



International Conference on Energy,  
Ecology and Environment



International Conference on  
Energy Storage and Intelligent Vehicles

**Rome, Italy**  
**Aug 26-29, 2024**



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# Welcome to ICEEE&ICEIV 2024

On behalf of the Organizing Committee, it is my great pleasure to welcome you to the International Conference on Energy, Ecology, and Environment (ICEEE) 2024. Hosted by the University of Rome Tor Vergata, ICEEE 2024 will serve as a leading international platform to explore the latest advancements in the diverse fields of energy and environmental systems, paving the way for a greener future. The conference will span a broad range of topics, showcasing both numerical and experimental findings, alongside groundbreaking technologies in the realms of Engineering, Ecology, Environmental, and Energy Sciences.

Supported by the International Society for Energy and Environmental Science (ISEES)—a prominent organization in advancing energy and environmental excellence—ICEEE invites young scientists to join the society and contribute to its growth. This year is significant for Tor Vergata University, as our Rector, Prof. Nathan Levialdi Ghiron, has dedicated 2024 to sustainability during the Academic Year's opening ceremony. This makes hosting such a prestigious international event even more special for us.

We are equally thrilled to invite you to the 7th International Conference on Energy Storage and Intelligent Vehicles (ICEIV 2024) in Rome from August 26 to 29, 2024. This conference focuses on "Boosting Decarbonization via Innovation in Energy Storage and Intelligent Transportation."

Energy storage plays a crucial role in achieving carbon neutrality. The innovation and application of energy storage technologies are vital for accelerating renewable energy deployment. Decarbonizing the transport sector is also essential to achieving climate goals and ensuring sustainable societal evolution. ICEIV, held annually since 2017 in various global cities, is a high-impact conference providing an excellent forum for scientists, researchers, engineers, and government officials to present their latest findings.

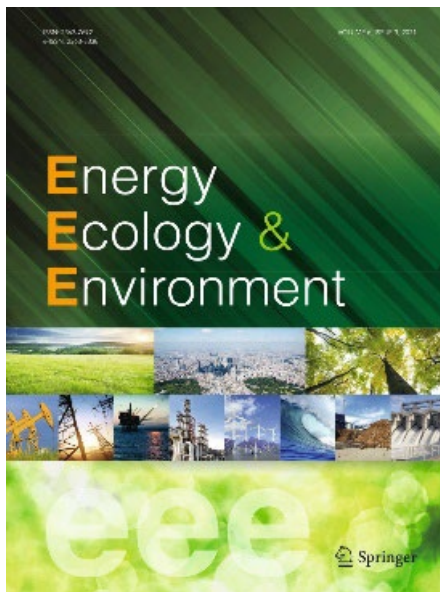
We look forward to your participation in these pivotal conferences, helping to shape a sustainable future for all.

*Conference Chairs*

*Prof. Eng. Giacomo Falcucci, The University of Rome "Tor Vergata", Italy*

*Prof. Bin Chen, Beijing Normal University, China*

# Organizers



Impact Factor: **3.9** CiteScore: **9.8**

The scientific committee will recommend high quality papers, which are presented at the conference, for further consideration of publication in the prestigious journals, including *Energy Ecology and Environment*, *Applied Energy*, *Journal of Industrial Ecology*.

<http://www.springer.com/energy/journal/40974>

# International Society of Energy and Environmental Science (ISEES)

The International Society of Energy and Environmental Science (ISEES) is an independent, non-profit, global membership organization for business, government, academic and other professionals concerned with energy and environment science and related issues in the international community.

The purpose of ISEES is to provide for the mutual association of people interested in the shortages of energy and deterioration of the natural environment, to create a forum for professional, multi-national, multi-disciplinary discussion and to provide a means of professional communication and constructive dialog.

## Our Mission

The ISEES will facilitate worldwide information flow and exchange of ideas on energy and environmental science, promote high quality research and propel the development and education of students and professionals. The ISEES will conduct the following activities:

- Providing leading edge publications and electronic media;
- Organizing international and regional conferences;
- Building networks of energy and environmental science concerned professionals.
- Bridging the cooperation between clean technology inventors or environmental remediation technologies and their industry with the financial sector.

## Focused Areas

- Energy engineering and innovation for sustainability
- Advanced energy storage and applications
- Environmental pollution and ecological remediation
- Climate dynamics, adaptation, and mitigation
- Climate change and public health
- Emission reduction, carbon captures and storage
- Smart management of natural resources
- Biodiversity and ecosystem services across energy transition
- Environmental, economic, and societal trade-offs
- Big data applications in multiple spheres
- Sustainable nanotechnology

## Website

<http://iseesglobal.org/index.html>

# Committees for ICEEE 2024

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Prof. Eng. Giacomo Falcucci  
Prof. Bin Chen

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	Renna, Spain		





# Keynote Speakers for ICEEE 2024



**Efi Foufoula-Georgiou**

**Title: *Precipitation in the Earth's system: Global Estimation, S2S Prediction and Climate Change***

**Bio:** *Efi Foufoula-Georgiou is an elected member of the European Academy of Sciences, the U.S. National Academy of Engineering (NAE) and the American Academy of Arts and Sciences. She is a Distinguished Professor in the Departments of Civil and Environmental Engineering and Earth System Science and the Henry Samueli Endowed Chair in Engineering at the University of California, Irvine. Her area of research is hydrology and geomorphology, with special interest on scaling theories, multiscale dynamics and space-time modeling of precipitation and landforms. She has served as Director of the NSF Science and Technology Center “National Center for Earth-surface Dynamics” (NCED) and Director of the St. Anthony Falls Laboratory at the University of Minnesota. Her elected positions include President of the Hydrology Section of AGU, chair of the Board of Directors for CUAHSI (Consortium of Universities for the Advancement of Hydrologic Sciences), a member of the Board of Trustees of UCAR (University Corporation for Atmospheric Research), and Councilor of the American Meteorological Society (AMS). Professor Foufoula-Georgiou's work has been recognized by several awards including the John Dalton Medal of the European Geophysical Society, the Hydrologic Sciences Medal of AMS, and the Horton Medal of AGU.*

**Abstract:** Precipitation is the input to the hydrologic cycle and affects the water and energy balance at the local, regional and global scales. Precipitation extremes create hazards and endanger life, property and critical infrastructure. Under global warming, precipitation is expected to change in complex ways, including the mean annual precipitation, the duration of wet and dry spells, the seasonality, and the frequency and magnitude of extremes. In this talk, I will present recent results on two main aspects of precipitation: (1) global precipitation estimation from multi-satellite observations in places of the world that do not have ground measurements, with particular emphasis on preservation of extremes, and (2) assessment of the change of the space-time structure of storms under global warming. In global precipitation estimation, we propose a new conditional generative deep neural network diffusion model that combines the information from the instantaneous Passive Microwave (PMW) snapshots taken by Low Earth Orbit (LEO) satellites with the dynamical temporal information provided by GEO IR satellites before and after the time of the LEO overpass, and show a considerable improvement as well as the ability of the conditional generative diffusion model to capture extremes and provide uncertainty estimates. In assessing the change of precipitation extremes under climate change, we analyze the cold-season (October-March) precipitation over the western United States in long-term numerical simulations from the storm-resolving WRF model at 6 km and 1 h resolution in the historical period (1981-2020) and pseudo-future simulations for the 2041-2080 period, constrained by GCMs under the high emission RCP8.5 scenario. We demonstrate that global warming will induce a “sharpening” of storms both in time and space, meaning that a larger proportion of rain will fall over fewer wet hours and over smaller areas, amplifying hazard potential for flooding and post-fire debris flows.



**Petros Koumoutsakos**

***Title: Artificial Intelligence and Computational Science: There is Plenty of Room in the Middle***

**Bio:** Petros Koumoutsakos is Herbert S. Winokur, Jr. Professor of Engineering and Applied Sciences, Faculty Director of the Institute for Applied Computational Science (IACS) and Area Chair of Applied Mathematics at Harvard John A. Paulson School of Engineering and Applied Sciences (SEAS). He has served as the Chair of Computational Science at ETHZ Zurich (1997-2020) and has held visiting fellow positions at Caltech, the University of Tokyo, MIT, the Radcliffe Institute of Advanced Study at Harvard University and he is Distinguished Affiliated Professor at TU Munich. Petros is elected Fellow of the American Society of Mechanical Engineers (ASME), the American Physical Society (APS), the Society of Industrial and Applied Mathematics (SIAM) and the Collegium Helveticum. He is recipient of the Advanced Investigator Award by the European Research Council and the ACM Gordon Bell prize in Supercomputing. He is elected International Member to the US National Academy of Engineering (NAE). His research interests are on the fundamentals and applications of computing and artificial intelligence to understand, predict and optimize fluid flows in engineering, nanotechnology, and medicine.

**Abstract:** Unprecedented hardware capabilities and algorithmic innovations have enabled the acquisition and analysis of massive datasets and simulations of complex systems that were inconceivable only a decade ago. Computing is transforming our intellectual capacity to tackle complex problems and fueling the Artificial Intelligence (AI) revolution that is changing our world. Computational Science and AI have been drivers and benefactors of these advances, each in different ways, and originally, with different targets. I will juxtapose pattern recognition with Learning of Effective Dynamics, physics based flow control and controllers learned via multi-agent reinforcement learning, to argue and that the intellectual space between these two fields contains a wealth of opportunities for advancing human knowledge and scientific discovery.



**Fengqi You**

***Title: Environmental Sustainability Analytics for Trending Issues on Virtual Engagement, Digital Assets, and Transportation Electrification***

**Bio:** Fengqi You is the Roxanne E. and Michael J. Zak Professor in Energy Systems Engineering at Cornell University. Within Cornell, he serves as the Chair of Ph.D. Studies in Systems Engineering, Co-Director of the Cornell University AI for Science Institute (CUAISci), Co-Lead of the Schmidt AI in Science Program, and Co-Director of the Cornell Institute for Digital Agriculture (CIDA). His research focuses on fundamental theory and methods of systems engineering and artificial intelligence, with applications spanning materials informatics, smart manufacturing, digital agriculture, quantum computing, energy systems, and sustainability. Fengqi has an h-index of 80 and authored over 250 refereed articles in journals such as Science, Nature Sustainability, Nature Communications, Science Advances, and PNAS.

**Abstract:** In an era where energy and environmental sustainability are paramount, exemplified by the recent COP 28 Agreement and widespread “net zero” commitments, the role of sustainability analytics is increasingly significant. This presentation explores its applications in addressing key societal and industrial challenges. We will examine the climate impacts of recent shifts to virtual and hybrid conferences, the rising trend of remote and hybrid work models, and the metaverse industry's expansion. Subsequently, we will explore strategies for climate-neutral bitcoin mining and its potential to support renewable energy projects, along with the environmental aspects of non-fungible tokens and the Ethereum merge. The final part will discuss the critical metal requirements and environmental impacts of automotive batteries in transportation electrification, covering battery chemistry, recycling technologies, and global supply chain dynamics. Through these examples, we demonstrate the breadth of sustainability analytics, encompassing mathematical programming, data analytics, life cycle assessment, techno-economic analysis, integrated assessment models, systems design and integration, and model-based design of experiments, highlighting its critical role in advancing sustainability across various sectors.

# Keynote Speakers for ICEIV 2024



**Liz Varga**

**Title:** *Automation and electrification innovation in transport: systemic consequences and dependencies*

**Bio:** *Professor Liz Varga CBE has a chair in Complex Systems in the Civil, Environmental, and Geomatics Engineering Department of University College London (UCL). She leads the Infrastructure Systems Institute. She teaches, writes, and advises globally on energy, transport, digital communications, water, and waste systems. Her key research themes are infrastructure resilience, sustainable innovation, circular engineering, and decarbonisation, using digital and mixed (quantitative and qualitative) approaches including digital twins, computational ontologies and epistemologies, artificial intelligence, and hybrid models. She is a commissioner with the National Preparedness Commission, an Executive member of the UK Collaboratorium for Research in Infrastructure and Cities (UKCRIC) (<https://www.ukcric.com/>), director of UKCRIC Limited, and a governor on the Strategy Board for the Data and Analytics Facility for National Infrastructure (<https://dafni.ac.uk/>). She developed UCL's Infrastructure Systems MSc <https://www.ucl.ac.uk/prospective-students/graduate/taught-degrees/infrastructure-systems-msc> and is project manager for a new international standard ISO 22372 on infrastructure resilience building on work with United Nations Office for Disaster Risk Reduction.*

**Abstract:** The twin objectives of combating negative environmental consequences and improving productivity are driving innovation in transport infrastructure and solutions. This talk examines two specific innovations: automation and electrification, which are often combined. These innovations are delivering desirable systemic consequences, such as greater inclusion and resilience. However, to be effective at scale, various adaptations are needed to grid/energy infrastructure, telecommunications systems, data infrastructures, standards, etc. It follows that the quality of systemic consequences of transport innovation depend on adaptations in other systems. Thus, other adaptations must be driven by the twin objectives driving innovation in transport.



**Zheng Chen**

**Title:** *Collaborative Energy-Saving Control for Connected Autonomous New Energy Vehicle Platoon*

**Bio:** *Zheng Chen received the B.S. and M.S. degrees in electrical engineering and the Ph.D. degree in control science engineering from Northwestern Polytechnical University, Xi'an, China, in 2004, 2007 and 2012, respectively. He is currently a Professor with the Faculty of Transportation Engineering, Kunming University of Science and Technology, Kunming, Yunnan, China. He was a Post-Doctoral Fellow and a Research Scholar with the University of Michigan, Dearborn, MI, USA from 2008 to 2014, and a Marie-Curie Research Fellow with Queen Mary University of London, London, U.K. from 2019 to 2021. He has conducted over 30 projects and has published over 200 peer-reviewed journal papers and conference proceedings. His research interests include battery management system, and energy control of intelligent electric vehicles. He is a Fellow of the Institution of Engineering and Technology.*

**Abstract:** The advancement of new energy and connected autonomous technologies facilitates the implementation of collaborative energy-saving control for vehicle platoon, and the collaborative energy-saving control for connected autonomous new energy vehicle platoon showcases the potential in enhancing safety, efficiency and economic viability of traffic management. Nevertheless, implementation of collaborative energy-saving control in complex traffic scenarios, such as extensive traffic networks and combination of human-driven and autonomous vehicles, presents significant challenges. In view of the aforementioned considerations, a collaborative energy-saving control system in complex traffic scenarios is introduced. The optimization of single-vehicle energy-saving operations, with a particular focus on the single-vehicle energy management is firstly

introduced. Then, an efficient modelling method for connected autonomous vehicle platoon based on graph structure is presented to address the challenges posed by the high-dimensional state and action space. Subsequently, a vehicle platoon safety warning scheme is introduced based on the established model, thereby laying the foundation for safe operation of collaborative energy-saving control. Finally, an end-to-end intelligent traffic decision-making model based on hybrid deep reinforcement learning is deployed based on the macro “vehicle-road-cloud” architecture, thus enabling energy-saving control for connected autonomous new energy vehicle platoons.

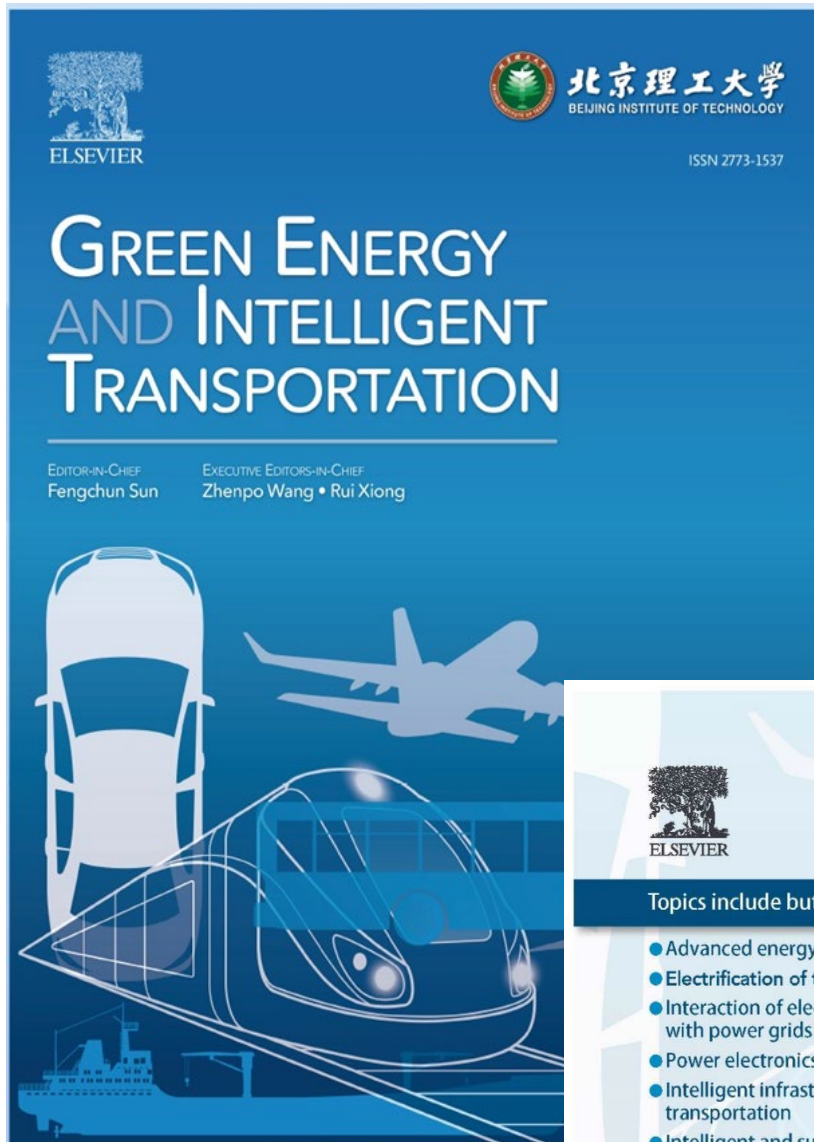


**Giacomo Falucci**

***Title: Hydrogen Storage through Metal Hydrides: a viable solution for the Green Transition?***

**Bio:** *Giacomo Falucci is Associate Professor of Fluid Machinery, Energy and Environmental Systems at the University of Rome Tor Vergata. He has been appointed as the Referee for the Quality Assurance of his Department and as the Responsible for the Research Quality. He got his Masters Degree in Mechanical Engineering and PhD in Mechanical Engineering at the University of Rome “Roma Tre”. He became Post-Doc Researcher and then Assistant Professor at the University of Naples “Parthenope”, then he completed his Tenur-Track at Tor Vergata. He has been Visiting Professor of “Heat Transfer” at the Tandon School of Engineering of the New York University and Visiting Professor of “Computational Physics” at the John A. Paulson School of Engineering and Applied Sciences of Harvard University. He is currently Associate to the Department of Physics of Harvard University. He is Principal Investigator of many National and International Research Grants and he is author of more than 150 papers on Scientific Journals, and is first author of 2 publications in Nature.*

**Abstract:** Hydrogen is increasingly viewed as a critical component of the global green energy transition due to its potential to significantly reduce greenhouse gas emissions and serve as a clean, sustainable energy source across various sectors, including transportation, industry, and power generation. However, despite its potential, the widespread adoption of hydrogen is hampered by significant challenges associated with its production, storage, and distribution. Solid-state hydrogen storage through metal hydrides is emerging as one of the most promising solutions to these challenges. Metal hydrides offer several advantages over traditional high-pressure gas or cryogenic liquid hydrogen storage methods. They provide a much higher volumetric density of hydrogen, allowing more hydrogen to be stored in a given volume. Moreover, metal hydride storage operates at more practical and safer temperatures and pressures, making it suitable for a wide range of applications, from small-scale mobile systems to large-scale stationary storage. The fundamental process behind metal hydride storage involves a reversible reaction between hydrogen gas and metals or alloys to form metal hydrides. This reaction allows hydrogen to be absorbed into the metal lattice at relatively low pressures and released by applying heat. However, the success of metal hydride storage hinges on improving the thermodynamic efficiency of the hydrides. Researchers are working to enhance hydrogen absorption and desorption kinetics, increase power performance, and optimize operating conditions. This keynote will explore the current state of metal hydride hydrogen storage technology, with a special focus on recent advancements aimed at enhancing thermodynamic efficiency. Improving these aspects is crucial for making metal hydride storage a key enabler in the broader adoption of hydrogen as a clean energy carrier, supporting the global shift towards a sustainable energy future.



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## GREEN ENERGY AND INTELLIGENT TRANSPORTATION

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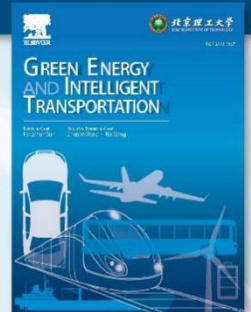
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Topics include but are not limited to:

- Advanced energy storage
- Electrification of transportation
- Interaction of electric transportation with power grids
- Power electronics for traction
- Intelligent infrastructure for green transportation
- Intelligent and sustainable transportation system
- New materials and lightweight technology in transportation
- Sustainability of green transportation (including carbon neutrality)
- AI, new materials and technologies in energy and transportation



### Special Issue Call for Papers

1. Safety Technologies for New Energy Vehicles
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3. Advances on hydrogen and hybrid propulsion
4. Learning-based intelligent transportation systems: theories, technologies and applications



