

2022 IEEE 20th International Power Electronics and Motion Control Conference

IEEE Conference Record # 51159

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Welcome to IEEE-PEMC 2022

It is our great pleasure to announce **the 20th IEEE International Power Electronics and Motion Control Conference (IEEE-PEMC 2022)** to be held **September 25-29, 2022 in Brasov, Romania**, and we are proud to invite you to such an event, which is the first in Romania.

The conference is sponsored by **IEEE-Industrial Electronics** and **IEEE-Industry Applications**. The conference is a continuation of the **Power Electronics and Motion Control International conference series** organized in previous years by PEMC Council. In last decades, the IEEE PEMC Conference (previously named PEMC and EPE-PEMC) has become the largest and most important conference on Industrial Electronics and Motion Control in Central and Eastern Europe. The 50th Anniversary of PEMC Series was celebrated during IEEE-PEMC 2020 in Gliwice, Poland. Many excellent scientists and engineers affiliated to academic, research and industrial centers from Europe and whole world attend PEMC conferences every time.

The **IEEE-PEMC 2022 is organized by Transilvania University of Brasov, Romania**, which is a large technical university top-ranked in Romania, with 18 faculties, 720 academic staff, over 16000 bachelor students, 3500 master students and 460 doctoral students (<https://www.unitbv.ro/en/facts-and-figures.html>)

The conference will be held in the heart of Europe, in the industrial and very modern region of Transilvania. I hope that the location of the conference will attract participants from all over the world and enrich the scientific diversity.

The conference language is English. Accepted and presented papers will be proposed for inclusion into IEEE Xplore subject to meeting IEEE Xplore's scope and quality requirements.

On behalf of the Scientific and Organizing Committees we welcome you to Brasov!

Mihai Cernat and Dan Lascu, General Co-Chairs
on behalf of the organizing committee

SESSION CHAIRS

Monday, 26 September 2022

8:30-9:00	Pavol Bauer Mihai Cernat,	Opening ceremony
9:00-10:30	Mihai Cernat Babak Nahid,	Plenary session 1
11:00-13:00	Dmitri Vinnikov, Dan Lascu	Oral sessions 1, Room UI2, Power Electronic Converter Topologies, Design, Control and Reliability – 1
11:00-13:00	Krzysztof Stankiewicz Marcin Kasprzak	Oral sessions 1, Room UI3, Power Electronics in Electrical Energy Generation and Distribution, Smart Grid, Renewable and Sustainable Energy – 1,
11:00-13:00	Karol Kyslan Prasanth Venugopal	Oral sessions 1, Room UI6, Power Electronics in Electrical Machines and Actuators – 1
11:00-13:00	Krzysztof Szabat, Lucian-Mihai Itu	Oral session 1, Room UI7, Sensors, Measurement and Observation Technique & Machine Learning – 1,
14:00-15:15	Bülent Ertan, Remus Teodorescu	Plenary session 2
15:15-17:45	Catalin Ion	Dialogue session 1, Rooms UI2+ DR1
	Ioan Serban	Dialogue session 2, Rooms UI3+ DR2
	Ilhami Colak	Dialogue session 3, Room3 UI6+ DR3

Tuesday 27 September 2022

8:45-10:30	Zbigniew Krzeminski, Pavol Bauer	Plenary session 3
11.00 – 13:00	Aditya Shekhar, Kaspars Kroics	Oral sessions 2, Room UI2, Power Electronic Converter Topologies, Design, Control and Reliability – 2
11.00 – 13:00	Ramazan Bayindir, Krzysztof Szabat	Oral sessions 2, Room UI3, Power Electronics in Electrical Energy Generation and Distribution, Smart Grid, Renewable and Sustainable Energy – 2
11.00 – 13:00	Jan Michalak Karol Wrobel	Oral sessions 2, Room UI6, Power Electronics in Electrical Machines and Actuators – 2
11.00 – 13:00	Stefan Janous, Razvan Panati	Oral sessions 2, Room UI7, Sensors, Measurement and Observation Technique & Machine Learning 2

SESSION CHAIRS

Tuesday 27 September 2022

14:00-15:15	Peter Korondi Viliam Fedak	Plenary session 4
15:45-17:45	Helmut Weiss, Levon Gevorgov	Oral sessions 3, Room UI2, Power Electronic Converter Topologies, Design, Control and Reliability – 3
15:45-17:45	Mariusz Stepień, Denes Fodor	Oral sessions 3, Room UI3, Power Electronics in Electrical Energy Generation and Distribution, Smart Grid, Renewable and Sustainable Energy – 3
15:45-17:45	Gautham Ram, Ramdane Lateb	Oral sessions 3, Room UI6, Power Electronics in Transportation, EV – 1
15:45-17:45	Husam Almusawi, Marcin Skora	Oral sessions 3, Room UI7, Motion Control, Adjustable Speed Drives and Robotics & Underground Applications – 1

Wednesday, 28 September 2022

8:45-10:30	Marco Liserre, Helmut Weiss	Plenary session 5, Chairs:
11:00-13:00	Patrick Wheeler Zian Qin	Oral sessions 4, Room UI2, Power Electronic Converter Topologies, Design, Control and Reliability – 4
11:00-13:00	Seiichiro Katsura, Ilhami Colak	Oral sessions 4, Room UI3, Power Electronics in Electrical Energy Generation and Distribution, Smart Grid, Renewable and Sustainable Energy – 4
11:00-13:00	Mariusz Stepień, Julius Rogowski	Oral sessions 4, Room UI6, Power Electronics in Transportation, EV – 2
11:00-13:00	Hadi Kanaan, Peter Korondi	Oral sessions 4, Room UI7, Motion Control, Adjustable Speed Drives and Robotics & Underground Applications – 2
14:00-14:45	Pavol Bauer, Patrick Wheeler	Plenary session 6
14:45-15:30	Pavol Bauer, Mihai Cernat	Closing Ceremony

Sunday, 25 September 2022

14:00-19:00	Registration
15:00-16:30	Tutorials (4 rooms, 120 places)
	Room UI2, Tutorial 1, part 1 Smart Battery, a new technology of batteriesthat can breathe! - part 1 Prof. Remus Teodorescu, Dr. Xin Sui, Aalborg University, Denmark
	Room UI3, Tutorial 2, part 1 Big Data Analytics, Security and Privacy Issues in Smart Grid Systems - part 1 Prof. Şeref Sağıroğlu, Gazi University, Ankara, Turkey
	Room UI6, Tutorial 3, part 1 Damping of torsional vibrations in mechatronic systems using different control strategies - part 1 Prof. Krzysztof Szabat, Wroclaw University of Science and Technology, Poland, Prof. Seiichiro Katsura, Keio University, Yokohama, Japan, Dr. Karol Wróbel, Wroclaw University of Science and Technology, Poland
	Room UI7, Tutorial 4, part 1 Practical Digital Multi-Channel Measurement - - part 1 Prof. Helmut Weiss, Montanuniversität Leoben, Austria
16:30-17:00	Lobby, Coffee break
17:00-18:30	Room UI2, Tutorial 1, part 2 Smart Battery, a new technology of batteriesthat can breathe! - part 2
	Room UI3, Tutorial 2, part 2 Big Data Analytics, Security and Privacy Issues in Smart Grid Systems - part 2
	Room UI6, Tutorial 3, part 2 Damping of torsional vibrations in mechatronic systems using different control strategies - part 2
	Room UI7, Tutorial 4, part 2 Practical Digital Multi-Channel Measurement - - part 2

Monday, 26 September 2022

7:00-18:00	Registration
9:00-17:00	Trip 1 for companion/Guests (Brasov)
8:15-10:30	<p>Opening ceremony, Chairs: Pavol Bauer, Mihai Cernat,</p> <p>Plenary session 1 Chairs: Babak Nahid-Mobarakeh, Mihai Cernat</p> <p>Keynote address 1 Current Megatrends in Automotive Industry and Its Effects on Vehicle Architecture Dr. Christian von Albrichsfeld, General Chair of Continental Automotive, Romania</p> <p>Keynote address 2 Smart Battery, a New Technology Prof. Remus Teodorescu, Aalborg University, Denmark</p>
10:30-11:00	Lobby, Coffee Break
11:00-13:00	Oral sessions 1 (4 rooms, 23 papers)
	Room UI2, Power Electronic Converter Topologies, Design, Control and Reliability – 1 Chairs: Dmitri Vinnikov, Dan Lascu PEMC22-005, 012, 019, 024, 028, 055
	Room UI3, Power Electronics in Electrical Energy Generation and Distribution, Smart Grid, Renewable and Sustainable Energy – 1, Chairs: Krzysztof Stankiewicz, Marcin Kasprzak PEMC22-000034, 025, 153, 036, 043, 057
	Room UI6, Power Electronics in Electrical Machines and Actuators – 1 Chairs: Prasanth Venugopal, Karol Kyslan PEMC22-000003, 029, 038, 069, 144
	Room UI7, Sensors, Measurement and Observation Technique & Machine Learning – 1, Chairs: Krzysztof Szabat, Lucian-Mihai Itu PEMC22-000016, 009, 027, 037, 075, 032
13:00-14:00	Lunch Lobby, Lunch
14:00-15:15	Plenary session 2
	Chairs: Bülent Ertan, Remus Teodorescu Keynote 3 Motor Control for Electrified Transportation Systems Prof. Babak Nahid-Mobarakeh, McMaster University, Hamilton, ON, Canada. Invited paper 1 Technical and Non-Technical Challenges for Sustainable Transportation Electrification: A Case for Urban Catenary Buses Ibrahim Diab, Delft University of Technology, Netherlands
15:15-17:45	Dialogue sessions (3 rooms, 21 papers)
	Room DR1, Chairs: Catalin Ion Dialogue session 1 PEMC22-000039, 072, 109, 129, 139, 154, 083
	Room DR2, Chairs: Ioan Serban Dialogue session 2 PEMC22-000023, 030, 050, 091, 116, 125, 151, 140
	Room DR3, Chairs: Ilhami Colak Dialogue session 3 PEMC22-000094, 105, 137, 164, 014, 155, 099

Tuesday, 27 September 2022

8:00-18:00	Registration
9:00-17:00	Trip for companion/Guests (Prejmer, Harman, Sanpetru, Codlea)
8:45-10:30	<p>Plenary session 3, Chairs: Zbigniew Krzeminski, Pavol Bauer</p> <p>Keynote address 4 Trends and Challenges in Electrification of Aircraft Propulsion Systems Prof. Patrick Wheeler, Nottingham University, UK</p> <p>Invited paper 2 Designing High Power Density Induction Motors for Electric Propulsion <u>Prof. H. Bulent Ertan</u>, S. Koushan, M.S. Siddique</p>
10:30-11:00	Lobby, Coffee Break
11:00-13:00	<p>Oral sessions 2 (4 rooms, 22 papers)</p> <p>Room UI2, Power Electronic Converter Topologies, Design, Control and Reliability – 2 Chairs: Aditya Shekhar, Kaspars Kroics PEMC22-000056, 065, 070, 073, 074, 077</p> <p>Room UI3, Power Electronics in Electrical Energy Generation and Distribution, Smart Grid, Renewable and Sustainable Energy – 2 Chairs: Ramazan Bayindir, Krzysztof Szabat PEMC22-000066, 068, 076, 079, 081, 082</p> <p>Room UI6, Power Electronics in Electrical Machines and Actuators – 2 Chairs: Jan Michalik, Karol Wrobel PEMC22-000100, 131, 146, 157, 035, 053</p> <p>Room UI7, Sensors, Measurement and Observation Technique & Machine Learning 2 Chairs: Stefan Janous, Razvan Panati PEMC22-000052, 108, 138, 097, 071</p>
13:00-14:00	Lunch Lobby, Lunch
14:00-15:15	<p>Plenary session 4, Chairs: Peter Korondi, Viliam Fedak</p> <p>Keynote address 5 DC systems and Storage integration: Two key technologies for energy transition Prof. Pavol Bauer, Delft University of Technology, Netherlands</p> <p>Invited paper 3 Applications for Large Lithium-Ion Batteries Including Safety Issues and Precautions Univ.-Prof. Dr. Helmut Weiss, Montanuniversitaet Leoben, Austria</p>
15:15-15:45	Lobby, Coffee Break
15:45-17:45	<p>Oral sessions 3 (4 rooms, 24 papers)</p> <p>Room UI2, Power Electronic Converter Topologies, Design, Control and Reliability – 3 Chairs: Helmut Weiss, Levon Gevorgov, PEMC22-000087, 092, 093, 101, 114, 120</p> <p>Room UI3, Power Electronics in Electrical Energy Generation and Distribution, Smart Grid, Renewable and Sustainable Energy – 3 Chairs: Mariusz Stepień, Denes Fodor PEMC22-000085, 103, 112, 115, 123, 121</p> <p>Room UI6, Power Electronics in Transportation, EV – 1 Chairs: Gautham Ram Chandra Mouli, Ramdane Lateb PEMC22-000001, 018, 045, 135, 059, 159</p> <p>Room UI7, Motion Control, Adjustable Speed Drives and Robotics & Underground Applications – 1 Chairs: Husam A. Almusawi, Marcin Skora PEMC22-000041, 044, 063, 098, 083</p>

Wednesday, 28 September 2022

8:00-15:00	Registration
9:00-16:00	Trip for Companion/Guests (Sinaia)
8:45-10:30	<p>Plenary session 5, