

2023

Conference Program

2023 6th International Conference on Renewable Energy and Power Engineering

September 15-17, 2023 | Beijing, China

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Note

Conference Venue

北京华腾美居酒店 **Mercure Beijing CBD**

地址：中国北京市朝阳区西大望路甲 16 号院 邮编 100124

Address: No.16 Jia, Xi Da Wang Road, Chao Yang District, Beijing 100124, P.R. China



Access to Mercure Beijing CBD

- 距1号线大望路地铁站10分钟步行距离
10 min walk to Subway Line 1 (Dawanglu)
- 距10号线双井地铁站20分钟步行距离
20 min walk to Subway Line 10 (Shuangjing)
- 距7号线九龙山地铁站6分钟步行距离
6 min walk to Subway Line 7 (Jiulongshan)
- 距14号线九龙山地铁站6分钟步行距离
6 min walk to Subway Line 14 (Jiulongshan)
- 距首都国际机场30分钟车程
30 min drive to Capital International Airport
- 距北京火车站15分钟车程
15 min drive to Beijing Railway Station
- 距北京南站20分钟车程
20 min drive to Beijing South Railway Station
- 距北京环球影城度假区25分钟车程
25 min drive to Beijing Universal Studios



◆ Attention Please 注意事项:

- ✓ Don't stay too late in the city, don't be alone in the remote area. Be aware of the strangers who offer you service, signature of charity, etc., at scenic spots.

请勿在会议召开城市长时间逗留，请勿独自前往偏远地区。留心在景点为你提供服务、慈善签名的陌生人。

- ✓ You can search more Beijing Tourist Information and Security tips online:

<https://www.travelchinaguide.com/cityguides/beijing/>

更多北京旅游信息和安全提示请提前在网络上查询了解: <https://www.travelchinaguide.com/cityguides/beijing/>

- ✓ If you have Wechat, you can scan the QR code and send "REPE 2023-Paper ID "to add conference assistant Wechat for better communication

为会议信息能及时传达给各位作者，保障文章顺利出版，会务组开通了微信服务，建议文章每一位作者添加微信号 iconf-ee 并发送 REPE 2023-PAPER ID 添加会议助理，以免错过重要通知。



Conference Information and Tips

1) Onsite Registration

Registration desk (Reception table in the lobby of Mercure Beijing CBD) → Inform the staff of your paper ID → Sign-in → Claim your conference kit.

2) Devices Provided by the Organizer

Laptops (with MS-Office & Adobe Reader) / Projectors & Screen / Laser Sticks

3) Materials Provided by the Presenter

Oral Session: Slides (pptx or pdf version). Format 16:9 is preferred.

Official language: English.

4) Duration of Each Presentation

※ Keynote Speech: 40min, including Q&A / Oral Presentation: 15min, including Q&A


5) Notice

※ Please wear your delegate badge (name tag) for all the conference activities. Lending your participant card to others is not allowed.

※ Please take good care of your valuables at any time during the conference. The conference organizer does not assume any responsibility for the loss of personal belongings of the participants during conference day.

※ **UTC+8. Please be aware of time difference between this and your region/country.**

7) Online Presentation Tips

 Zoom Download	Meeting ID	Link
	Room A: 829 3531 7947	https://us02web.zoom.us/j/82935317947
	Room B: 840 0723 3313	https://us02web.zoom.us/j/84007233313

Note:

We recommend that you install the Zoom platform on your computer before the conference starts. New users can participate in the Zoom meeting without registration.

Participants who are going to do an online presentation are required to join the rehearsal in Zoom on **Friday, September 15. Duration: 3min apiece. Feel free to leave after you finish the test.**

◆Name Setting

Keynote Speaker: KN-Name

Committee: Position-Name

Author: Paper ID-Name

Listener: Listener-Name

◆Useful Links

✧ [Conference Banner](#)

✧ [Zoom Background](#)

Welcome Message

On behalf of Conference Committees, we welcome you to attend 2023 6th International Conference on Renewable Energy and Power Engineering (REPE) held in Beijing, China during September 15-17, 2023, co-sponsored by Tsinghua University, IEEE, PES, Institute of Engineering Thermophysics (Chinese Academy of Sciences) and hosted by the Department of Electrical Engineering at Tsinghua University.

REPE 2023 welcomes author submission of papers from any branch of renewable energy and power engineering, and their applications or other topic areas. The areas covered by the include, but not limited to: Control Models, Functional Analysis, and Stability Monitoring in Power Systems, Design and Optimized Scheduling of Integrated Energy Systems, New Technologies for Power Supply and Energy Storage in Power Systems, Power Load Calculation and Data Analysis, Novel Power System Construction and Energy Management System.

The conference aims to provide an interactive communication platform for practitioners to learn about the most cutting-edge academic and industrial application trends, to share the latest scientific research and technological achievements, innovative ideas and scientific methods in the field of renewable energy and power engineering, to improve the level of academic research and industrial application in the field of intelligence so as to serve the global strategic deployment of new and old kinetic energy conversion, and promotes technology research, development, and application home and abroad.

We feel deeply grateful to all that have contributed to make this event possible: authors, the conference steering committee, the conference speakers, and the peer reviewers. Thanks are also extended to the conference administrative committee and the supporters for their tireless efforts throughout the course of the conference.

We hope that all participants benefit from the conference, and enjoy the architectural, cultural and natural beauty of Beijing, China.

With Warmest Regards,
Conference Organizing Committees

Conference Committee

Conference Advisory Committee

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Agenda Overview (UTC+8)


Friday, September 15, 2023		
Onsite Registration	10:00-17:00	Reception table in the lobby of Main Building 主楼一层大厅
Zoom Test for online presenters	14:00-17:30	<u>ZOOM ID: 829 3531 7947</u>

Zoom Test Timetable

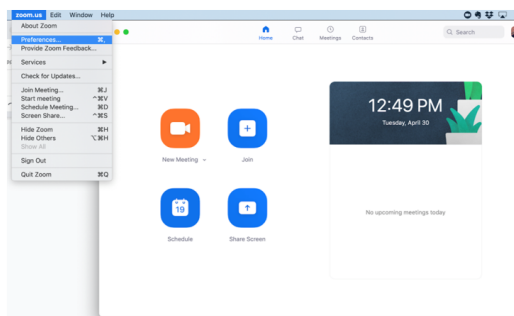
- ✧ Participants who are going to do an online presentation are required to join the rehearsal in Zoom on Friday, September 15, 2023. Duration: 3min apiece. Feel free to leave after you finish the test.
- ✧ We will test control panel including screen sharing, audio, video and “Raise Hand” feature, etc. Please get your presentation slides and computer equipment prepared beforehand.


14:00-14:40	PE539 PE510 PE532 PE541 PE553 PE554 PE576 PE582 PE572 PE5001& PE534 PE525
14:40-15:20	PE565&PE564 PE529 PE558 PE573 PE583 PE592 PE500 PE546 PE537&PE535&PE522
15:20-15:50	PE504 PE509 PE548 PE562 PE568 PE575 PE590
15:50-16:30	PE569 PE513 PE520 PE560 PE563 PE508 PE571 PE536 PE559
16:30-17:30	Alternative time for participants who are unavailable at allocated time. Other online participants, includes but not limited to keynote speaker, session chair, committee member, listener.


Zoom Guidance

 You can join the meeting without sign-in process. Just put the meeting ID and join us.

 URL: <https://zoom.us/download>



 Each meeting has a unique 9, 10, or 11-digit number called a **meeting ID** that will be required to join a Zoom meeting.

 For any questions on the meeting day, you can text privately to “Assistant” for help.



Audio muted and video off (both indicated by a red slash).

Click to open the Participants box. This will allow you to “Raise Hand”.

To share screen or contents.

Click to open the Chat box. This will allow you to chat with Hosts and Participants.

Saturday, September 16, 2023

Opening Ceremony & Keynote Speech

Meeting Room Innovation, B1 Floor, Main Building
主楼 B1 层 进取厅
ZOOM ID: **829 3531 7947**

Chairman: Prof. Lin Chen, Chinese Academy of Sciences, China

9:00-9:10 **Opening Remarks**

Prof. Chao Lu, Tsinghua University, China(清华大学电机系副系主任)

9:10-9:50 **Keynote Speech I: New Paradigm of Power System Operation and Control**

Prof. Janusz Bialek, (Fellow of the IEEE) Newcastle University, UK

Keynote Speech II: Application of Artificial Intelligence Methods to Wind Power Forecasting

9:50-10:30 Prof. Jizhong Zhu, (IEEE Fellow, IET Fellow, CSEE Fellow, AAIA Fellow, Alstom Fellow) South China University of Technology, China

10:30-11:00

Group Photo & Coffee Break

11:00-11:40 **Keynote Speech III: Dynamic Modeling for Analysis of Wind Farm and Grid Interaction**

Prof. Bikash Pal, (Fellow of the IEEE) Imperial College London, UK

11:40-12:20

Keynote Speech IV: Grid-Forming Converters and Resources for 100 % Renewable Power Systems

Prof. Kai Strunz, Technical University of Berlin, Germany

12:20-13:30

Lunch: La Vie ADD Restaurant, B1 Floor, Main Building / 主楼 B1 层 拉维全日餐厅

Parallel Session (Onsite)

Onsite Session 1 (13:30-16:00)

Meeting Room Innovation, B1 Floor, Main Building
主楼 B1 层 进取厅

Control Models, Functional Analysis, and Stability Monitoring in Power Systems

PE585 PE511 PE527 PE512 PE538 PE552 PE561
PE581 PE589 PE574

Onsite Session 2 (13:30-16:00)

Meeting Room Creativity, 3rd Floor, Conference Centre
会议中心三层 创新厅

New Technologies for Power Supply and Energy Storage in Power Systems

PE580 PE5003-A PE530 PE533 PE531 PE584 PE542
PE577 PE586 PE579

16:00-16:15

Coffee Break

Onsite Session 3 (16:15-18:30)

Meeting Room Innovation, B1 Floor, Main Building
主楼 B1 层 进取厅

Design and Optimized Scheduling of Integrated Energy Systems

PE5002-A PE567 PE516 PE543 PE551 PE544 PE570
PE593 PE549-A

Onsite Session 4 (16:15-18:45)

Meeting Room Creativity, 3rd Floor, Conference Centre
会议中心三层 创新厅

Power Load Calculation and Data Analysis

PE578 PE566 PE587 PE524 PE588 PE547 PE591
PE557 PE550 PE594

18:45-20:30

Dinner: Privilege Meeting Room I, 1st Floor, Executive Wing / 嘉宾楼一层 嘉宾一厅

Parallel Session (Online)	
Online Session 1 (13:30-16:15)	Room A: ZOOM ID: <u>829 3531 7947</u>
Integrated Energy System and Electricity Market Management	PE539 PE510 PE532 PE541 PE553 PE554 PE576 PE582 PE572 PE5001 PE525
Online Session 2 (13:30-16:00)	Room B: ZOOM ID: <u>840 0723 3313</u>
Control and Scheduling in Smart Grid and Microgrid Systems	PE565 PE529 PE564 PE558 PE573 PE583 PE592 PE5004 PE546 PE537
16:00-16:30	
Online Session 3 (16:30-18:45)	Room A: ZOOM ID: <u>829 3531 7947</u>
Intelligent Electrical Equipment Control and Reliability Assessment	PE504 PE509 PE548 PE562 PE568 PE575 PE590 PE534 PE535
Online Session 4 (16:15-18:45)	Room B: ZOOM ID: <u>840 0723 3313</u>
Novel Power System Construction and Energy Management System	PE522 PE569 PE513 PE520 PE560 PE563 PE508 PE571 PE536 PE559

Keynote Speaker I (UTC+8)

Saturday September 16, 2023
9:10-9:50

Meeting Room Innovation, B1 Floor, Main Building
主楼 B1 层 进取厅
ZOOM ID: [829 3531 7947](#)



[Prof. Janusz Bialek](#),
IEEE Fellow, Newcastle University, UK

Speech Title: New Paradigm of Power System Operation and Control

Abstract: Power systems are undergoing the greatest transformation since the War of Currents (DC vs AC) was won by AC at the end of the 19th Century. Since then, power systems have been powered by large, centrally-controlled, thermal/hydro/nuclear power stations and their technical characteristics were determined by physics of synchronous machines (SM) used to convert mechanical/thermal energy into electricity. However the combined drivers of decarbonisation and reduced costs of renewables result in an increasing penetration of smaller wind/solar stations and battery energy storage systems (BESS) (jointly referred to as Inverter-Based Resources (IBRs)) which are connected to the grid asynchronously by means of power electronics (controllable inverters). This means that the overall system technical characteristics and behaviour are no longer determined by physics of SM but by control algorithms of inverters which has profound consequences for power system operation and control. The presentation will discuss those changes and compare the way Grid Following Inverters and Grid Forming Inverters can be used to address the needs of IBR-based systems. The new challenges of modelling and analysing stability of the IBR-based grid will also be discussed.

Janusz Bialek (FIEEE) received his MEng and PhD degrees in Electrical Engineering from Warsaw University of Technology, Poland. He has been Professor of Power and Energy Systems at Newcastle University, UK, since 2019. Previously he held Full Professor positions at the University of Edinburgh (2003-2009), Durham University (2009-2014) and Skolkovo Institute of Science and Technology (Skoltech), Russia, (2014-2022) where he was the founding Director of Center for Energy Systems. He was also Independent Non-Executive Director of KEGOC, Kazakhstan Grid Operating Company (2015-2020). Janusz has been Principal Investigator of multi-million collaborative research grants funded by the Research Councils UK and the industry, and a consultant to the UK government, European Commission, and International Energy Agency. His main research interests are in the application of advanced mathematical methods to address techno-economic problems of achieving low-carbon power systems and he has published widely on integration of renewable generation in power systems, smart grids, power system dynamics, preventing electricity blackouts and power markets.

Keynote Speaker II (UTC+8)

Saturday September 16, 2023
9:50-10:30

Meeting Room Innovation, B1 Floor, Main Building
主楼 B1 层 进取厅
ZOOM ID: [829 3531 7947](https://us03zoom.us/j/82935317947)



Prof. Jizhong Zhu
IEEE Fellow, IET Fellow, CSEE Fellow, AAIA Fellow, Alstom Fellow
South China University of Technology, China

Speech Title: Application of Artificial Intelligence Methods to Wind Power Forecasting

Abstract: This presentation discusses the application of artificial intelligence methods to wind power forecasting in power system. It uses a two-layer Gated Recurrent Unit (GRU) to build a wind power time series forecasting model. To accurately predict the sudden change of the time series, we use differentiable dynamic time warping (DTW) to construct shape and time loss (STL) to improve the loss function of GRU. STL decouples the shape and time of the time series and provides the metrics of the two respectively. The test results on the wind power data of the Global Energy Forecasting Competition 2014 (GEFCom2014) show that compared with the traditional mean squared error (MSE) loss, the STL has a higher prediction accuracy under non-linear and non-stationary time series.

Prof. Jizhong Zhu (IEEE Fellow, IET Fellow, CSEE Fellow, AAIA Fellow, Alstom Fellow) received the B.S. degree, M.S. degree and Ph.D. degree in electrical engineering from Chongqing University in 1985, 1987, and Feb. 1990, respectively. Dr. Zhu was a professor in Chongqing University. He won seven provincial and ministerial awards for scientific and technological progress, and was selected as one of four outstanding young scientists working in China by The Royal Society of UK and China Science & Technology Association and awarded Royal Society Fellowship in 1994, as well as awarded the national research prize "Fok Ying-Tung Excellent Young Teacher Medal" in 1996. He worked in a variety of places all over the world, including Chongqing University in China, Brunel University in UK, National University of Singapore, Howard University in USA, and ALSTOM Grid Inc., China Southern Power Grid and South China University of Technology (since 2019).

He is currently a professor and director of ISESOC center in SCUT and National Distinguished Expert in China. He is Chair of IEEE P2781 and P2783 Standard working groups since 2018, Chair of IEEE PES SBLC Technical Committee (China), member of IEEE SMC Technical Committee on intelligent power and energy systems, and member of IEEE SMC Standard Committee, as well as was Chair of IEEE PES SBLC Loads Subcommittee during 2017-2019.

His research interest is integrated smart energy system optimal operation and control (ISESOC), as well as power system analysis, smart grid and renewable energy applications. He has published six books as a sole author, and published over 300 papers in the international journals and conferences.

Keynote Speaker III (UTC+8)

Saturday September 16, 2023
11:00-11:40

Meeting Room Innovation, B1 Floor, Main Building
主楼 B1 层 进取厅
ZOOM ID: 829 3531 7947



Prof. Bikash Pal
Fellow of the IEEE, Imperial College London, UK

Speech Title: Dynamic Modeling for Analysis of Wind Farm and Grid Interaction

Abstract: Electrical generation, transmission and distribution systems all over the world have entered a period of significant renewal and technological change. There have been phenomenal changes/deployments in technology of generation driven by the worldwide emphasis on energy from wind and solar as a sustainable solution to our energy need. Increasingly energy demand from heating and transportation will be met by electricity. So, to accommodate changes in either end the transmission grid is required to operate in more responsive manner. This is the most credible challenge in smart transmission grid operation today. Some of the recent wind farm operations have grabbed media headlines of not being connectable to the grid. While the debate is on whether it is the wind farm or the grid is the cause, the balance of the debate is shifting towards the integration and control aspect of these two technologies. This keynote will briefly mention the recent major problems in connecting big wind farms to the grid. It will then identify few possible specific technical reasons supported by the general technical insights gathered from detailed technical study conducted at Bikash Pal's research group at Imperial College London. Future research challenges and opportunities will be highlighted.

Dr. Bikash Pal is a Professor of Power Systems at Imperial College London (ICL). He is research active in power system stability, control, and estimation. Currently he is leading a six university UK-China research consortium on Resilient Operation of Sustainable Energy Systems (ROSES) as part of EPSRC-NSFC Programme on Sustainable Energy Supply. He led UK-China research consortium project on Power network stability with grid scale storage (2014-2017): He also led an eight- university UK-India research consortium project (2013-2017) on smart grid stability and control. His research is conducted in strategic partnership with ABB, SIEMENS, GE Grid Solutions, UK, and National Grid, UK. UK Power Networks. SIEMENS R&D collaborated with him to develop fast power flow and volt-var control tools in Spectrum Power, an advanced module for distribution management system solution from SIEMENS. This is now commissioned in distribution control centres in Columbia, Bosnia Norway and Azerbaijan serving 15 million customers in these countries. GE commissioned sequel of projects with him to analyse and solve wind farm HVDC grid interaction problems (2013-2019). Prof Pal was the chief technical consultant for a panel of experts appointed by the UNFCCC CDM (United Nations Framework Convention on Climate Change Clean Development Mechanism). He has offered trainings in Chile, Qatar, UAE, Malaysia and India in power system protections, stability and control topics. He has developed and validated a prize winning 68-bus power system model, which now forms a part of IEEE Benchmark Systems as a standard for researchers to validate their innovations in stability analysis and control design. He was the Editor-in-Chief of IEEE Transactions on Sustainable Energy (2012-2017) and Editor-in-Chief of IET Generation, Transmission and Distribution (2005-2012). He is Vice President, PES Publications (2019-). In 2016, his research team won the President's outstanding research team award at Imperial College London (ICL). He is Fellow of IEEE for his contribution to power system stability and control. He is an IEEE Distinguished Lecturer in Power distribution system estimation and control. He has published about 125 papers in IEEE Transactions and authored four books in power system modelling, dynamics, estimations and control. He was Otto Monstead Professor at Denmark Technical University (DTU) (2019) and Mercator Professor sponsored by German Research Foundation (DFG) at University of Duisburg-Essen in 2011. He worked as faculty at IIT Kanpur, India. He holds a Visiting Professorship at Tsinghua University, China.

Keynote Speaker IV (UTC+8)

Saturday September 16, 2023
11:40-12:20

Meeting Room Innovation, B1 Floor, Main Building
主楼 B1 层 进取厅
ZOOM ID: 829 3531 7947



[Prof. Kai Strunz](#)
Technical University of Berlin, Germany

Speech Title: Grid-Forming Converters and Resources for 100 % Renewable Power Systems

Abstract: In this presentation, a control scheme for power electronic grid-forming conversion is developed as an enabler for a system-wide integration of 100 % renewable energy sources (RESs) in power systems. The scheme culminates in the concept of the gridforming resource (GFR) that brings together both the control technologies of the renewable power resource and the grid-forming converter. As part of a GFRs, the proposed grid-forming converter controller is shown to be practical in offering inertial response emulation and frequency control based on droop characteristics to maintain power balances rapidly and to control voltages. The integration with the control of wind energy conversion systems (WECSs) creates a grid-forming wind park as the prototype of the GFR. Feedforward signals exchanged between grid and resourceside controls enhance fast overall controllability. The principal claims are substantiated for a European scenario example with the Irish power transmission system in the focus. The model comprises more than 2000 individual WECSs grouped into wind parks, where ten wind parks function as GFRs. The transient behavior of this scenario comprising 100 % converter-interfaced generation is shown to be superior compared with a counterpart case comprising synchronous machinery. The results validate the fact that GFRs with their proposed controls are expected to be key elements in creating a renewable and secure electric power system.

Dr. KAI STRUNZ received the Dr.-Ing. degree (summa cum laude) from Saarland University, Saarbrücken, Germany. From 1995 to 1997, he was with Brunel University London. From 1997 to 2002, he was with the Division Recherche et Développement of Electricité de France (EDF) in Paris. From 2002 to 2007, he was an Assistant Professor of electrical engineering with the University of Washington, Seattle, WA, USA. Since 2007, he has been a Professor of Sustainable Electric Networks and Sources of Energy with Technische Universität Berlin (TU Berlin), Germany.

Dr. Strunz received the IEEE PES Prize Paper Award, in 2015 and 2023, the IEEE Journal of Emerging and Selected Topics in Power Electronics First Prize Paper Award, in 2015, and the 2020 Best Paper Award in the field of electric machines and drives by IEEE Transactions on Energy Conversion. He was the Chairperson of the Conference IEEE PES Innovative Smart Grid Technologies Europe, in 2012. He is the Chair of the IEEE PES Committee on Energy Development and Power Generation and the Co-Chair of the IEEE PES Working Group on Dynamic Performance and Modeling of HVDC Systems and Power Electronics for Transmission Systems. On behalf of the Intergovernmental Panel on Climate Change (IPCC), he acted as the Review Editor of the Special Report on Renewable Energy Sources and Climate Change Mitigation. He is a section editor of IET's The Journal of Engineering.

Onsite Session 1 (UTC+8)

Saturday September 16, 2023

13:30-16:00

Meeting Room Innovation, B1 Floor, Main Building

主楼 B1 层 进取厅

Control Models, Functional Analysis, and Stability Monitoring in Power Systems

Chairperson: Assoc. Prof. Hua Xie, Beijing Jiaotong University, China

PE585 13:30-13:45	Function Specifications of Source-Grid-Load-Storage Platform Hua Xie , Beijing Jiaotong University, China
PE511 13:45-14:00	Evolution Characteristics of Dielectric Constant and Resistivity of Different Oil-impregnated Paperboard with Increasing Aging Time Han Zhang , North China Electric Power University, China
PE527 14:00-14:15	A Power Switching Control Method of Buck Converter Based on Power Switching Model Weipeng Li , Xi'an University of Technology, China
PE512 14:15-14:30	Research on Capacitor Aging Behavior and Prediction of Remaining Service Life Jiaxuan Yan , North China Electric Power University, China
PE538 14:30-14:45	Control of Parallel DVR with Demand-side Response under Complex Operating Conditions Xuan Wang , C-EPRI Electric Power Engineering Co., Ltd., China
PE552 14:45-15:00	Power Shaping Control of Single-Phase Grid-Connected Inverter Based on Brayton-Moser Model Yumin Fan , Beijing Information Science and Technology University, China
PE561 15:00-15:15	Study on the fault diagnosis of rolling bearings based on the CNN-BiLSTM method Sun Shuo , Navy Submarine Academy, China
PE581 15:15-15:30	Research on Control Parameters Analysis and Oscillation Suppression Strategy of Permanent Magnetic Synchronous Generator Based on Grid-Forming Control Bixing Ren , State Grid Jiangsu Electric Power Company Ltd. Research Institute, China
PE589 15:30-15:45	An Integrated Optical Method of PV-ESS-CHG V2G Station Based on PSO Algorithm Peizheng Zhang , Tsinghua University, China
PE574 15:45-16:00	Research on Voltage Source and Current Source Control of Three-phase Grid-connected Converter Chang Liu , Beijing Information Science and Technology University, China

Onsite Session 2 (UTC+8)

Saturday September 16, 2023

13:30-16:00

Meeting Room Creativity, 3rd Floor, Conference Centre

会议中心三层 创新厅

New Technologies for Power Supply and Energy Storage in Power Systems

Chairperson: Assoc. Prof. Qingguang Yu, Tsinghua University, China

PE580 13:30-13:45	V2G Hierarchical Grouping Control Considering Users' Behaviour Flexibility Qingguang Yu , Tsinghua University, China
PE5003-A 13:45-14:00	An Optimization Model for Supporting Driver's Decisions Regarding the Selection of an Electric Vehicle Charging Station Jacek Kamiński and Przemysław Kaszyński , Mineral and Energy Economy Research Institute of the Polish Academy of Sciences, Poland
PE530 14:00-14:15	Research on Capacity Allocation Optimization and Operational Strategies with Multiple Types of Energy Storage under New Energy Integration Xi Tong , North China Electric Power University, China
PE533 14:15-14:30	Day-ahead Scheduling for Improving the Transfer Capability Utilization Rate of Transmission Interface with Battery Energy Storage Ran Ding , State Grid Jibei Electric Power Company Limited, Beijing, China
PE531 14:30-14:45	Multi-type energy storage synergizes new power system operation optimization Jinhang Li , North China Electric Power University, China
PE584 14:45-15:00	A Novel of Source-Grid-Load-Storage Integrated Cooperative System Hua Xie , Beijing Jiaotong University, China
PE542 15:00-15:15	Multi-source Joint Optimal Scheduling of Wind-PV-thermal-storage with Frequency Modulation Capability of Energy Storage Chuanwei Tang , North China Electric Power University, China
PE577 15:15-15:30	Research on Evaluation System of Modern Power Supply Service System Min Guo , Tsinghua University, China
PE586 15:30-15:45	Data Architecture of Source-Grid-Load-Storage Platform Hua Xie , Beijing Jiaotong University, China
PE579 15:45-16:00	Cluster Control Technology of AC and DC Charging and Replacing Facilities for Electric Vehicle Leidong Yuan , Tsinghua University, China

Onsite Session 3 (UTC+8)

Saturday September 16, 2023

16:15-18:30

Meeting Room Innovation, B1 Floor, Main Building

主楼 B1 层 进取厅

Design and Optimized Scheduling of Integrated Energy Systems

Chairperson: Dr. Pablo Benalcazar, Mineral and Energy Economy Research Institute of the Polish Academy of Sciences, Poland

PE5002-A 16:15-16:30	Electricity Cost Reductions for Energy-Intensive Companies: An Optimization Model of Hybrid Energy Systems Pablo Benalcazar and Aleksandra Komorowska , Mineral and Energy Economy Research Institute of the Polish Academy of Sciences, Poland
PE567 16:30-16:45	Research on the impact of carbon emission reduction technology on the cost of transmission and transformation project based on hierarchical analysis method Lanxin Fan , North China Electric Power University, China
PE516 16:45-17:00	BIM-Based Solar PV Modelling for Public Buildings – A New Zealand Case Study John Jiang , The University of Auckland, New Zealand
PE543 17:00-17:15	Reactive Power Optimization of Renewable Energy Base Considering Reactive Power Adjustment Capacity of Grid-forming Energy Storage Station Hao Cui , North China Electric Power University, China
PE551 17:15-17:30	Short-term Wind Load Prediction Considering Coupling Characteristics of Multi-energy Complementary System Zhen Zhong , Nanjing Haoqing Information Technology Co., Ltd, China
PE544 17:30-17:45	Optimal Operation of User-side Integrated Energy System Containing Biomass CHP Chuanwei Tang , North China Electric Power University, China
PE570 17:45-18:00	Human-Tolerance-Oriented Fault Recovery Strategy for Regional Integrated Energy Systems Jie Du , Tianjin University, China
PE593 18:00-18:15	Research on Key Challenges and Technologies Ahead for Energy Internet to Net Zero Emissions Rui LI , State Grid Energy Research Institute Co., Ltd, China
PE549-A 18:15-18:30	Smart Energy Technology for Renewable Energy Consumption and Its Utilization at Airports Qin Jia , China Academy of Civil Aviation Science and Technology, China

Onsite Session 4 (UTC+8)

Saturday September 16, 2023

16:15-18:45

Meeting Room Creativity, 3rd Floor, Conference Centre

会议中心三层 创新厅

Power Load Calculation and Data Analysis

Chairperson: Prof. Gong Feixiang, China Electric Power Research Institute, China

PE578 16:15-16:30	Research on Clustering Approach of Interruptible Load in Power Demand Side Management RuiQi Si , Tsinghua University, China
PE566 16:30-16:45	Comprehensive Evaluation and Optimal Selection of Carbon Reduction Technologies for Power Transmission and Transformation Projects Shuyuan Zhao , North China Electric Power University, China
PE587 16:45-17:00	Optimal Scheduling of Microgrid Based on Multi-objective Particle Swarm Optimization Algorithm Di Yang , Tsinghua University, China
PE524 17:00-17:15	Performance Analysis of Flat-chip Solid Oxide Fuel Cells with Discrete Interconnector Designs Jiawei Liao , Zhejiang University, China
PE588 17:15-17:30	Approach of Flexible Load Control Strategy Based on Group Control and Regulate for PV-ESS-CHG V2G Stations Xiaoyu Li , Tsinghua University, China
PE547 17:30-17:45	Architecture design of energy Internet regulation system based on cloud-edge collaboration Kaiyue Zhang , Beijing Institute of Petrochemical Technology, Beijing, China
PE591 17:45-18:00	Research on Big Data Scenario of Power Marketing Service System Zhongjun Wu , Tsinghua University, China
PE557 18:00-18:15	Study of overhead grounding wire and preformed armor rods port based on multi-physical field coupling Deliang Liu , Shanwei Power Supply Bureau, China
PE550 18:15-18:30	Joint Optimization of Industrial Process and Power Demand Response A Case Study in Cement Gong Feixiang , China Electric Power Research Institute, China
PE594 18:30-18:45	Evaluation and Visualization System of Sustainable Energy Hosting Capacity of the County-wide Distribution Network Based on Safety Constraints Qingguang Yu , Tsinghua University, China

Online Session 1 (UTC+8)

Saturday September 16, 2023

13:30-16:15

Room A: [ZOOM ID: 829 3531 7947](#)

Integrated Energy System and Electricity Market Management

Chairperson:

PE539 13:30-13:45	Reducing Lead Iodide Leaching in Perovskite Solar Cells with a Chelating Bioplastic Layer Sasha Masson , The Harker School, USA
PE510 13:45-14:00	Optimal Operation of Integrated Energy System with Coupled Energy Storage Based on Stackelberg Game Yifan Zhu , Zhejiang University, China
PE532 14:00-14:15	Research on Spot Market Clearing Method of Electric Energy Storage based on Quantity Declaration Mode Binye Ni , Electric Power Dispatching Control Center of Guangdong Grid Co.Ltd., GuangZhou, China
PE541 14:15-14:30	Research on Evaluation Method for Potential Value of Comprehensive Energy Metering Data Jian Dou , China Electric Power Research Institute Co., Ltd, Beijing, China
PE553 14:30-14:45	A Bilateral Electricity Market Settlement Model Considering Unbalanced Fund Handling Yang Xu , State Grid Zhejiang Electric Power Co., Ltd, China
PE554 14:45-15:00	Effect of Wave Conditions on Offshore Floating Photovoltaic Power Generation Ying Tian , Tianjin University of Technology, China
PE576 15:00-15:15	Wind Farm Frequency Support Strategy Considering Adjustable Capacity Zheng Wang , North China Electric Power University, China
PE582 15:15-15:30	An Integrated Demand Response-Based Energy Management Strategy for Integrated Energy System Based on Deep Reinforcement Learning Baohui Han , Zhejiang University, China
PE572 15:30-15:45	Multi-step short-term wind power prediction based on spatio-temporal graph convolutional networks Zheng Liu , Xiangtan University, China
PE5001 15:45-16:00	Integrating Battery Energy Storage Systems in Hot Desert Regions Kenza Maher , Qatar Environment and Energy Research Institute (QEERI), Qatar; Hamad Bin Khalifa University (HBKU), Qatar Foundation (QF), Qatar
PE525 16:00-16:15	Generation of synthetic hot water demand profiles with dynamic Markov chains models for end-user-friendly demand response Giscard Binin , Tshwane University of Technology, South Africa

Online Session 2 (UTC+8)

Saturday September 16, 2023

13:30-16:00

Room B: [ZOOM ID: 840 0723 3313](#)

Control and Scheduling in Smart Grid and Microgrid Systems

Chairperson:

PE565 13:30-13:45	Optimal Schedule Strategy for Peak Shaving Based on the Coordinated Operation of Flexible Resources in Multi-Energy Microgrid Libin Yang , Economic and Technological Research Institute Of State Grid Qinghai Electric Power Company, China
PE529 13:45-14:00	An intra-day rolling scheduling optimization method considering the dynamic adjustment of operation reserve Deliang Zhang , Beijing QU Creative Technology Co., Ltd. Beijing, China
PE564 14:00-14:15	Hierarchical Interactive Mechanism for Flexible Demand Response of Multi-Energy Microgrids Libin Yang , Economic and Technological Research Institute Of State Grid Qinghai Electric Power Company, China
PE558 14:15-14:30	High Impedance Grounding Fault Protection for Low-resistance Grounding System Based on the Ratio of Phase Active Power Variation Huamin Liang , South China University of Technology, China
PE573 14:30-14:45	Distribution Network Structure Planning Method including DC Distribution Network Pengli Li , China Electric Power Research Institute, China
PE583 14:45-15:00	Reward Mechanism Design for Deep Reinforcement Learning-Based Microgrid Energy Management, Mingjie Hu , Zhejiang University, China
PE592 15:00-15:15	Power Optimization Allocation Method of Direct-Drive Wind Turbines for Mitigating Grid Transient Frequency Dip Jinling Qi , Harbin Institute of Technology, China
PE5004 15:15-15:30	Flexible Transmission network expansion planning considering multi-path deep peak regulation and network structure regulation under uncertainty Su Ma , Shanghai Jiao Tong University, China
PE546 15:30-15:45	A Multi-Objective Optimal Scheduling Model for Electric Vehicle Charging Considering Distribution Network Operation Shichao Qiao , North China Electric Power University, China
PE537 15:45-16:00	Modeling and Analysis of a Battery-Supercapacitor Hybrid Energy Storage System (HESS) for Renewable Energy Applications Thato P Ratau , Tshwane University of Technology, South Africa

Online Session 3 (UTC+8)

Saturday September 16, 2023

16:30-18:45

Room A: [ZOOM ID: 829 3531 7947](#)

Intelligent Electrical Equipment Control and Reliability Assessment

Chairperson: Dr. Rao Fu, Shandong Jianzhu University, China

PE504 16:30-16:45	Multi-module input series output parallel DC/DC converter study of control strategies Qian Liu , Beijing Jiaotong University, China
PE509 16:45-17:00	The Research on Wind turbine blade fatigue test method Jiarui Li , Wuhan Polytechnic University, China
PE548 17:00-17:15	Service Life Prediction Method of Transformer in Prefabricated Substation Based on BOA-BP Neural Network Rao Fu , Shandong Jianzhu University, China
PE562 17:15-17:30	Performance Evaluation of Transformer Substations Based on EWM-GRA Chengyu Jia , North China Electric Power University, China
PE568 17:30-17:45	Research on Interturn Short Circuit Fault Diagnosis of Permanent Magnet Synchronous Generator Based on CWGAN-GP and CNN-TSA-GRU Xiaopeng Chai , Northeastern University, China
PE575 17:45-18:00	Research on Power Line Identification Based on 4D Millimeter Wave Radar Ao Li , Hefei University of Technology, China
PE590 18:00-18:15	Adaptability Research of the Dynamic Equivalent Model of Variable Frequency Drive Motors Chao Sun , Hohai University, China
PE534 18:15-18:30	Study of 18650 LiFePO ₄ Lithium-Ion Battery Cells for Stationary and EV Applications: Performance, Reliability, and Safety Kenza Maher , Qatar Environment and Energy Research Institute (QEERI), Qatar; Hamad Bin Khalifa University (HBKU), Qatar Foundation (QF), Qatar
PE535 18:30-18:45	Induction Motor Faults Identification Using Support Vector Machine Thato P Ratau , Tshwane University of Technology, South Africa

Online Session 4 (UTC+8)

Saturday September 16, 2023

16:15-18:45

Room B: [ZOOM ID: 840 0723 3313](#)

Novel Power System Construction and Energy Management System

Chairperson: Dr. Ningning Ma, Tsinghua University, China

PE522 16:15-16:30	Impact of Load Models on Elevated Neutral-to-Earth Voltage (NEV) in Distribution Systems Thato P Ratau , Tshwane University of Technology, South Africa
PE569 16:30-16:45	Protection Strategy of Sub-/Super-synchronous in Power Systems with High-Penetration Wind Power Ningning Ma , Tsinghua University, China
PE513 16:45-17:00	Optimization and Scheduling of Distributed Flexible Resources in Novel Power System Based on Consistency Algorithm Baosheng Chen , Economic and Technical Research Institute State Grid Ningxia Electric Power Co., Ltd, China
PE520 17:00-17:15	Research on Comprehensive Evaluation of New Power System Construction Caixing Liu , Beijing Jiaotong University, China
PE560 17:15-17:30	Unit Commitment Strategy Based on Multi Energy Power System Fan Yang , Dalian Maritime University, China
PE563 17:30-17:45	A novel grid- connected inverter circuit based on first level SPWM modulation Qiang Wang , Shanghai Institute of Space Power-Sources, China
PE508 17:45-18:00	Design and Performance Analysis of Thermal Power Coupled Thermal Energy Storage with Integrated Steam Ejector Weiwei Ma , Zhejiang University, China
PE571 18:00-18:15	Intelligent Building Indoor Temperature Control Based on Deep Reinforcement Learning Botao Jiang , State Grid Zhejiang Electric Power Co. Ltd., China
PE536 18:15-18:30	Large-Scale Renewable Energy Power Aggregation Modeling Technology Dehai Zhang , Sichuan Energy Internet Research Institute, Tsinghua University, China
PE559 18:30-18:45	Multi-objective optimal dispatch with electricity and heat energy Mingyu Liu , Dalian Maritime University, China