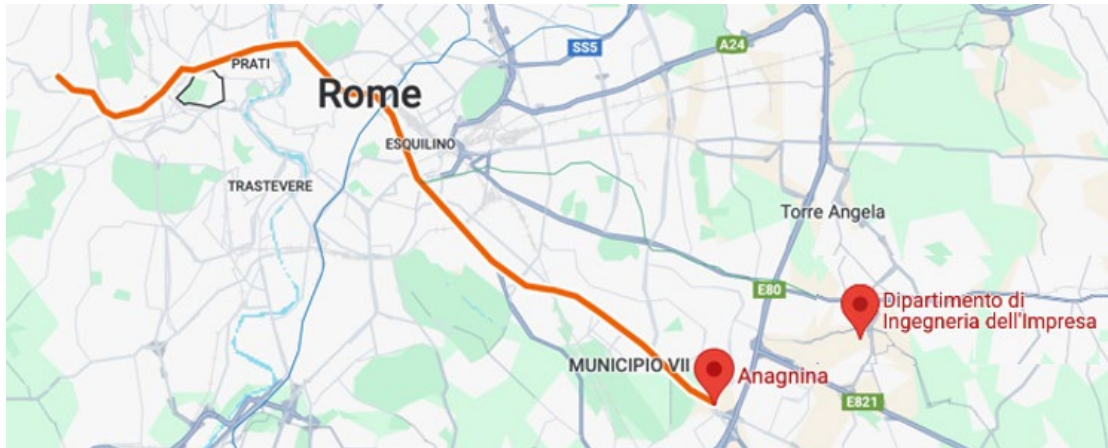
The Article Publishing Charge (APC) fee of USD 2340 will be covered by Beijing Institute of Technology Press Co., Ltd for articles submitted by 31st December 2024.

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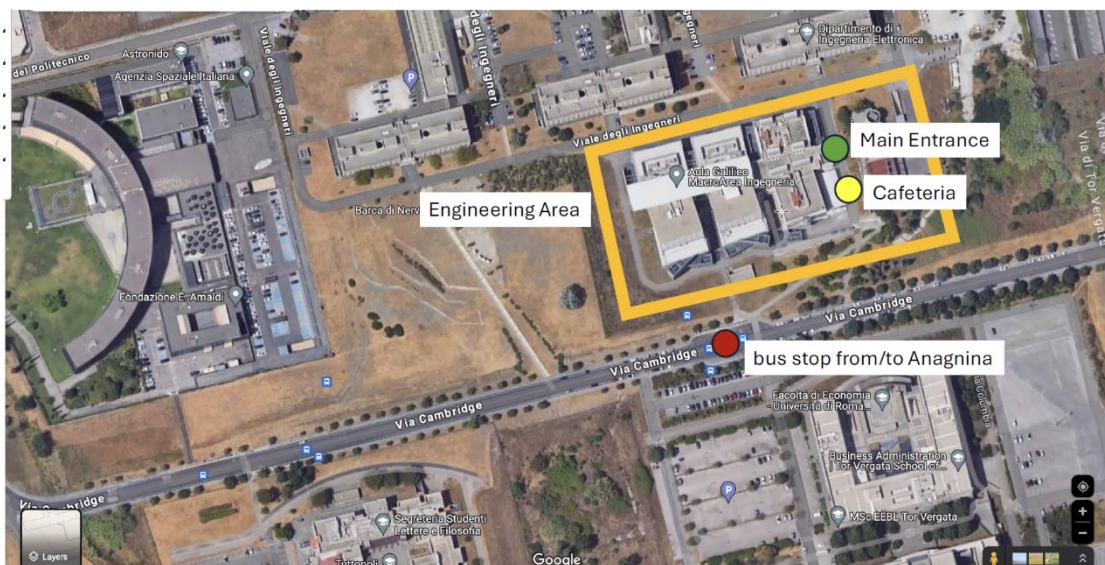
# Practical Guide

## Location



It is directly connected with the A-line metro terminus (bus 20): A-line is the subway that connects all the major monuments in Rome, including the Colosseum and the Vatican Museums.

From A-subway terminus “Anagnina” to the location of the ICEEE2024, take Bus “20” to the stop “CAMBRIDGE/COLUMBIA” + little walk to the Conference Rooms at the Department of Enterprise Engineering “Mario Lucertini”.



# Speaker's Guide

- Authors should give a 15-minutes presentation.
- Question and answer for each presentation would last 5 minutes.
- The recommended aspect ratio of the projector screen is 16:9.
- There is no template for the presentation.

# Program at a Glance

August 26, 2024				
Registration: Main Entrance				
14:00-16:00	Registration			
August 27, 2024				
Conference Room: Aula Convegni				
09:00-09:15	<p>Opening of ICEEE 2024  Welcome from ICEEE 2024 Conference Chair  Prof. Bin Chen</p>			
09:15-09:55	<p>Keynote: Precipitation in the Earth system: Global Estimation, Precipitation Extremes &amp; Climate Change  Prof. Efi Foufoula-Georgiou</p>			
09:55-10:30	Coffee break			
10:30-11:10	<p>Keynote: Artificial Intelligence and Computational Science: There is Plenty of Room in the Middle  Prof. Petros Koumoutsakos</p>			
11:10-11:50	<p>Keynote: Environmental Sustainability Analytics for Trending Issues on Virtual Engagement, Digital Assets, and Transportation Electrification  Prof. Fengqi You</p>			
11:50-13:30	Lunch			
Parallel session of ICEEE 2024			Opening of ICEIV 2014	
	Energy and Energy Economics	Ecology and Environment		
	Session Room: Archimede	Session Room: Leonardo	Conference Room: Aula Convegni	
13:30-13:50	#22	#83	14:00-14:10	Opening of ICEIV 2024
13:50-14:10	#25	#79	14:10-14:55	<p>Keynote: Automation and electrification innovation in transport: systemic consequences and dependencies  Prof. Liz Varga</p>
14:10-14:30	#55	#23		
14:30-14:50	#96	#99		
14:50-15:30	Coffee break			
15:30-15:50	#42	#69	15:30-16:15	<p>Keynote: Collaborative Energy-Saving Control for Connected Autonomous New Energy Vehicle Platoon  Prof. Zheng Chen</p>
15:50-16:10	#6	#88		
16:10-16:30	#82	#34	16:15-17:00	<p>Keynote: Hydrogen Storage through Metal Hydrides: a viable solution for the Green Transition?  Prof. Giacomo Falucci</p>
16:30-16:50	#75	#8		
August 28, 2024				



<b>Parallel session of ICEEE 2024 &amp; ICEIV 2024</b>			
	<b>Energy and Energy Economics</b>	<b>Ecology and Environment</b>	<b>ICEIV</b>
	<b>Session Room: Archimede</b>	<b>Session Room: Leonardo</b>	<b>Session Room: Galileo</b>
<b>08:30-08:50</b>	<b>#38</b>	<b>#10</b>	<b>N2603</b>
<b>08:50-09:10</b>	<b>#95</b>	<b>#4</b>	<b>N2616</b>
<b>09:10-09:30</b>	<b>#98</b>	<b>#29</b>	<b>N2606</b>
<b>09:30-09:50</b>	<b>#92</b>	<b>#94</b>	<b>N2405</b>
<b>09:50-10:30</b>	<b>Coffee break</b>		
<b>10:30-10:50</b>	<b>#31</b>	<b>#21</b>	<b>N2604</b>
<b>10:50-11:10</b>	<b>#44</b>	<b>#61</b>	<b>#50</b>
<b>11:10-11:30</b>	<b>#13</b>	<b>#97</b>	<b>N2611</b>
<b>11:30-11:50</b>	<b>#87</b>		<b>N2629</b>
<b>11:50-13:30</b>	<b>Lunch</b>		
<b>13:30-13:50</b>	<b>#2</b>	<b>#54</b>	<b>N2624</b>
<b>13:50-14:10</b>	<b>#72</b>	<b>#80</b>	<b>#48</b>
<b>14:10-14:30</b>	<b>#28</b>	<b>#24</b>	<b>#19</b>
<b>14:30-14:50</b>	<b>#100</b>	<b>#93</b>	<b>N2628</b>
<b>14:50-15:20</b>	<b>Coffee break</b>		
<b>15:20-15:40</b>	<b>#59</b>	<b>#43</b>	<b>#15</b>
<b>15:40-16:00</b>	<b>#41</b>	<b>#53</b>	<b>N2605</b>
<b>16:00-16:20</b>	<b>#91</b>	<b>#16</b>	<b>N2630</b>
<b>16:20-16:40</b>	<b>#36</b>	<b>#101</b>	<b>#81</b>
<b>16:40-17:00</b>		<b>#30</b>	<b>N2621</b>
<b>19:30-20:00</b>	<b>Banquet</b>		

# Oral Presentations (27 August)

Session Room: Archimede			
Session Title: Energy and Energy Economics			
Chair: Hailong Li			
Time	Paper ID	Author	Paper Title
13:30-13:50	22	Ruoqing Yin and Liz Varga	Physics Informed Neural Networks (PINNs) for Capturing the Dynamics of Power Systems: A Case Study of IEEE BUS 9
13:50-14:10	25	Maoquan Huang, Wei Wang, Xiaohan Ren, Qie Sun and Mu Du	Dust Accumulation Effects on the PV Cells with a Transparent Radiative Cooling Cover
14:10-14:30	55	Mario Petrollese, Giorgio Cau, Daniele Cocco, Vittorio Tola and Mostafa Esmaeili Shayan	Sustainable off-grid energy solutions: pumped thermal energy storage modeling and its role in optimizing renewable energy utilization
14:30-14:50	96	Ran Tao, Liang Wang, Long Lin, Gang Xin and Øyvind Skreiberg	Production and characterization of biocarbon from woody biomasses
14:50-15:30	TEA/COFFEE BREAK		
Chair: Yigang Wei			
15:30-15:50	42	Fei Teng, Qi Zhang, Xiwen Liu, Siyuan Chen and Lu Wang	Hydrogen Supply System Optimization Toward Carbon Neutrality in China: Life Cycle Analysis and Techno-Economic Assessment
15:50-16:10	6	Tiantian Feng	Grappling with the Trade-offs of Carbon Emission Trading and Green Certificate: Achieving Carbon Neutrality in China
16:10-16:30	82	Weize Song, Zheng Li and Boda Sun	Policy Incentives of CCUS development under China's Carbon Neutrality Goal
16:30-16:50	75	Yigang Wei and Entong Gao	Identifying Development Trends and Technological Innovations in the CCUS Sector: Building Patent Knowledge Graphs and Time-Series Analysis Based on LLM
Session Room: Leonardo			
Session Title: Ecology and Environment			
Chair: Ling Shao, Zi Wu			
Time	Paper ID	Author	Paper Title
13:30-13:50	83	Weize Song and Zheng Li	Typology of low-carbon development pathways under future uncertainty
13:50-14:10	79	Jin Yang and Song Chai	Can Transition from Pollution Fees to Environmental Tax Reduce Carbon Emission in the Electricity Sector: The Tax Rate Matters

14:10-14:30	23	Lijuan Si, Yao Li, Chaoqun Wang and Pinyue Wang	Promoting large-scale development of renewable energy really promote carbon emission reduction?
14:30-14:50	99	Dan Song	Indicators on Energy Conservation and Emission Mitigation for Life Cycle of Cement Production Process
14:50-15:30	TEA/COFFEE BREAK		
Chair: Dan Song			
15:30-15:50	69	Stefano Mazzoni, Simone Orazzini, Daniele Mioni, Michela Vellini and Marco Gambini	Hydrogen Production and Utilization in the Hard-to-Abate Sectors Decarbonization pathways
15:50-16:10	88	Ling Shao and Zi Wu	Life-cycle carbon emissions from pilot zero-waste technologies in China
16:10-16:30	34	Ying Zhang, Wenjie Gang, Xiuxia Hao and Keqi Chen	An assessment and ranking method of building flexibility for sustainable cities
16:30-16:50	8	Mengyao Han	Deploying Renewables: Trends, Overlaps and Impacts

