



# MEEPS- 2021

Manchester Energy and Electrical Power Systems  
Symposium (MEEPS) 2021

**“Power Systems in a Post-Pandemic Era”**

3rd-5th November 2021, 2pm-5pm (GMT)

MEEPS 2021 Programme e-Leaflet

Organised by



**The IEEE PES  
Student Branch Chapter**  
The University of Manchester

IEEE Power & Energy Society  
**Women  
in Power**



**IEEE**  
United Kingdom and Ireland Section

Sponsored by



**MANCHESTER**  
1824  
The University of Manchester

# Welcome

**Manchester**, the birthplace of the industrial revolution, has a proud history in science, politics, music, arts and sport. The city combines this heritage with a progressive vision to be a city that delivers surprise and delight in equal measures.

**The University of Manchester (UoM)** traces its roots to the formation of the Mechanics' Institute in 1824. The university is now the second largest in the UK, with more than 40,000 students and 10,000 staff. 25 Nobel laureates are among its past and present members.

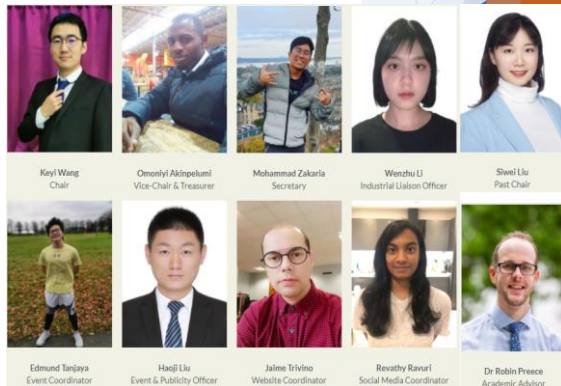
We are one of the largest **Electrical and Electronic Engineering (EEE)** Departments in the UK, and we are renowned for our theoretical and applied research. The power and energy group work closely with the industry to solve the energy challenges, aiming at providing low-carbon affordable energy and embracing the coming industry 4.0 era.

**The IEEE PES Student Branch Chapter at The University of Manchester** was officially launched on 28 June 2012. The Chapter is driven by PhD students in EEE and an academic advisor. It is the first IEEE PES Student Chapter in the UKRI Section and boasts more members than any other UK university-based student branch.

During the coronavirus pandemic, we shift our activities to online forms. We are active as usual and have been hosting educational and technical events.

## Achievements:

- 2020, 2019, 2018, 2017 and 2016 IEEE PES High Performance Student Branch Chapter
- 2019 IEEE Region 8 Chapter of the Year Award (for Medium Size Student Branch)
- 2019 IEEE Region 8 Student Branch Website Contest – 4th Place
- 2015 IEEE Darrel Chong Student Activity Award – SILVER
- 2014 IEEE Darrel Chong Student Activity Award – BRONZE



North Campus, The University of Manchester

Current committee members, IEEE PES SBC at UoM

# Programme—Day 1

## Opening

**14:00 – 14:05**     **Welcome**  
Keyi Wang, The University of Manchester

**14:05 – 14:20**     **Opening Address: Equipment Challenges in Future High Voltage Power Systems**  
Ian Cotton, The University of Manchester

## Planning and Operation of Future Power Networks

**14:20 – 14:50**     **Keynote Speech: The Death of Moore's Law**  
Max McFarlane, TNEI

**14:50 – 15:10**     **Reliability Assessment of Cyber-Physical Voltage Control System**  
Omoniyi Akinpelumi, The University of Manchester

**15:10 – 15:30**     **Comparative Studies on Cost, Reliability and Resilience of Off-Grid Energy Systems**  
Wenzhu Li, The University of Manchester

**15:30 – 15:40**     **Break**

**15:40 – 16:00**     **Assessment of the Impact of Extreme Events (Windstorm) on the Resilience of Power Systems**  
Mohd Khairi Bin Mohd Zambri, The University of Manchester

**16:00 – 16:20**     **Simultaneous Fast Frequency Control and Intelligent Delay Compensation for Demand Response in Renewable Rich Power Systems**  
Dlzar Al Kez, Queen's University Belfast

**16:20 – 16:40**     **Dynamic Grid Flexibility: Estimation, Applications and Mitigation**  
Debargha Brahma, Indian Institute of Technology Delhi

**16:40 – 17:00**     **Electricity Markets in Presence of Strategic Prosumers**  
Sepehr Ramyar, University of California, Santa Cruz

**Judges of Presentations:** Angeliki (Kelly) Loukatou, Max McFarlane

## Presentation Session 1

# Programme—Day 2

## Energy Policy for Sustainability and Resilience

### Women in Power

- 14:00 – 14:10**      **Women in Power for a More Diverse Power & Energy Society**  
Jelena Ponocko, The University of Manchester
- 14:10 – 14:30**      **Accelerating Low-Carbon Transitions Everywhere: The Role of Policy and Technology Cooperation**  
Arianna Griffa, ICF
- 14:30 – 14:50**      **The Relevance of Resilience in Energy Policy: A Post-pandemic Perspective**  
Rosa Serrano, The University of Manchester
- 14:50 – 15:10**      **Strengthening Energy Policy through Civil Society**  
Vilislava Ivanova, E3G

## Achieving Sustainable Development Goals

### Presentation Session 2

- 15:10 – 15:30**      **Risk Assessment of Cascading Failures in Power Systems with Increasing Wind Penetration**  
Yitian Dai, The University of Manchester
- 15:30 – 15:50**      **Impact of Fast Frequency Response on Transient Angle Stability of Low Inertia Power Systems**  
Zaichun Zhang, The University of Manchester
- 15:50 – 16:00**      **Break**
- 16:00 – 16:20**      **A Hybrid Model for Analyzing System Loadability with multiple VSCs**  
Youhong Chen, The University of Manchester
- 16:20 – 16:40**      **Unit Commitment Modelling of the All-Island ISEM to Support Novel Electricity Market Design and Operations**  
Harrison Hampton, Queen's University Belfast
- 16:40 – 17:00**      **Impact Analysis of Converter Controls on Wind Turbine Behaviour during Faults**  
Daniel Pereira, Cardiff University

**Judges of Presentations:** Despina Yiakoumi, Ying Xue

# Programme—Day 3

## Advanced Technologies Applied to Power Systems

### Presentation Session 3

**14:00 – 14:30**      **Keynote Speech: Implication of COVID-19 for the Electricity Industry in China**  
Haiwang Zhong, Tsinghua University

**14:30 – 14:50**      **An Extended Kalman Filter Based Network Thevenin's Impedance Estimation Algorithm**  
Arpan Malkhandi, Indian Institute of Technology Delhi

**14:50 – 15:10**      **Electrical Network Power Transfer Flexibility: Focusing on Power Conductors Electro-Mechanical Behaviour**  
Mohammed AlAqil, King Faisal University

**15:10 – 15:30**      **A Novel General Power Theory for Sustaining Post-Covid Power Systems**  
Hilary Chisepo, University of Cape Town

**15:30 – 15:40**      **Break**

**15:40 – 16:00**      **A Study on the Protective Effects of Beetle Elytron Plates on Substation Properties and its Impact on the Reliability of the Power Systems**  
Xiaoming Zhang, The University of Manchester

**16:00 – 16:20**      **Revenue Stacking for Behind the Meter Battery Storage in Energy and Ancillary Services Markets**  
William Seward, Cardiff University

**16:20 – 16:40**      **Anomalous First Breakdown Behaviour for HFO1234ze(E)**  
Prem Ranjan, The University of Manchester

**Judges of Presentations:** Mohammad Yazdani-Asrami, Wenjuan Song

### Closing

**16:40 – 16:55**      **Closing Remarks**  
Steve Potts, The University of Manchester

**16:55 – 17:00**      **Announcement of Presentation Awards**



# Guests



## **Angeliki (Kelly) Loukatou**

**Research Engineer, EDF Energy**

Angeliki (Kelly) Loukatou specialises in optimal valuation of energy storage co-located with renewables and long-term electricity price forecasting, with her products being provided to Pivot Power. She also helps the wholesale market optimisation team of EDF Energy UK regarding workflow automation of their forecasting tools. She holds a PhD in battery storage, which was completed in the Centre for Doctoral Training in Power Networks of The University of Manchester (UoM). Currently, she is the vice-chair of the IEEE PES UK&I Women in Power Network, the project manager of Cigre's Women Network, the digital lead of EDF Women's Network and she also serves as a data science instructor at Sister Analyst.



## **Arianna Griffa**

**Senior Climate & Energy Consultant at ICF**

Arianna Griffa is a Senior Climate & Energy Consultant at ICF, leading on the design and implementation of international climate programmes to support capacity-building and facilitate low-carbon transitions across countries in Asia, Latin America and Africa. She is experienced in managing and delivering climate/energy policy research projects, and providing policy and stakeholder engagement expertise to support both domestic and international low-carbon innovation programmes. She holds a MSc. Climate Change and Environmental Policy from the University of Leeds.



## **Despina Yiakoumi**

**Postdoctoral Fellow in Energy Economics, Cyprus Institute**

Dr Despina Yiakoumi is a Postdoctoral Fellow in energy economics at the Cyprus Institute in Cyprus. Prior to this, she had a stint as a Lecturer at the University of Aberdeen in the UK for six months and as a Transport Analyst at Energy Systems Catapult (ESC) in the UK for two years. At ESC, she contributed to the company's work across transport and its interaction with the energy system by providing research, modelling and analysis capability. Despina worked in a variety of projects including the Decarbonising of Road Freight project; her main responsibilities included developing a new optimization model called Road Freight Model (RFM) which predicts the future uptake of alternative fuels in road freight from different types of operation. She holds a PhD in Energy Economics. Her PhD research was on electricity market design with a focus on the auction design implemented as part of the GB capacity market.



## **Haiwang Zhong**

**Associate Professor, Tsinghua University**

Haiwang Zhong (IEEE Senior Member) received both the B.S. and Ph.D. degrees from the Department of Electrical Engineering, Tsinghua University. He is currently an Associate Professor in Tsinghua University. His research interests include power system operations and planning, electricity markets and demand response. He currently serves as the Chair of the IEEE PES Working Group on Demand Response, Secretary of the Architecture Subcommittee under the IEEE PES Smart Building, Load & Customer Committee, the Secretary of the CIGRE D2.53 Working Group.



## **Ian Cotton**

**Professor of High Voltage and Joint Head of Research in the School of Engineering, The University of Manchester**

Ian carries out research in the high voltage laboratories of the University and has worked on a range of projects focused on power system equipment including cables, switchgear and overhead lines throughout his career. More recently he has been involved in projects relating to the electrification of transport. His work on aerospace high voltage systems has seen him engaged in the design and test of components used on platforms including the A350, 787 and E Fan X.



## **Jelena Ponocko**

**Lecturer, The University of Manchester**

Dr Jelena Ponocko is a Lecturer in the Department of Electrical and Electronic Engineering at The University of Manchester, UK. Her research focuses on assessing demand-side flexibility and the analysis of the effects of wide-scale demand side management on power network performance. Jelena has authored or co-authored over 40 research papers and technical reports. She has been an active IEEE PES member since 2015. She is the IEEE Power and Energy Society (PES) Women in Power Representative for UK and Ireland.



## **Max McFarlane**

**Technical Consultant, TNEI**

Mr Max McFarlane is a Technical Consultant at TNEI. His industrial experience is centred on development of mathematical models of power systems, optimisation methods for DNO investment strategies and full-stack tools for power system dynamics simulation and visualisation. He received his MEng in Electronic and Electrical Engineering (EEE) from University of Strathclyde in 2019, where he focused on Power System Analysis and Protection.



## **Mohammad Yazdani-Asrami**

**Postdoctoral Research Associate, University of Strathclyde**

Dr Mohammad Yazdani-Asrami has spent the last 12 years on research works and projects related to harmonics and power quality events, conventional and superconducting transformers, electric machines, and fault current limiters in four different countries, including Iran, Italy, New Zealand, and the UK. His current fields of interest are cryo-electrification for modern transportation, hydrogen-based aircrafts, and large-scale power devices. He is an editor for the Transformers Magazine (TM), "IEEE Transactions on Applied Superconductivity" and "Superconductor Science and Technology" journals.



## **Rosa Serrano**

**PhD Researcher, The University of Manchester**

Rosa Serrano is currently working on developing tools to improve the resilience of power systems against wildfires. Before starting her PhD, she had worked in Chilean public and private sectors, where she developed passion for public policy and energy market regulation. She was a part of the National Energy Commission and served as a Director of Regulation and Studies at Empresas Eléctricas A.G., the electricity network association in Chile.



### **Stephen (Steve) Potts**

**Lecturer in Electrical Power Systems, The University of Manchester**

Stephen (Steve) Potts is a Chartered Electrical Engineer with extensive experience in the electrical power systems industry. He has particular technical interest in the application of differential protection and tele-protection to electrical power systems, and the challenges of interfacing telecommunications with power system protection systems. He is a member of the IET and contributes to CIGRE, primarily through WG B5.



### **Vilislava Ivanova**

**Senior Researcher on Clean Economy at E3G**

Vilislava is a Brussels-based Senior Researcher within Clean Economy at E3G, where she works on Place-Based Transitions and Climate-Neutral Energy Systems with her focus on the EU level and key Member States, particularly in Central and Eastern Europe. She had previously worked as Energy Policy Advisor at Energy Systems Catapult, engaging with policy development on a variety of topics including energy system innovation, electricity market design, heat decarbonisation and local area energy planning. Vilislava holds a master's degree in Politics, Economics and Philosophy from the University of Hamburg.



### **Wenjuan Song**

**Post-doctoral Research Associate, University of Bath**

Dr Wenjuan Song (Member, IEEE) is a post-doctoral research associate in the Department of Electrical & Electronic Engineering at the University of Bath since 2019. She was a Research Assistant at Robinson Research Institute, Victoria University of Wellington, New Zealand for more than two years from 2016 to 2018. Her field of expertise is on electromagnetic analysis for power applications, loss calculation and measurement of superconducting devices, design and development of fault current limiters and transformers for power network and electric aircraft application.



### **Ying Xue**

**Chair of CIGRE UK NGN and Assistant Professor in Electrical Power Networks at University of Birmingham**

Dr Ying Xue received his BEng degree from Huazhong University of Science and Technology in China and the University of Birmingham in the UK, and his Ph.D. degree in electrical engineering from the University of Birmingham, U.K. He is currently the chair of CIGRE UK NGN and an Assistant Professor in Electrical Power Networks in the University of Birmingham. He has a strong research interest in HVDC technologies.

## **Oral Presentation Prizes**

All oral presentations will be assessed by guest judges from academia and industry.

- **£150** for the Best Presentation Award
- **£100** for the runner-up
- **£50** for the third place



## Organised by



**The IEEE PES  
Student Branch Chapter**  
The University of Manchester

IEEE Power & Energy Society  
**Women  
in Power**



**IEEE**  
United Kingdom and Ireland Section

## IEEE PES SBC UoM Committee

Keyi Wang (Chair)  
Omoniyi Akinpelumi (Vice-Chair & Treasurer)  
Mohammed Zakaria (Secretary)  
Wenzhu Li (Industrial Liaison Officer)  
Haoji Liu (Event & Publicity Officer)  
Edmund Tanjaya (Event Coordinator)

Jaime Trivino (Website Coordinator)  
Revathy Ravuri (Social Media Coordinator)  
Siwei Liu (Past Chair)  
Dr Robin Preece (Academic Advisor)

## Sponsors



[tneigroup.com](http://tneigroup.com)



The University of Manchester

[manchester.ac.uk](http://manchester.ac.uk)

**For more info visit  
or follow us on**



[www.ieee-manchester.org.uk](http://www.ieee-manchester.org.uk)

[facebook.com/IEEEManchester](https://facebook.com/IEEEManchester)

[twitter.com/IEEE\\_PES\\_SB\\_UOM](https://twitter.com/IEEE_PES_SB_UOM)

[linkedin.com/company/ieee-pes-sb-uom](https://linkedin.com/company/ieee-pes-sb-uom)

[instagram.com/ieee\\_pes\\_sbc\\_uom](https://instagram.com/ieee_pes_sbc_uom)

