in the EV Charging Infrastructure	1373
<i>Manoj Basnet, Mohd. Hasan Ali</i>	
Controller Hardware-In-The-Loop Testing of a Scheduler for Microgrid Control Tasks.....	1378
<i>Siddhartha Nigam, Olaoluwapo Ajala, Alejandro D. Dominguez-García</i>	
Dynamic Graph-Based Anomaly Detection in the Electrical Grid.....	1383
<i>Shimiao Li, Amritanshu Pandey, Bryan Hooi, Christos Faloutsos, Larry Pileggi</i>	
Dynamic Ramping of Retrofitted Coal-Fired Power Plants: Basic Formulation and Tightened Approximation.....	1384
<i>Chao Lei, Siqu Bu, Qianggang Wang, Qifan Chen</i>	
Stability Analysis and Setting Guideline for Inverter- Based Distributed Energy Resources with Volt-Var and Volt-Watt Control Functions.....	1390
<i>Wenzong Wang, Wei Ren, Aminul Huque, Devin Van Zandt, Reigh Walling, Jack Vaz, Samer Arafa, Ruvini Kankanamalage, Nathan Walsh</i>	
Emergy Based Decarbonization and Sustainability Analysis of a Power Prosumer.....	1395
<i>Jing Lan, Jizhong Zhu, Wanli Wu, Hongfang Lu, Dongrong Liu</i>	
Algorithm to Convert Power System Network Data from Bus-Branch Model to Node-Breaker Model	1400
<i>Vibhuti Sahu, Gurunath Gurrala</i>	
Deep Learning Signal Waveform Characterization of Partial Discharge for Underground Power Cable Conditions	1405
<i>Steffen Ziegler, Shishir Shekhar, Daniel Scherle, Malaquias Peña</i>	
Mitigation of Overvoltage Due to Solar and Wind in Networked Microgrids Using Division Rules	1410
<i>Saeed Alyami, Caisheng Wang</i>	

Online Frequency Strength Quantification for Power Systems with More Renewable Energy Sources	1415
<i>Guang Hu, Huisheng Gao, Huanhai Xin, Yongheng Yang, Yingzi Wu, Xiaotong Ji, Yiqun Kang</i>	
Towards Distributed Learning of PMU Data: A Federated Learning Based Event Classification Approach	1420
<i>Seyed Mahmoud Sajjadi Mohammadabadi, Yunchuan Liu, Abraham Canafe, Lei Yang</i>	
A New Dynamic State Estimation Approach Including Hard Limits on Control Devices	1425
<i>Omar Romay, Ricardo Martinez-Parrales, Claudio Fuerte-Esquivel, Enrique Acha, Enrique Zamora-Cardenas</i>	
Moving Target Defense Strategy to Protect a PV/Wind Lab-Scale Microgrid Against False Data Injection Cyberattacks: Experimental Validation	1426
<i>Ehsan Naderi, Arash Asrari, Benito Ramos</i>	
Modeling 100% Electrified Transportation in NYC.....	1431
<i>Jingrong Zhang, Amber Jiang, Brian Newborn, Sara Kou, Robert Mieth</i>	
Distributed Multi-Agent Consensus-Based Virtual Inertia Control of Low Inertial Microgrids	1436
<i>Ibrahim Alotaibi, Mohammad Abido</i>	
A Novel Ranking Algorithm for Topology Identification in Power Distribution Systems	1441
<i>Cody Francis, Shiva Poudel, Arun Veeramany, Andrew P. Reiman</i>	
A Model Calibration Method for Grid-Forming Inverters Using Iterative Bayesian Optimization	1446
<i>Shuchismita Biswas, Francis Tuffner, Jim Follum, Todd Wall</i>	
Distributed Load Shedding Application Architecture and Bi-Level Predictive Estimator Algorithm	1451
<i>Alexander Anderson, Arturo Bretas, Dexin Wang, Orestis Vasios, Jeff Carrara, Jason Pew</i>	
Flexibility Sources for Local Distribution Operators	1456
<i>Farhad Angizeh, Mohsen A. Jafari</i>	
Quantifying V2G Response Capabilities Considering MV-LV Distribution Network Constraints	1461
<i>Jing Zhu, Luis F. Ochoa</i>	
PMU-Timescale Topology Identification of Sub-Station Node-Breaker Models Using Deep Learning	1466
<i>Behrouz Azimian, Anamitra Pal, Backer Abu-Jaradeh, Lang Chen, Penn Markham</i>	
Power System Restoration Services by Grid-Forming Offshore Wind Farms with Integrated Energy Storage.....	1471
<i>Daniela Pagnani, Lukasz Kocewiak, Jesper Hjerrild, Frede Blaabjerg, Claus Leth Bak, Ramón Blasco-Gimenez, Jaime Martínez-Turégano</i>	
A Power Flow Homotopy-Based Solver Emanating from a Flat Start Estimate	1476
<i>Francisco Damasceno Freitas, Alisson Lima-Silva</i>	
Large-Signal Stability Analysis Using Takagi-Sugeno Fuzzy Model Theory for Fractional Frequency Transmission System	1481
<i>Ziyue Duan, Yongqing Meng, Tianyi Wang, Haitao Zhang, Yong Yang, Xiuli Wang</i>	
Application of Feasibility Area for Cybersecurity of Electric Power Systems.....	1486
<i>Ahmed Abd Elaziz Elsayed, E. Z. Hany Farag, Abdullah Tauqeer, Filza Shahid, Amir Asif</i>	

Grid-Forming Loads: Can the Loads Be in Charge of Forming the Grid in Modern Power Systems?	1491
<i>Oriol Gomis-Bellmunt, Saman Tavakoli, Vinicius Lacerda, Eduardo Prieto-Araujo</i>	
A Directed Acyclic Graph Neural Network for AC Optimal Power Flow.....	1492
<i>Zhenping Guo, Kai Sun, Byungkwon Park, Srdjan Simunovic, Wei Kang</i>	
A Four Parameter Distribution Family for Probabilistic Load Forecasting and Scenario Generation with Mixture Density Networks	1497
<i>Tomás Ochoa, Cristián Serpell, Esteban Gil, Carlos Valle</i>	
Wildfire Risk Evaluation Framework for Grid Operations and Planning.....	1502
<i>Vishvas Hiren Chalishazar, Jan Westman, Jillian Deines, Sohom Datta, Jerry Tagestad, Andre Coleman, Emily Barrett, Mike Hoffman, Abhishek Somani, John G Schaad</i>	
Automatics Integrated Simulator for Power Grid Operations Training.....	1507
<i>Brian Chul G. Shin, Anil K. Jampala, Xingkang Wang</i>	
Identifying and Resolving Low Frequency Oscillations in Power Systems: An Illustrative Real- World Study with Practical Considerations.....	1512
<i>Farhad Yahyaie, Carlos Grande-Moran</i>	
Enhancing Conservation Voltage Reduction Using Coordinated Control of Medium and Low Voltage Controllable Devices.....	1517
<i>Rahul Ranjan Jha, Honghao Zheng, Paul Pabst</i>	
Volt/VAR Optimization (VVO) Application on GridAPPS-D Platform.....	1522
<i>Rahul R Jha, Shiva Poudel, Poorva Sharma, Anamika Dubey, Kevin P. Schneider</i>	
Cyber-Physical System Security Assessment: A Real-Life Power Grid Automatic Generation Control System Case Study	1527
<i>Quan Qing, Weihua Luo, Shuyu Jia, Yuqian Zhang, Bin Wang, Shu Zheng, Chengjiang Liu</i>	
Privacy-Preserving Optimal Schedule for Microgrid Cluster Based on Information Masking Method	1532
<i>Ze Chen, Xiaojun Zuo, Botao Hou, Yuling Guo, Nianfeng Tian</i>	
Design and Sensitivity Analysis of Underfrequency Load-Shedding Schemes of Isolated Power Systems Based on Frequency Stability Margin.....	1537
<i>Mónica Vadillo, Lukas Sigrist, Luis Rouco, Urban Rudež</i>	
Analysis of Mumbai Grid Failure Restoration on Oct 12, 2020: Challenges and Lessons Learnt	1542
<i>Sunny Kumar, Abhishek Pandey, Prerna Goswami, Polagani Pentayya, Faruk Kazi</i>	
Coordination of Networked Microgrids for Supporting Voltages of Bulk Power Systems	1543
<i>T. L. Vu, L. Marinovici, K. Schneider, J. Xie, C. Klauber, A. Dubey</i>	
Analysis and Mitigation of Cascading Failure Spatial Propagation in Real Utility Outage Data.....	1548
<i>Shuchen Huang, Junjian Qi</i>	
Three-Phase Grid-Forming Droop Control for Unbalanced Systems and Fault Ride Through.....	1553
<i>Prajwal Bhagwat, Dominic Groß</i>	
Fault Clearing Operation in Low-Frequency High-Voltage AC Systems.....	1558
<i>Woosung Kim, Quan Nguyen, Surya Santoso</i>	

Physics-Informed Deep Reinforcement Learning-Based Adaptive Generator Out-Of-Step Protection for Power Systems.....	1563
<i>Ramij R. Hossain, Kaveri Mahapatra, Qiuhua Huang, Renke Huang</i>	
Adaptive Prepositioning and Emergency Scheduling of Mobile Microgrids in Constrained Active Power Distribution and Urban Transportation Networks	1568
<i>Liang Che, Mohammad Shahidehpour, Alexandre B. Nassif, Daniel Kushner, Aleksii Paaso, Shay Bahramirad</i>	
Model Agnostic Bayesian Framework for Online Anomaly/Event Detection in PMU Data.....	1573
<i>Ramij R. Hossain, Kaveri Mahapatra, James P. Ogle</i>	
EMT and Phasor-Domain Co-Simulation of a Low Frequency AC Transmission System for Offshore Wind Integration.....	1578
<i>Manisha Maharjan, Quan Nguyen, Sheik M. Mohiuddin, Jinho Kim, Bhaskar Mitra, Nimat Shamim, Ahmad Tbaileh, Nader Samaan</i>	
Examining the Feasibility of Modeling the Inner Current Control Loop of a Grid-Following Inverter in the Phasor-Based Solver	1583
<i>Sheik M. Mohiuddin, Wei Du, Yuan Liu</i>	
On Net Energy Metering X: Optimal Prosumer Decisions, Social Welfare, and Cross-Subsidies	1588
<i>Ahmed Alahmed, Lang Tong</i>	
Power System Recovery Coordinated with (Non-)Black-Start Generators.....	1589
<i>Meng Zhao, Patrick R. Maloney, Xinda Ke, Juan Carlos Bedoya Ceballos, Xiaoyuan Fan, Marcelo A. Elizondo</i>	
Steady-State Security Region Calculation for a Multi-Energy Microgrid.....	1594
<i>Yan Cao, Yan Xu, Zhaoyang Dong, Hongjie Jia, Yunfei Mu</i>	
Inertia and Frequency Support from Britain's AC Powered Trains.....	1599
<i>Callum Henderson, Agusti Egea-Alvarez, Joan Rull-Duran, Marcel Nedd, Panagiotis Papadopoulos, Lie Xu</i>	
Is it Coming Soon to Power Systems: Quantum Computing and Its Early Exploration.....	1600
<i>Yousu Chen, Samuel Stein, Ang Li, Zhenyu Henry Huang</i>	
Resilient Microgrid Scheduling Considering Stochastic Chance-Constrained Islanding Capability	1605
<i>Guodong Liu, Max Ferrari, Ben Ollis, Aditya Sundararajan</i>	
Bi-Level Co-Optimization Architecture for Transmission and Distribution Voltage Control	1610
<i>Mohammad Abujubbeh, Kumarsinh Jhala, Karthikeyan Balasubramaniam</i>	
Techno-Economic Analysis on the Dual-Use of Pumped Storage Hydro as Transmission Service Provider and Market Participant.....	1615
<i>Kumarsinh Jhala, Zhi Zhou, Jonghwan Kwon</i>	
Optimal Distributed Voltage Control Via Primal Dual Gradient Dynamics	1620
<i>Mohammed N. Khamees, Kai Sun</i>	
Using the Common Information Model for Power Quality Data	1625
<i>Tom Cooke, Theo Laughner</i>	
Optimal Synchronization Scheme of Grid-Forming Inverters at Multiple Point of Coupling in Reconfiguring Grid.....	1628
<i>Amirhosein Gohari Nazari, Muhammad F. Umar, Mohammad B. Shadmand</i>	

Primal-Dual Differentiable Programming for Distribution System Critical Load Restoration	1633
<i>Xiangyu Zhang, Bernard Knueven, Ahmed Zamzam, Matthew Reynolds, Wesley Jones</i>	
Achieving Social Optimality for Energy Communities Via Dynamic NEM Pricing.....	1638
<i>Ahmed S. Alahmed, Lang Tong</i>	
Hybrid Power Plant Bidding in Models of Future Electricity Systems	1643
<i>Julie Mulvaney Kemp, Miguel Heleno, Andrew D. Mills</i>	
Data-Driven Flow and Injection Estimation in PMU-Unobservable Transmission Systems	1648
<i>Satyaprajna Sahoo, Anwarul Islam Sifat, Anamitra Pal</i>	
DeepONet Based Uncertainty Quantification for Power System Dynamics with Stochastic Loads	1653
<i>Ketian Ye, Junbo Zhao, Xiaodong Liu, Christian Moya, Guang Lin</i>	
Centralized Secondary Control Scheme for Delay Compensation Based on Smith Predictor Approach	1659
<i>Omar F. Rodriguez-Martinez, Jan L. Diaz, Oscar Daniel Garzon Rivera, Matias Patino Gomez, Carlos Julian Delgado Munoz, Cesar A. Vega Penagos, Adriana C. Luna, Fabio Andrade</i>	
Transactive Emergency Power Allocation.....	1664
<i>Monish Mukherjee, Manisha Maharjan, Trevor Hardy</i>	
Real-Time Identification of Electromechanical Oscillations Via Deep Learning Enhanced Dynamic Mode Decomposition	1669
<i>Khaled Aleikish, Thomas Øyvang</i>	
Testing Double-Ended Traveling-Wave Protection Schemes in Distribution Systems.....	1674
<i>Javier Hernández-Alvidrez, Miguel Jiménez-Aparicio, Matthew J. Reno</i>	
Reliability-Based Sizing of Energy Storage for Systems with Very High Renewable Penetration	1679
<i>Atri Bera, Andrew Benson, Tu Nguyen</i>	
Estimation of Participation Factors Using the Synchrosqueezed Wavelet Transform.....	1684
<i>Mahsa Sajjadi, Tianwei Xia, Min Xiong, Kai Sun, Andy Hoke, Jin Tan, Bin Wang</i>	
Carbon Emissions Resulting from Different Power Flow Models for Dispatch.....	1689
<i>Calla Winner, Jasmine Garland, Constance Crozier, Kyri Baker</i>	
Electromagnetic Modeling of Transformers in EMT-Type Software by a Circuit-Based Method	1694
<i>Sadegh Rahimi Pordanjani, Mohammed Naidjate, Nicolas Bracikowski, Mircea Fratila, Jean Mahseredjian, Afshin Rezaei-Zare</i>	
Modeling of Internal Controllable HVDC Lines in Energy Market Operations.....	1695
<i>Bo Yuan, Hossein Lotfi, Muhammad Marwali, K. Max Zhang</i>	
Assessing the Impact of Primary Frequency Support from IBRs in Low Inertia Isolated Power Systems.....	1700
<i>Phivos Therapontos, Rogiros Tapakis, Petros Aristidou</i>	
Online State of Charge Estimation Framework Using Hybrid Equivalent Circuit Model and Neural Network.....	1705
<i>Faizan Manzoor, Haris Saleem, Ijaz H. Naqvi, Nauman A. Zaffar</i>	
AI-Based Estimation of Available Flexibility at Individual House Level	1710
<i>Baraa Mohandes, Daniel Koster, Phuong H. Nguyen</i>	

Insulation Performance of a High-Voltage Compact Overhead Transmission Line Subject to Tropical Savanna Wildfires	1715
<i>Alessandro Berredo, Michael Smith</i>	
Generating Wind Power Pseudo-Measurements by Machine-Learning-Based Methods	1720
<i>Fabrizio De Caro, Alfredo Vaccaro</i>	
A New Hybrid Fuzzy-Stochastic Model for Day-Ahead Scheduling of Isolated Microgrids.....	1725
<i>Seyed Farhad Zandrazavi, Alejandra Tabares, John Fredy Franco, Miadreza Shafie-Khah, João Soares, Zita Vale</i>	
Networked Microgrid Design and Operation for Enhancing the Grid Resilience in Extreme Conditions	1730
<i>Zhiyi Li, Mohammad Shahidehpour, Alexandre B. Nassif, Daniel Kushner, Aleksi Paaso, Shay Bahramirad</i>	
Aspects of the Implementation of a Pilot Microgrid in a Rural Brazilian Distribution System	1735
<i>Felipe Crestani Dos Santos, Guilherme Louro Justino, Rogerio Meneghetti, Rodrigo Braun Dos Santos, Ahda Grilo-Pavani, Rodrigo Andrade Ramos</i>	
Practical Steady-State Security Region of Loop-Containing Active Distribution Networks.....	1740
<i>Daowu Sun, Yixin Yu</i>	
Renewable Energy Communities Classification.....	1745
<i>Bruno Canizes, João Costa, Zita Vale</i>	
Energy Security Forecast in ISO New England.....	1750
<i>Mingguo Hong, Jinye Zhao, Izudin Lelic, Mallory Waldrip, Thomas Knowland, Xiaochuan Luo, Tongxin Zheng</i>	
A Robust Mixed-Integer Convex Model for Optimal Scheduling of Integrated Energy Storage—Soft Open Point Devices	1755
<i>Ilias Sarantakos, Meltem Peker, Natalia-Maria Zografou-Barredo, Matthew Deakin, Charalampos Patsios, Timur Sayfudinov, Phil C. Taylor, David M. Greenwood</i>	
Analysis of Wind Energy Curtailment in the Ireland and Northern Ireland Power Systems	1756
<i>Manuel Hurtado, Taulant Kërçi, Simon Tweed, Eoin Kennedy, Nezar Kamaluddin, Federico Milano</i>	
Using Optimization to Perform Steady-State System Model Validation for ISO New England	1761
<i>Eric H. Allen, Jeffrey Lang, Marija Ilic, Xiaochuan Luo, Kannan Sreenivasachar, Rajesh Nimbalkar</i>	
Open-Source Computational Tool for Scheduling Off-Grid Home Loads, Batteries, and Backup Generators	1766
<i>Lea J. Daniel, Carey W. King, David P. Tuttle</i>	
Model for Cooperative Operation of Li-Ion Batteries and Hydrogen Storage Systems in Microgrids Considering Cycling Costs and Dynamic Prices	1771
<i>Cláudio A. C. Cambambi, Renata R. Lautert, Camilo A. S. Rangel, Isabel Milani, Luciane N. Canha</i>	
Extending Bus Branch Power System Models by Use of Graphs for Resilience Studies	1776
<i>Riley Weinmann, Ted K. A. Brekken, Eduardo Cotilla-Sanchez</i>	

Design, Field Implementation, and Operation of a Special Protection Scheme Based on Synchronized Phasor Measurements	1781
<i>Jose Maria Barua Godoy, Robson Almir Oliveira, Gustavo Aguayo, Elizandro Rodriguez, Alfredo Javier Mezger Szostak, Jhonatan Andrade Dos Santos, Manuel Leonardo Sosa-Rios, André Tochetto, Paulo Henrique Galassi, Jonas Pesente, Rodrigo Ramos</i>	
Linear Recursive State Estimation of Hybrid and Unbalanced AC/DC Micro-Grids Using Synchronized Measurements	1782
<i>Willem Lambrechts, Mario Paolone</i>	
A Machine Learning Framework to Deconstruct the Primary Drivers for Electricity Market Price Events	1783
<i>Milan Jain, Xueqing Sun, Sohom Datta, Abhishek Somani</i>	
Electrical Vehicle Load Modelling for Distribution System Considering Future Scenarios	1788
<i>Hanshan Qing, Abhinav Kumar Singh, Stratis Batzelis</i>	
Multi-Year PV Generation Planning Incorporating Power Electronics Impacts in Sizing Decisions.....	1793
<i>Monika Sandelic, Ariya Sangwongwanich, Saeed Peyghami, Frede Blaabjerg</i>	
A Single-Ended Protection Scheme for Multi-Terminal HVDC Grids Based on Hilbert-Huang Transform	1798
<i>Mohamed Radwan, Sahar Pirooz Azad</i>	
Security Concerns of Adversarial Attack for LSTM/BiLSTM Based Solar Power Forecasting	1803
<i>Murat Kuzlu, Brian Emmanuel Tamayo, Salih Sarp, Ferhat Ozgur Catak, Umit Cali, Yanxiao Zhao</i>	
On Distribution Grid Optimal Power Flow Development and Integration.....	1808
<i>Sarmad Hanif, Rabayet Sadnan, Tylor E. Slay, Nawaf Nazir, Shiva Poudel, Bilal Bhatti, Andy Reiman, Jim Follum, Joseph McKinsey, Tarek Elgindy, Rui Yang</i>	
A Voltage Inference Framework for Real-Time Observability in Active Distribution Grids	1813
<i>Mazhar Ali, Aleksandar Dimitrovski, Zhihua Qu, Wei Sun</i>	
Cybersecurity Value-At-Risk Framework	1818
<i>Anuj Dilip Sanghvi, Ryan Cryar</i>	
Automating the Solar Interconnection Technical Evaluation Process: PREconfiguring and Controlling Inverter SEt-Points (PRECISE)	1822
<i>Killian McKenna, Aadil Latif, Kapil Duwadi, Adarsh Nagarajan, Sheikh Hassan, David Brown, Sruthi Nadimpalli, Valentino Tiangco</i>	
Integrative Simulation of Inverter-Based PV Systems and Unbalanced Distribution System with Adaptive Step Size Framework in OpenDSS	1827
<i>Mengxi Chen, Shanshan Ma, Raja Ayyanar, Vijay Vittal</i>	
“One Graph of Electricity Carbon” Spatiotemporal Data Analysis and Management System.....	1832
<i>Yachen Tang, Yi Lu, Xiaolei Yang, Guangyi Liu, Tingting Liu, Tianlin Yang</i>	
Constrained Reinforcement Learning for Stochastic Dynamic Optimal Power Flow Control.....	1837
<i>Tong Wu, Anna Scaglione, Daniel Arnold</i>	
An Electromagnetic Transient and Three-Phase Phasor Co-Simulation Platform for Studying Distribution System Transients with High Penetration of DERs.....	1842
<i>Yuan Liu, Wei Du, Shrirang G Abhyankar</i>	

Microgrid Sizing for Critical Infrastructure Considering Black-Sky Conditions & Grid Outages.....	1847
<i>Cody J. Newlun, Waylon T. Clark, Tim Wilcox</i>	
Real-Time Locational Marginal Price Forecast: A Decision Transformer-Based Approach	1852
<i>Zhongxia Zhang, Meng Wu</i>	
High-Resolution Synthetic Solar Irradiance Sequence Generation: An LSTM-Based Generative Adversarial Network	1857
<i>Zhongxia Zhang, Rui Yang</i>	
Optimal Peer-To-Peer Power Dispatch in Islanded DC Clustered Nanogrids for Rural Electrification	1862
<i>Rabia Khan, Noel N. Schulz</i>	
A Modified Maximum Entropy Inverse Reinforcement Learning Approach for Microgrid Energy Scheduling.....	1867
<i>Yanbin Lin, Avijit Das, Zhen Ni</i>	
Sensitivities of Geomagnetically Induced Currents in Dominion Energy Virginia to the Neighboring Grids and Transformer Blocking Schemes	1872
<i>Adedasola A. Ademola, Yilu Liu, Xiawen Li, Andrea Pinceti, Micah J. Till, Katelynn D. Vance, Kevin D. Jones, Matthew Gardner</i>	
Local Adaptive Modular Protection for Transmission Systems.....	1877
<i>Binod P. Poudel, Ali Bidram, Matthew J. Reno</i>	
Developing a Disaster-Ready Power Grid Agent Through Geophysically-Informed Fault Event Scenarios	1882
<i>Julian B. Arnheim, Trier Mortlock, Hashmath Fathima, Pat Pataranutaporn, Nadia Ahmed, Ahmad Tbaileh, Tarannom Parhizkar</i>	
Optimal Storage Response to Utility Tariff Structures and Potential Use of Capacity Charges.....	1887
<i>Killian McKenna</i>	
Black-Start Service Restoration of Unbalanced Distribution Systems Considering Frequency Stability Constraints	1892
<i>Adel Heidari-Akhijahani, Karen L. Butler-Purry</i>	
Transient Analysis on Wind Farms with Interconnected Grounding Systems Located on Frequency-Dependent Soils.....	1897
<i>Wagner Costa Da Silva, Walter Luiz Manzi De Azevedo, José Luciano Aslan D'Annibale, Anderson Ricardo Justo De Araújo, José Pissolato Filho</i>	
Changes Required in the PMU Standards	1902
<i>Artis Riepieks, Dani Strickland, Jan-Philipp Kitzig, Harold Kirkham</i>	
Efficient Phasor-Based Dynamic Volt/Var and Volt/Watt Analysis of Large Distribution Grid with High Penetration of Smart Inverters.....	1907
<i>Maryam Mahmoudi, Thanh Thai Nguyen, Tuyen Vu, Sumit Paudyal, Rob Hovsapian</i>	
Low-Carbon Community Energy Management Incorporating Data-Driven User Segmentation.....	1908
<i>Yinyan Liu, Lei Bai, Jin Ma</i>	
A Modified Sequence-To-Point HVAC Load Disaggregation Algorithm.....	1913
<i>Kai Ye, Hyeonjin Kim, Yi Hu, Ning Lu, Di Wu, Pj Rehm</i>	

Learning Power System Dynamics with Nearly-Hamiltonian Neural Network.....	1918
<i>Shaorong Zhang, Nanpeng Yu</i>	
Impedance Trajectories During Stable and Unstable Power Swings in Presence of PQ Control Based PV Generations.....	1923
<i>Meenu Jayamohan, Sarasij Das, Sukumar Brahma</i>	
Control of Behind-The-Meter Resources for Enhancing the Resilience of Residential Buildings.....	1928
<i>Prateek Munankarmi, Jeff Maguire, Xin Jin</i>	
Investigating Net-Zero Microgrids for Facilities: A Case Study for Idaho National Laboratory	1933
<i>Bikash Poudel, Jeremiah Gilbert, Timothy R. McJunkin, Ian L. Archibald, Kurt S. Myers, Ning Kang, Thomas M. Stoops, Michael H. Auble, Kenneth A. Barnes, Samuel R. Dixon</i>	
Quantifying the Benefits of Room Temperature Vulcanising Rubber Coatings for HV Insulators Against Pollution in Power System Resilience Assessment Studies	1938
<i>E. Ciapessoni, D. Cirio, A. Pitto, G. Pirovano</i>	
Rapid Estimation of Temporary Overvoltage for Heterogeneous Wind Power-Integrated System.....	1943
<i>Xinyu Liu, Huanhai Xin, Di Zheng, Qiulong Ni, Xiaolei Yang</i>	
A Review of Lithium-Ion Battery Physics-Based Models.....	1948
<i>L. V Raviteja, Gurunath Gurrala</i>	
Analysis of Cross-Bonded Cables Using Accurate Model Parameters.....	1953
<i>Jean Mahseredjian, Haoyan Xue</i>	
An Investigation of Electromagnetic Transients for a Mixed Transmission System with Overhead Lines and Buried Cables.....	1954
<i>Jean Mahseredjian, Haoyan Xue</i>	
A Near-Real-Time Estimation Method for Carbon Emissions from High-Emission Industries Based on Electricity-Energy-Carbon Linkage Model	1955
<i>Shangze Li, Xiangyu Kong, Bixuan Gao, Ziyti Liu, Shuo Wang</i>	
MPC Based Community Battery System to Minimize the Energy Cost of a Residential Community.....	1960
<i>Sunil Abraham, Yateendra Mishra, Michael E. Cholette</i>	
Clustering-Based Two-Stage Probabilistic Small-Signal Stability Analysis of Power Systems with Uncertainties.....	1965
<i>Qifan Chen, Siqi Bu, Jiaxin Wen</i>	
On Fault-Ride-Through Performance in MMC-HVDC Applications Controlled as a Virtual Synchronous Machine	1970
<i>Carolin Hirsching, Max Goertz, Simon Wenig, Alexander Bisseling, Michael Suriyah, Thomas Leibfried</i>	
AMLA: The Art of Converging IT-OT; And Logical Airgaps	1971
<i>Abhinav R Chopra, Nirmal-Kumar C Nair, Rizki Rahayani</i>	
An Exact Self-Synchronized Realization of Park Transformation Equations for PLL-Free Inverter Control.....	1976
<i>Mohammed Manaz Mohammed Ansar</i>	
Learning a Multi-Agent Controller for Shared Energy Storage System.....	1981
<i>Ruohong Liu, Yize Chen</i>	

A Convex Solution-Sequential Linear Programming Methodology for the Quadratized-OPF Problem	1986
<i>Gad Ilunga, A. P. Sakis Meliopoulos</i>	
Improving Resiliency for Electric Vehicle Charging.....	1991
<i>M. Starke, M. Chinthavali, N. Kim, T. Carroll, F. Tuffner, B. Varghese, C. Rieger, K. Rohde, T. Pennington</i>	
Black Start of Unbalanced Microgrids Harmonizing Single- And Three-Phase Grid-Forming Inverters.....	1996
<i>Gab-Su Seo, Jay Sawant, Fei Ding</i>	
A Software Test Suite for Data Acquisition and GPU-Based Computations on IoT Edge Devices for High Frequency Power Grid Monitoring.....	2001
<i>Justin Johnson, Luigi Vanfetti</i>	
Load Modeling Impact on System Stability and Guidelines for Stability Studies on an Islanded System with Grid-Forming Inverters.....	2006
<i>Sibin Mohan, Sam Maleki, Mahsa Shirinzad, Billy Yancey, Haven Trahan, Ramsey Ayass</i>	
A Hierarchical Control Architecture: Utilization of Behind-The-Meter Appliances with Increased Visibility and Controllability	2011
<i>Arun Sukumaran Nair, Mohd Azrin Mohd Zulkefli, Yi Liu, Shakawat Hossan, Siddharth Suryanarayanan, Roger Alexander</i>	
Modeling and Analysis of the SUNY-Maritime College New Training Ship Power System with BESS	2016
<i>Sina Zarrabian, Van-Hai Bui, Thai-Thanh Nguyen</i>	
Real-Time Protection Against Microgrid False Data Injection Attacks Using Passive Monitoring	2021
<i>Mark Karanfil, El-Nasser S. Youssef, Marthe Kassouf, Mourad Debbabi, Mohsen Ghafouri, Aiman Hanna</i>	
Optimal Adaptive Protection Coordination Using Topology Groups for Distribution Network Reconfiguration.....	2026
<i>Paul Cristian Arroyo Quispe, Antonio E. C. Momesso, Eduardo N. Asada</i>	
Analytic Input Convex Neural Networks-Based Model Predictive Control for Power System Transient Stability Enhancement.....	2031
<i>Tong Su, Junbo Zhao, Xiao Chen, Xiaodong Liu</i>	
Learning to Optimize Distributed Optimization: ADMM-Based DC-OPF Case Study	2036
<i>Meiyi Li, Soheil Kolouri, Javad Mohammadi</i>	
Automatic Recloser Adjustment for Power Distribution Systems.....	2041
<i>Antonio Eduardo Ceolin Momesso, Guilherme Kume, Wandry Faria, Benvindo Pereira, Eduardo Asada</i>	
Leveraging Deep Learning to Improve Performance of Distributed Optimal Frequency Control Under Communication Failures.....	2042
<i>Masoud H. Nazari, Siyu Xie, Le Yi Wang</i>	
Two-Stage Deep Reinforcement Learning for Distribution System Voltage Regulation and Peak Demand Management.....	2043
<i>Yansong Pei, Yiyun Yao, Junbo Zhao, Fei Ding, Jiyu Wang</i>	

Benders Decomposition for TSO-DSO Coordination in Local Ancillary Services Market.....	2048
<i>Carmine Rodio, Giovanni Giannoccaro, Sergio Bruno, Massimo La Scala</i>	
Spatiotemporal Impact Assessment of Hurricanes and Storm Surges on Electric Power Systems.....	2053
<i>Abodh Poudyal, Charlotte Wertz, Amy Mi Nguyen, Sajjad Uddin Mahmud, Anamika Dubey, Vibha Gunturi</i>	
Predicting Power System Voltage Health Index with PMUs and Graph Convolutional Networks	2058
<i>Koji Yamashita, Jingtao Qin, Nanpeng Yu, Evangelos Farantatos, Lin Zhu</i>	
Online Voltage Event Detection Using Synchrophasor Data with Structured Sparsity-Inducing Norms.....	2063
<i>Xianghao Kong, Brandon Foggo, Nanpeng Yu, Koji Yamashita</i>	
Enhancing the Power System Resilience to Ice Storms	2064
<i>Anahita Bahrami, Mingyu Yan, Mohammad Shahidehpour, Shikhar Pandey, Deepak Tiwari, Honghao Zheng</i>	
Towards Smart Grids Enhanced Situation Awareness: A Bi-Level Quasi-Static State Estimation Model	2069
<i>Arturo Bretas, Mark Rice, Chris Bonebrake, Carl Miller, David McKinnon, Arcadio Vielma</i>	
Transient Stable Corrective Control Using Neural Lyapunov Learning.....	2074
<i>Federica Bellizio, Jochen L. Cremer, Goran Strbac</i>	
Optimal Mode and Droop Setting of Smart Inverters.....	2075
<i>Temitayo O. Olowu, Adedoyin Inaolaji, Sumit Paudyal, Arif Sarwat</i>	
Anomaly Detection in Power Markets and Systems	2080
<i>Ugur Halden, Umit Cali, Ferhat Ozgur Catak, Salvatore D'Arco, Francisco Bilendo</i>	
Machine Learning Application to Extreme Weather Power Outage Forecasting in Distribution Networks Using a Majority Under-Sampling and Minority Over-Sampling Strategy	2085
<i>Anahita Bahrami, Mohammad Shahidehpour, Shikhar Pandey, Will Nation, Keith Dsouza, Honghao Zheng</i>	
Extended Frequency Divider Formula with Inclusion of DER Control Dynamics	2091
<i>Mohammadamin Aghahassani, Edgardo D. Castronuovo, Pablo Ledesma, Federico Milano</i>	
Optimization of Distribution Feeder Topology: A Differential Programming Learning Approach	2096
<i>Devon Sigler, David Biagioni, Patrick Emami, Ahmed Zamzam, Bernard Knueven</i>	
Performance Specifications for Grid-Forming Technologies	2101
<i>Deepak Ramasubramanian, Benjamin Kroposki, Sairaj Dhople, Dominic Groß, Anderson Hoke, Wenzong Wang, Shahil Shah, Philip Hart, Gab-Su Seo, Michael Ropp, Wei Du, Vijay Vittal, Raja Ayyanar, Jack Flicker, Joseph Benzaquen, Brian Johnson, Pedro Arsuaga, Sebastian Achilles, Siddharth Pant, Rojan Bhattarai, Dustin Howard, Maozhong Gong, Deepak Divan, Aidan Tuohy</i>	
Verifying the Computational Integrity of Power Grid Controls with Zero-Knowledge Proof	2106
<i>Chin-Yao Chang, Richard Macwan, Sinnott Murphy</i>	
The Cause of Insufficient Damping in Phase-Locked-Loop and Its Influence.....	2111
<i>Zhengyu Wang, Lingling Fan, Zhixin Miao</i>	

Impacts of Ride-Through Requirements on Distributed Generation Anti-Islanding Protection.....	2116
<i>Gabriella Pinheiro Dos Santos, Rodrigo De Barros Iscuissati, José Carlos M. Vieira, Daniel Motter</i>	
Unbalanced Distribution System Expansion Planning Under Wildfire Risk.....	2121
<i>Augusto Zanin Bertoletti, Josue Campos Do Prado</i>	
Topological Attributes of Cascading Failures in Power Grids.....	2126
<i>Jamir Shariar Jyoti, Majeed M. Hayat</i>	
Protecting Customer Privacy Through Distributed Energy Resource Anonymization	2131
<i>Nicole Henderson, Midrar Adham, Robert B. Bass, Tylor Slay</i>	
A Practical Method to Represent Distance Protection Relays in Transient Stability Simulations of Lines Connecting Inverter-Based Resources	2136
<i>Oscar Patino, Carolina Correa Soto, Ahda P. Grilo-Pavani, Rodrigo A. Ramos, Renan M. Furlaneto, Ilhan Kocar</i>	
Invulnerability Evaluation and Optimization of Communication Topology for Microgrids Under Distributed Control.....	2141
<i>Xiaoyan Wu, Sicheng Deng, Laijun Chen, Shengwei Mei</i>	
A Multi-Agent Deep Deterministic Policy Gradient Method for Multi-Zone HVAC Control	2146
<i>Xuebo Liu, Yingying Wu, Bo Liu, Hongyu Wu</i>	
Using OPF-Based Operating Envelopes to Facilitate Residential DER Services.....	2151
<i>Michael Z. Liu, Luis F. Ochoa, Peter K. C. Wong, John Theunissen</i>	
Net-Zero Emission for Multi-Energy Campus System.....	2152
<i>Patrick Wilk, Ethan Cantor, Jie Li</i>	
Distribution System EV-Hosting Capacity Assessment Considering Decentralized Smart Charging and Static Pricing Rates.....	2157
<i>Jorge Fernandez, Santiago Grijalva</i>	
A Low-Breaking-Energy-Needed Fault Isolation Scheme Based on Fault Active Control for DC Distribution Network with Multi-Type Converters	2162
<i>Wenxuan Lv, Hong Cao, Tao Zheng</i>	
Random-Based Hidden Moving Target Defense Against Alert False Data Injection Attackers	2167
<i>Bo Liu, Qihui Yang, Hang Zhang, Xuebo Liu, Hongyu Wu</i>	
Accurate Single-Ended Fault Location for Cable-OHL Hybrid Transmission Lines	2172
<i>Zhongtao Guan, Jun Wan, Yu Liu, Dian Lu, Mengzhao Duan, Renke Huang</i>	
Probing-Based Inertia Estimation Method Using Hybrid Power Plants.....	2177
<i>Zhihao Jiang, He Yin, Hongyu Li, Yilu Liu, Jin Tan, Andy Hoke, Brad Rockwell, Cameron Kruse</i>	
Design Considerations of a Coordinative Demand Charge Mitigation Strategy	2182
<i>Rongxing Hu, Kai Ye, Hyeonjin Kim, Hanpyo Lee, Ning Lu, Di Wu, Pj Rehm</i>	
Regional Medium-Term Hourly Electricity Demand Forecasting Based on LSTM	2187
<i>Hongfei Sun, Dongliang Duan, Hongming Zhang, Seong Choi, Jie Rockey Luo, Liuqing Yang</i>	
Resilience of Power Systems to Ice Storms: Analysis and Quantification	2192
<i>Michael Abdelmalak, Jitendra Thapa, Mohammed Benidris</i>	

Optimal Tax Incentive Policy Design for Promoting Emerging Energy Technologies: A Stackelberg Game Approach.....	2197
<i>Alejandro Castillo-Ramírez, Diego Mejía-Giraldo</i>	
A Heterogeneous Multiscale Method for Power System Simulation Considering Electromagnetic Transients	2202
<i>Kaiyang Huang, Min Xiong, Yang Liu, Kai Sun, Feng Qiu</i>	
Estimation of Regulation Reserve Requirements in California ISO: A Data-Driven Method.....	2207
<i>Li He, Jie Zhang, Benjamin Hobbs</i>	
A Testing Framework for Grid-Forming Resources	2212
<i>Shahil Shah, Weihang Yan, Przemyslaw Koralewicz, Vahan Gevorgian, Deepak Ramasubramanian, Robb Wallen, Anderson Hoke, Benjamin Kroposki, Barry Mather</i>	
Reactive Power: Sorted, Perhaps.....	2217
<i>Artis Riepiņeks, Dani Strickland, Jan-Philipp Kitzig, Harold Kirkham</i>	
Learning-Based, Safety and Stability-Certified Microgrid Control.....	2222
<i>Lizhi Wang, Songyuan Zhang, Yifan Zhou, Chuchu Fan, Peng Zhang, Yacov A. Shamash</i>	
Frequency-Dependent Electrical Characteristics of Submarine Cables in Low Frequency High Voltage Ac (LF-HVAc) Transmission for Offshore Wind.....	2227
<i>Okechukwu Efofi, Wei Li, Mukesh Das, Aniruddha Gole, Okechukwu Efofi</i>	
Testing GFM and GFL Inverters Operating with Synchronous Condensers	2232
<i>Vahan Gevorgian, Przemyslaw Koralewicz, Shahil Shah, Weihang Yan, Robb Wallen, Emanuel Mendiola</i>	
An Economic Optimization Method of Ancillary Service for VPP Consist of Multi-Microgrids.....	2237
<i>Bin Wang, Kaiyuan Hou, Deming Xia, Yu Chen, Zhen Li, Samson S. Yu, Bin Liu, Xi Chen</i>	
The Need for Equitable Coordination in Multi-Agent Power Systems	2242
<i>Yuhan Du, Javad Mohammadi</i>	
Revealing the Complexity of Load Fluctuations for Electricity Consumers Using MLP-HVG.....	2247
<i>Mengxue Qi, Linjuehao Mei, Zhiyi Li, Lei Yan, Zhen Wang, Ping Ju</i>	
Renewable Self-Sufficient Energy Supply for Smart Devices in Urban Areas, Energy-Hub - Case Study.....	2252
<i>Christoph Wenge, Bartłomiej Arendarski, Stephan Balischewski, Robert Pietracho</i>	
Novel Feature Selection Strategy for Cyclic Loss Prediction of Lithium-Ion Electric Vehicle Battery	2257
<i>Huzaiifa Rauf, Muhammad Khalid, Naveed Arshad, Michael Pecht</i>	
Dynamic Sizing of Frequency Control Ancillary Service Requirements for a Philippine Grid	2263
<i>Elgar John S. Del Rosario, Jordan Rel C. Orillaza</i>	
Carbon Flow Tracing Based Consumer's Indirect Carbon Emissions Calculation	2268
<i>Yuyang Wang, Ming Zhou, Zhaoyuan Wu, Jingting Wang, Gengyin Li</i>	
Pp OPF -Pandapower Implementation of Three-Phase Optimal Power Flow Model.....	2273
<i>Tomislav Antic, Andrew Keane, Tomislav Capuder</i>	

Performance Analysis of Interleaved Bidirectional DC-DC Converters for Battery Control in Islanded Microgrid	2278
<i>Lindemberg Roberto De Lima, Pedro A. De Alcântara, Luana C. S. Soares, Camila M. V. Barros, Luciano S. Barros</i>	
A Novel Quantile Lite-PCE for Probabilistic Risk Assessment of Power System Cascading Outage for N-1-1 Contingency Analysis	2283
<i>Sel Ly, Kapil Chauhan, Gooi Hoay Beng, Hung D. Nguyen</i>	
Experimental Test Bench for Power Transformer Differential Protection Testing Methods Evaluation.....	2288
<i>R. P. Medeiros, L. D. Simões, F. B. Costa</i>	
Method for Characterization of Limit Cycles in Power Systems	2293
<i>Manuel L. Sosa-Ríos, Luís F. Costa Alberto, Rodrigo A. Ramos, Federico Bizzarri</i>	
Multi-Objective Planning for Integrated Energy Systems Considering Both Energy Quality and Renewable Energy	2298
<i>Tianshuo Zhou, Dan Wang, Jiayi Li, Hongjie Jia</i>	
Coordinated Planning Strategies of Power Systems and Energy Transportation Networks for Resilience Enhancement.....	2303
<i>Xu Tianyuan, Shao Chengcheng, Mohammad Shahidehpour, Wang Xifan</i>	
Strategic Investment in Energy Markets Using Bayesian Optimization.....	2304
<i>Mana Jalali, Sina Taheri, Vassilis Kekatos</i>	
Data-Driven Estimation of Li-Ion Battery Health Using a Truncated Time-Based Indicator and LSTM	2309
<i>Wesley Qi Tong Poh, Yan Xu, Robert Thiam Poh Tan</i>	
Three-Stage Optimization Approach for Storage Sizing, Siting, and Transmission Network Expansion Under Severe Renewable Drought.....	2314
<i>Gagan Meena, Rajeev Kumar Gajbhiye, Paresh Risbud, Shreevardhan A. Soman</i>	
An Integrated Wind Power Prediction Method Based on Heterogeneous Clustering and DALSTM.....	2319
<i>Shuo Wang, Xiangyu Kong, Ning Wang</i>	
Voltage Stability Monitoring Based on Adaptive Dynamic Mode Decomposition	2324
<i>Minh-Quan Tran, Trung Thai Tran, Phuong H. Nguyen</i>	
Design of Dynamic Prices for Retailers Based on User Equilibrium	2329
<i>Fengyuan Jin, Chengcheng Shao, Xifan Wang</i>	
Graph Theoretic Approach for Cyber Contingency Analysis of Smart Grid	2334
<i>Kumar Reddy M Hareesh, V Vignesh</i>	
High Resolution Harmonic Power Flow and Passive Harmonic Impedance Measurements.....	2339
<i>Jan-Philipp Kitzi, Christoph Szymczyk, Gerd Bumiller</i>	
Energy Flow Optimization of Integrated Gas and Power Systems Using Staggered Difference Method	2344
<i>Zehua Yin, Xiaoqing Han, Tingjun Li, Xinqi Li, Xinfang Zhang</i>	
Dynamic Reserves for Managing Wind Power.....	2349
<i>Marija Ilic, Dongwei Zhao</i>	

Climate Vulnerability Assessment in Power Systems	2354
<i>Andrew Lopez, Hayk Zargaryan, Manuel Avendaño</i>	
Comparison of Phase Restoring Principle with Other Grid-Forming Methodologies	2359
<i>Ananya Kuri, Alexander Raab, Artur Takhtaganov, Gert Mehlmann, Matthias Luther, Ananya Kuri</i>	
Automated Initialization of Large-Scale Real-Time EMT Simulation Studies Using Measured Data.....	2364
<i>Eric Segerstrom, Andrea Pinceti, Katelynn Vance</i>	
DSO-DERA Coordination for the Wholesale Market Participation of Distributed Energy Resources	2369
<i>Cong Chen, Subhonmesh Bose, Lang Tong</i>	
A Unified Solution Framework for Generic Simulation of Multi-Vector Energy Systems	2374
<i>Shuai Yao, Wei Gu, Jianzhong Wu, Meysam Qadrdan, Tong Zhang</i>	
Cost-Effective and Resilient Operation of Distribution Grids and 5G Telecommunication.....	2379
<i>Jiawei Wang, Dawei Qiu, Yi Wang, Saptarshi Ghosh, Pierre Pinson, Sandra Dudley, Goran Strbac</i>	
Index System for Evaluating the Supporting Capability of the Inverter-Based Resource	2384
<i>Yushan Liu, Junru Chen, Chenchen Ge, Kaike Wang, Xiqiang Chang, Qi Zhao</i>	
Analysis and Control of an Isolated Multi-Source Renewable Microgrid Employing the Multi-Input Split-Source Inverter	2389
<i>Gabriel M. Cocco, Fábio E. Bisogno, Robinson F. De Camargo, Tahaguas A. Woldu, Christian Ziegler, Martin Wolter</i>	
Transient Stability Analysis and Coordination Control Design for Grid-Forming PMSG Based on Dynamics of DC-Link Capacitor.....	2394
<i>Kehao Zhuang, Zijun Wang, Dawei Sun, Linlin Wu, Xiao Wang, Huanhai Xin</i>	
Distributed Multi-Objective Control of Hybrid Microgrid in Autonomous Mode	2399
<i>Shwetank Agrawal, Uzair Malik, Yangyadatta Tripathy, Barjeev Tyagi, Vishal Kumar, Pawan Sharma</i>	
EMT Model Validation of DFIG Wind Turbine Using Full-Scale Electrical System Lab Tests and Lessons Learned	2404
<i>Amir Kazemi, Jagdeep Kaur, Fernando Ramirez, Durga Gautam, Min Lwin, Amy Ridenour</i>	
Synchronous Wind: Evaluating the Grid Impact of Inverterless Grid-Forming Wind Power Plants.....	2409
<i>Weihang Yan, Vahan Gevorgian, Shahil Shah</i>	
Improving Hybrid Ac/Dc Power System Resilience Using Enhanced Hybrid Power State Estimator	2414
<i>Abdallah A. Smadi, Brian K. Johnson, Hangtian Lei, Abdulwahab A. Aljabrine</i>	
An Efficient Machine Learning Model for Microgrid Fault Detection and Classification: Protection Approach	2419
<i>Mohammed Alsaba, Mohammad Abido</i>	
Integration of an MMC-HVDC Link to the Existing LCC-HVDC Link in Balearic Islands Based on Grid-Following and Grid-Forming Operation	2424
<i>Carlos Collados-Rodriguez, Marc Cheah-Mane, Francisco Cifuentes-Garcia, Eduardo Prieto-Araujo, Oriol Gomis-Bellmunt, Carmen Longas, Silvia Sainz, Macarena Martin, Antonio Cordon</i>	

The Impacts of Dynamic Line Rating on Systems with High Levels of Renewable Energy Resources	2425
<i>Cheng Lyu, Sara Eftekharijad</i>	
System Identification Based Adaptive Droop Control Strategy for Predominantly Resistive Microgrids	2430
<i>Prashant Pant, Vedran S. Peric, Thomas Hamacher</i>	
Investigating Protection Challenges on Distribution Systems Self-Healing.....	2435
<i>Konrad Schmitt, Rabindra Bhatta, Rajendra Shrestha, Manohar Chamana, Meisam Mahdavi, Olatunji Adeyanju, Stephen Bayne, Luciane Canha</i>	
Chance Constraint Co-Optimization of Volt/Var and Demand Response in Distribution Networks	2440
<i>Soroush Najafi, Hanif Livani, Mohammed Benidris</i>	
Injected Current Sensitivity Based Load Flow Algorithm for Multi-Phase Distribution System in the Presence of Distributed Energy Resource.....	2445
<i>Arun Suresh, Krishna Murari, Sukumar Kamalasan</i>	
Quantifying the Protectability of Power Systems for Restoration Applications.....	2446
<i>Jay R. Sawant, Rishabh Jain</i>	
A Long-Term Voltage Stability Margin Index Based on Multiple Real Power Flow Solutions	2451
<i>Bin Wang, Dan Wu, Xiaowen Su, Kai Sun, Le Xie</i>	
Frequency Cyber-Attack Detection for Droop-Controlled Grid-Forming Inverters.....	2456
<i>Gabriel Intriago, Raúl Intriago, Yu Zhang</i>	
Conservation Voltage Reduction with Distributed Energy Resource Management System, Grid-Edge, and Legacy Devices	2461
<i>Harsha Padullaparti, Murali Baggu, Jing Wang, Ismael Mendoza, Soumya Tiwari, Jiyu Wang, Santosh Veda</i>	
Impact of Spatial Variation in Flexibility on System Operations in Electric Power Systems.....	2466
<i>Rabayet Sadnan, Thiagarajan Ramachandran, Saptarshi Bhattacharya, Abhishek Somani</i>	
Optimal Offering Strategy of GenCo with Joint Participation in FTR Auction and Day-Ahead Market Considering Virtual Bidding	2471
<i>Hossein Mehdipourpicha, Rui Bo, Siyuan Wang</i>	
Online Model-Free Chance-Constrained Distribution System Voltage Control Using DERs	2472
<i>Haoyi Wang, Yiyun Yao, Junbo Zhao, Fei Ding</i>	
Approximating Input-Output Curve of Pumped Storage Hydro Plant: A Disjunctive Convex Hull Method	2477
<i>Siyuan Wang, Jian Liu, Rui Bo, Yonghong Chen</i>	
A Two-Stage Packetized Energy Trading and Management Framework for Virtual Power Plants	2478
<i>Yuanliang Li, Luyang Hou, Jun Yan, Yuhong Liu, Mohsen Ghafouri, Peng Zhang</i>	
Multi-Agent Reinforcement Learning for Distribution System Critical Load Restoration	2483
<i>Yiyun Yao, Xiangyu Zhang, Jiyu Wang, Fei Ding</i>	
Distributed Energy Resource-Cognizant Upgrade Paths to the Traditional Restoration Strategy of Utilities for Improved Load Restoration.....	2488
<i>Kumar Utkarsh, Weijia Liu, Fei Ding</i>	

Distributed Energy Resource Management Systems: Preserving Customer Privacy Through K-Anonymity.....	2493
<i>Mohammed Alsaïd, Nirupama Bulusu, Midrar Adham, Robert B. Bass</i>	
Grid-Forming Control Benchmarking for 100% Inverter-Based Systems: Case Study on Hawai‘i Island.....	2498
<i>Nan Xue, Xiaofan Wu, Ulrich Muenz, Norbert Benesch, Hawaiian Electric</i>	
MIP Formulations of Piece-Wise Polyhedral Relaxations of AC Power Flow Equations.....	2503
<i>Juncheng Li, Trivikram Dokka, Guglielmo Lulli</i>	
A Resilience-Oriented Multi-Stage Adaptive Distribution System Planning Considering Multiple Extreme Weather Events.....	2508
<i>Siyuan Wang, Rui Bo</i>	
Online Output-Based Inertia Estimation of Modern Power Systems	2509
<i>Mohamed Elnasry, Amarsagar Reddy Ramapuram Matavalam, Pranav Sharma, Venkataramana Ajarapu</i>	
Effects of Approximate Residential Distribution System Models on Power Systems Analysis	2514
<i>Surendra Bajagain, Anamika Dubey</i>	
Data Driven Machine Learning Model for Condition Monitoring and Anomaly Detection in Power Grids.....	2519
<i>Komal Saleem, Bugra Alkan, Sandra Dudley-McEvoy</i>	
Annual Benefit Analysis of Integrating the Seasonal Hydrogen Storage into the Renewable Power Grids	2524
<i>Jin Lu, Xingpeng Li</i>	
Graph Neural Networks for Voltage Stability Margins with Topology Flexibilities	2529
<i>Kishan Prudhvi Guddanti, Yang Weng, Antoine Marot, Benjamin Donnot, Patrick Panciatici</i>	
Planning Non-Wire Alternatives in Distribution Systems Considering the Flexibility of Water Desalination Plants.....	2530
<i>Adnan S. Al-Bukhaytan, Ali T. Al-Awami, Masood Parvania, Ammar Muqbel</i>	
Proactive Grid Planning for Fleet Electrification	2535
<i>Jonathan Hou, Shyamal Patel, Gary Rackliffe, Gideon Katsh, John McDaniel, Katie Meyer, Kelly Stropp, Jeff Wilke, Brian Yung</i>	
A Temperature-Informed Data-Driven Approach for Behind-The-Meter Solar Disaggregation.....	2540
<i>Soroush Vahedi, Junbo Zhao, Yangmin Ding, Elli Ntakou, Ting Wang</i>	
A Hierarchical Local Electricity Market for a DER-Rich Grid Edge.....	2545
<i>Vineet Jagadeesan Nair, Venkatesh Venkataramanan, Rabab Haider, Anuradha Annaswamy</i>	
Identification of Power Islands Via Event-Triggered Decaying Current Injection by Inverter Networks	2546
<i>Avinash Kumar, Yuzhang Lin, Xiaonan Lu</i>	
Hybrid Phasor- And EMT-Based Multi-Terminal MMC-HVDC Model with Grid-Forming Control	2551
<i>Alexander Raab, Dominik Frauenknecht, Gert Mehlmann, Matthias Luther, Anatoli Wellhoefer</i>	
A Real-Time Quantitative Framework for Survivability Evaluation of Smart Grids	2556
<i>Abolfazl Rahiminejad, Mohsen Ghafouri, Ribal Atallah, Arash Mohammadi, Mourad Debbabi</i>	

Compact Solutions for Outdoor 138kV Substation Projects, Using Only Conventional Equipment	2561
<i>Carlos A. F. Castelli, José Pissolato Filho, Ricardo A. De Araujo, Felipe M. Daquino</i>	
Multi Area Thevenin Equivalent Based Transient Stability Simulations in Shared Memory Paradigm.....	2566
<i>Francis C Joseph, Gurunath Gurrula</i>	
Deep Learning-Based Transmission Line Screening for Unit Commitment	2571
<i>Farhan Hyder, Sriparvathi Shaji Bhattathiri, Bing Yan, Michael E. Kuhl</i>	
Oscillatory Power Control and Consensus in Unbalanced Networks Using Grid Forming Inverters	2576
<i>Soumyadeep Nag, Zhihua Qu</i>	
A Unified Hybrid State Estimation Approach for VSC HVDC Lines Embedded in Ac Power Grid	2581
<i>Abdallah A. Smadi, Brian K. Johnson, Hangtian Lei, Abdulwahab A. Aljabrine</i>	
Efficient Dynamic Phasor Model of Distributed Photovoltaic Systems	2586
<i>Maryam Mahmoudi Koutenaeei, Sumit Paudyal, Tuyen Vu</i>	
Cyberattack Threats Against Adaptive Protection Systems in Microgrids	2591
<i>Negar Karimipour, Mohammadreza F. M. Arani, Amir Abiri Jahromi</i>	
Voltage Stability Analysis of a Weak Power System Involving DERs -A Bayesian Parameter Estimation Approach	2596
<i>Paul Wanjoli, Mohamed M. Zakaria Moustafa, Nabil H. Abbasy</i>	
Load Shedding for Voltage Regulation with Probabilistic Agent Compliance	2601
<i>Bai Cui, Guido Cavraro, Andrey Bernstein</i>	
False Data Injection Attack Detection Using Adaptive Threshold Via Model Free Deep Reinforcement Learning for Residential Load Demand.....	2606
<i>Dhruv Singh Kushwaha, Zoleikha Biron</i>	
Dynamic Frequency Regulation Based on Hierarchical Control of DERs in Microgrid.....	2611
<i>Anjan Debnath, Sukanta Roy, Alexander Stevenson, Milad Behnamfar, Temitayo O. Olowu, Mohd Tariq, Arif Sarwat</i>	
An Iterative Algorithm for Accurate Estimation of Power System Forced Oscillation Parameters	2616
<i>Luke Dosiek, Sanjay Hosur</i>	
Multi-Agent Deep Reinforcement Learning-Based Volt-VAR Control in Active Distribution Grids.....	2621
<i>Rakib Hossain, Mukesh Gautam, Mohammad Mansourlakouraj, Hanif Livani, Mohammed Benidris</i>	
Dynamic Load-Altering Cyberattacks Against Direct Load Control of Residential Electric Water Heaters.....	2626
<i>El-Nasser S. Youssef, Fabrice Labeau, Marthe Kassouf</i>	
A Definitive Technology Stack for Development of Smart Contracts for Energy Applications.....	2631
<i>Komal Khan, Toqeer Ahmed, Umit Cali, Pablo Arboleya, Sergii Grybniak, Islam El-Sayed</i>	
Battery Energy Storage to Mitigate Wind Power Intermittencies Using Model Predictive Control.....	2636
<i>Giovanni Ponce, Paras Mandal, Eric Galvan</i>	
Optimal Droop Scheduling of Smart Inverters in Unbalanced Distribution Feeders	2641
<i>Alper Savasci, Adedoyin Inaolaji, Sumit Paudyal</i>	

Priority Load Control for Dynamic WPT Roadway in Electrified Transportation Infrastructure.....	2646
<i>Travis Newbolt, Paras Mandal, Hongjie Wang, Regan Zane</i>	
Quantification of DERs Penetration Level in Microgrids: A Quest for Enhancing Short-Term Power Grid Resilience	2651
<i>Abdollah Younesi, Zongjie Wang, Sergio A. Dorado-Rojas, Paras Mandal</i>	
Evaluation of Communication Issues in Primal-Dual-Based Distributed Energy Resource Management Systems (DERMS).....	2656
<i>Joshua Comden, Jing Wang, Andrey Bernstein</i>	
DQ Admittance Extraction for Inverter-Based Resources	2661
<i>Rahul H. Ramakrishna, Zhixin Miao, Lingling Fan, Shahil Shah</i>	
A Two-Step Time-Series Data Clustering Method for Building-Level Load Profile.....	2666
<i>Jiyu Wang, Xiangqi Zhu, Barry Mather</i>	
Comprehensive G-C Modeling of a Gapless Continuously Variable Series Reactor.....	2671
<i>Mohammadali Hayerikhiyavi, Aleksandar Dimitrovski</i>	
A Pathway to Mitigate Climate Change Impacts on Energy Communities: Decarbonization-Based Cost-Effective Grid Resilience Enhancement	2676
<i>Abdollah Younesi, Zongjie Wang, Pierluigi Siano, Fengyu Wang</i>	
Voltage Control of Islanded DC Microgrid Using Hierarchical Controllers Based on Kharitonov Theory	2681
<i>Mohammad Javad Najafirad, Nima Mahdian Dehkordi, Hamidreza Nazaripouya</i>	
A Pre-Commissioning Testbed for Online Monitoring of Nuclear Power Plant Auxiliary Power Systems Using a Digital Real-Time Simulator	2686
<i>Akram Saad, Mark Bowman, Hugo Castro, Abdelrahman Karrar</i>	
GridViz: A Toolkit for Interactive and Multi-Modal Power Grid Data Visualization.....	2691
<i>Kai-Wen Cheng, Yize Chen, Yuanyuan Shi</i>	
Analysis of Electric Vehicles Interfacing with Three-Phase Four-Wire Distribution System	2696
<i>Khalil Sinjari, Saad Alzahrani, Riley Lawson, Samuel Rabick, Joydeep Mitra</i>	
Efficiency Contingency Factors for Commercial EVs Optimal Centralized Charging Stations.....	2701
<i>Antonio Avila, Paras Mandal</i>	
Detection and Location of Electricity Theft Via Convolutional Neural Network in Distribution System	2706
<i>Keejoo Sim, Gyul Lee, Yong-June Shin</i>	
The Need for Modeling the Impact of Behind-The-Meter Generation Trip on Primary Frequency Response Through Operational Experiences in Korea Power System	2711
<i>Jae-Kyeong Kim, Sangho Lee, Jin-Su Kim, Hongseok Choi</i>	
Improved Fault Phase Selection Scheme for Lines Terminated by Inverter Based Resources.....	2712
<i>Yuhao Xie, Yu Liu, Yuan Nie, Dian Lu, Yuxuan Zhu, Xiaodong Zheng</i>	
Outage Forecast-Based Preventative Scheduling Model for Distribution System Resilience Enhancement	2717
<i>Yiyun Yao, Weijia Liu, Rishabh Jain, Santhosh Madasthu, Badrul Chowdhury, Robert Cox</i>	

Facilitating the Service of a Shared PV and Energy Storage System Considering Users' Discrete Choice.....	2722
<i>Yuxuan Zhuang, Zhiyi Li, Xutao Han</i>	
Cooperative-Planning-Oriented Probabilistic Matching of Photovoltaic Generators and Base Station Loads by Considering Historical Scenarios	2727
<i>Yue Xu, Zhiyi Li</i>	
Generation Investment Equilibrium Among Multiple GENCOs Using Modified PMP	2732
<i>Hui Guo, Yunpeng Xiao, Xiuli Wang, Likai Zhang, Wanru Li</i>	
Dual-dVOC Based Controlled Negative Sequence Current Injection for Grid-Forming Inverters Under Asymmetrical Grid Conditions	2737
<i>Arnab Acharya, Raja Ayyanar</i>	
Risk-Averse Self-Scheduling of Storage in Decentralized Markets	2742
<i>Ogun Yurdakul, Farhad Billimoria</i>	
Metrics for Evaluating Grid Service Provision from Communities of Grid-Interactive and Efficient Buildings and Other DER.....	2747
<i>Jason S. Macdonald, Cynthia Regnier</i>	
Optimal Wind Farm Layout with Bastankhah Model.....	2752
<i>Carlos Kebudi, Bruno Fanzeres</i>	
Demand Response on the Operation of Regional Distribution Network: An Australian Case Study.....	2757
<i>B. M. Amin, Rakibuzzaman Shah, Nima Amjady, Kazi Hasan, Usman Bashir Tayab, Syed Islam</i>	
Protection of Multi-Terminal Hybrid Transmission Lines Based on Dynamic States Estimation.....	2762
<i>Jinhao Qiu, Yu Liu, Binglin Wang, Yuhao Xie, Wentao Huang</i>	
Outage Cause Impacts to Overhead and Underground AC Circuit Reliability.....	2767
<i>Svetlana Ekisheva, Mark G. Lauby, Howard Gugel, David Till, Milorad Papic</i>	
Digital Twins for Power Transformers	2772
<i>Reza Jalilzadeh Hamidi</i>	
Event Detection, Classification and Localization in an Active Distribution Grid Using Data-Driven System Identification, Weighted Voting and Graph.....	2777
<i>Amirkhosro Vosughi, Sanjeev Pannala, Anurag Srivastava</i>	
Fault Location on Distribution Cables Using Traveling Waves: A Field Data Study	2778
<i>Yun'An Xu, Sheng Zhang, Yu Liu, Yuan Nie, Lihui Yi</i>	
Two-Settlement Locational Marginal Pricing for Distribution Networks	2783
<i>Ryan C. Triolo, Ram Rajagopal, Frank A. Wolak</i>	
A Group of Single-Ended Time-Domain Line Fault Location Methods Using Breaker Operation Information.....	2788
<i>Mengzhao Duan, Yu Liu, Ze Liu, Xinchun Zou, Zhongtao Guan</i>	
Demographic Information Incorporated Household Energy Consumption Analysis	2793
<i>Jiyu Wang, Xiangqi Zhu, Barry Mather</i>	
Implementation-Aware Tool for Reliable and Resilient Operation of Power Systems (i-TROOPS).....	2798
<i>Rupamathi Jaddivada, Marija Ilic, Xiaochuan Luo, Slava Maslennikov, Tongxin Zheng</i>	

A Free Industry-Grade Education Tool for Bulk Power System Reliability Assessment 2803
Yongli Zhu, Chanan Singh

Enhancing Cyber-Physical Resiliency of Power Grids Under IoT-Enabled Dynamic Botnet Attacks..... 2808
Juntao Chen

A Deep Neural Network Architecture for Composite Reliability Assessment 2813
Dilip Pandit, Nga Nguyen

Author Index