# Oral Presentations (28 August)

Session Room: Archimede			
Session Title: Energy and Energy Economics			
Chair: Liz Varga			
Time	Paper ID	Author	Paper Title
08:30-08:50	38	Tianrun Yang and Qie Sun	The impact of large-scale implementation of seasonal thermal energy storage on the regional energy system
08:50-09:10	95	Zekai Wang and Sun Qie	Enhancing HVAC Demand Response by PMV-based Control method
09:10-09:30	98	Liang Wang, Hao Wu, Peter Arendt Jensen, Øyvind Skreiberg, Kim Dam-Johansen and Johan Einar Hustad	Ash Transformation and Deposition Behavior during Co-firing of Biomass Fuels with Sewage Sludge
09:30-09:50	92	Fuwen Yu, Yingying Zheng and Shijie Guan	Assessment of the Resistance of Integrated Energy Systems against Cold Wave Compound Disasters
09:50-10:30	TEA/COFFEE BREAK		
Chair: Tianrun Yang, Beibei Dong			
10:30-10:50	31	Raza Ayyaz and Liz Varga	Blockchain Technology in Electricity Systems
10:50-11:10	44	Xiurong Hu	Synergistic Cost-Benefit Analysis of Emission Trading and Renewable Portfolio Standards in China
11:10-11:30	13	Li Liu and Jichuan Sheng	Energy quota trading and energy vulnerability: China's energy quota trading pilot
11:30-11:50	87	Chenyu Su, Xiaodan Shi, Anders Avelin and Hailong Li	Dynamic modelling Thermal Energy Storage Using Long Short-Term Memory (LSTM) Networks
11:50-13:30	LUNCH		
Chair: Vittorio Villani, Beibei Dong			
13:30-13:50	2	Mei Song, Zisha Wang, Mingming Zhu and Rui Wang	Study on short-term natural gas system resilience under import shortage shocks
13:50-14:10	72	Mingzhe Wang and Xuesong Li	Effects of Tip Clearance on Economy and Safety in a Compressor Cascade
14:10-14:30	28	Lijuan Si, Kexin Shi, Yaru Xin, Yao Li and Haoyu Cao	How do renewable energy policies affect regional energy economic resilience? Evidence from 237 prefecture-level cities in China
14:30-14:50	100	Mingquan Shao, Zhen Ye, Hichem Hakka and Yukun Hu	A Financial Model for Hydrogen Energy Ocean Shipping: Modelling Uncertainties and Risks across Supply Chain and Technological Pathways
14:50-15:20	TEA/COFFEE BREAK		
Chair: Wei Wang, Chenyu Su			
15:20-15:40	59	Beibei Dong, Shuo Wang, Qie Sun, Eva Thorin and Hailong Li	Marginal cost of CO <sub>2</sub> capture
15:40-16:00	41	Yang Li, Gemma Cremen and Liz	Autonomous Grid: Opportunities and Challenges of AI

		Varga	Empowerment and Telecom Integration
16:00-16:20	91	Mahuizi Lu, Kelin Jia and Yukun Hu	Adaptive reinforcement learning self-tuning electromagnetic inference cancellation via active filters
16:20-16:40	36	Lihong Su, Wenjie Gang, Shukun Dong and Xiuxia Hao	An optimal sizing method of battery energy storage system for buildings considering monthly demand shaving

# Oral Presentations (28 August)

Session Room: Leonardo			
Session Title: Ecology and Environment			
Chair: Lijuan Si			
Time	Paper ID	Author	Paper Title
08:30-08:50	10	Zhihui Zhang and Shaoqing Chen	Assessing the habit-formation related lock-in effects in co-reducing CO <sub>2</sub> and air pollutants in China
08:50-09:10	4	Mei Song, Jia Zhang, Mengxue Li and Yujin Gao	The influence of population aging on living carbon emissions in the Yellow River Basin: a comparative analysis of urban and rural areas
09:10-09:30	29	Tiantian Gu, Muhan Xie and Enyang Hao	Classifying and Quantifying Residents' Engagement in the Sponge-Style Old Community Renewal of China: An Analysis Using the ANP-PROMETHEE II Approach
09:30-09:50	94	Sichale Abdissa Bayissa, Cuncun Duan, Bin Chen	Enhancing Urban Resilience in Addis Ababa: Energy Efficiency and Sustainability through the Corridor Initiative
09:50-10:30	TEA/COFFEE BREAK		
Chair: Weize Song			
10:30-10:50	21	Lijuan Si, Pinyue Wang, Chaoqun Wang and Kexin Shi	Can low-carbon city pilot policy improve energy efficiency? empirical evidence from China's low-carbon city pilots
10:50-11:10	61	Kaipeng Ren, Xu Tang, Jakob Willerström and Mikael Höök	Revealing global energy security from the perspectives of fossil and metal resource supply
11:10-11:30	97	Rui Huang and Wei Li	Managing China's renewable energy poverty in advancing green hydrogen economy
11:30-13:30	LUNCH		
Chair: Tiantian Gu			
13:30-13:50	54	Qianqian Sheng, Yaou Ji, Ying Chen, Zhengwei Huang and Zunling Zhu	Spatial-temporal variation characteristics and key driving factors of atmospheric pollutants in the Qinghai-Tibet Plateau
13:50-14:10	80	Chenxing Wang, Yan Yan and Zetong Wang	Pathways for Ecological Restoration of Territorial Space Based on Ecosystem Integrity
14:10-14:30	24	Yuhan Liang	Quantification of food waste and its impacts on energy-water-carbon in China from the trans-regional perspective
14:30-14:50	93	Xuan Yang, Dan Song, Cuncun Duan, Bin Chen	Does stricter sewage treatment policy exacerbate the contradiction between effluent water quality improvement and carbon emissions mitigation? Evidence from China
14:50-15:20	TEA/COFFEE BREAK		
Chair: Andrea Facci, Xiurong Hu			
15:20-15:40	43	Tong Luo, Yongjia Wang, Honghui Chen and Cong Luo	Nano-sized spherical CaO-based CO <sub>2</sub> sorbents prepared by spray combustion synthesis
15:40-16:00	53	Wei Zhang and Yiqi Geng	The rheology behavior of copper tailing suspensions with polyethyleneimine
16:00-16:20	16	Chong Zhang, Xianning Li and Xintong Gao	Sulfamethoxazole degradation in a tri-electrode microbial electrochemical system operating in organically polluted

			waters: Metabolomic and metagenomic approaches
16:20-16:40	101	Xueqiang Li, Xiaohan Zhao, Zhongyao Zhang, Shengchun Liu and Chengming Zhang	Time series forecasting based on the LSTM of the heat pipe performance on motor cooling
16:40-17:00	30	Zetian Tang	Thermal analysis and fuel allocation optimization for improved ICE-PEMFC ammonia-based system efficiency

# Oral Presentations (28 August)

Session Room: Galileo			
Session Title: ICEIV			
Chair: Zeyu Chen, Hui Pang			
Time	Paper ID	Author	Paper Title
08:30-08:50	N2603	Xiaoran Yu, Ruiming Zhang, Wenchao Zhu, Changjun Xie	Model-data-fusion based long-term degradation prediction for proton exchange membrane fuel cell
08:50-09:10	N2616	Hongqian Zhao, Zheng Chen, Xing Shu, Jiangwei Shen, Yonggang Liu	Fast State of Health Prediction of Lithium-ion Batteries Based on Least Squares Support Vector Machine with Adaptive Learning Particle Swarm Optimization
09:10-09:30	N2606	Hui Pang, Fengbin Wang, Kaiqiang Chen, Wenzhi Nan	A state-of-health estimation method for lithium-ion batteries using BiLSTM and attention mechanism
09:30-09:50	N2405	Zeyu Chen, Yanshen Chi, Mingguang Hu, Huachen Zhang	Low temperature heating of lithium-ion battery pack based on a sequential pulse method
10:10-10:40	TEA/COFFEE BREAK		
Chair: Kui Chen, Xiaopeng Tang			
10:40-11:00	N2604	Xiaopeng Tang, Yuan Liu, Jiahuan Lu, Xin Lai	A Data-Matching Framework for Battery State-of-Charge Estimation
11:00-11:20	50	Abigail Holmes, Dylan Jethwa, Joseph Baker, Cynthia Liu and Yukun Hu	System Dynamic Modelling of UK Electromobility Infrastructure
11:20-11:40	N2611	Xing Shu, Hao Yang, Jiangwei Shen, Zheng Chen, Aihua Tang	A Fusion Estimation Method of Remaining Useful Life for Lithium-ion Batteries Based on Multi Machine Learning Algorithms
11:40-12:00	N2629	Kui Chen, Yang Luo, Zhou Long, Yang Li, Kai Liu, Guoqiang Gao, Guangning Wu	A health state estimation method for lithium-ion batteries based on multi-stage, multi-scale features and convolutional neural networks
12:00-13:30	LUNCH		
Chair: Chuang Qi, Chunjing Lin			
13:30-13:50	N2624	Chunjing Lin, Qingsong Zhang, Yuemeng Zhang, Sichuan Xu, Chuang Qi	Research on Active and Passive Coupled Thermal Management System for Lithium ion Battery Based on Phase Change Materials and Liquid Cooling
13:50-14:10	48	Abigail Holmes and Liz Varga	An Assessment of High Voltage Connection Technologies Over Life
14:10-14:30	19	Yujing Cai and Yuan Chen	An improved LSTM transfer learning method based SOC estimate of lithium-ion batteries for small sample real vehicles datasets
14:30-14:50	N2628	Chuang Qi	Structural design of the refrigerant direct cooling thermal management system for lithium-ion batteries
14:50-15:20	TEA/COFFEE BREAK		
Chair: Aihua Tang, Xing Shu			
15:20-15:40	15	Zhipeng Zhu, Guangzhong Dong, Xiaojia Luo, Jincheng Yu	Charging Optimization for Lithium-Ion Battery Based on Robust Deep Reinforcement Learning



		and Jingwen Wei	
15:40-16:00	N2605	Aihua Tang, Yuchen Xu, Xin Yang, Lei Peng, Quanqing Yu	Unsupervised autocoder enabling for machine learning-based battery health monitoring
16:00-16:20	N2630	Boyu Chen, Jiwei Cao, Bin Chen	Reliability Analysis of High-Power Density Motors with New Cooling Methods
16:20-16:40	81	Chun Wang, Yuqin Shen, Jing Chen, Xinmei Gao, Hao Jin and Maosheng Tian	Hierarchical predictive energy management strategy for electric vehicles
16:40-17:00	N2621	Yong Chen, Qinhong Zhong, Yuecheng Li	Unmanned Vehicle Path Planning with P-RRT Based on Steering Angle Constraints



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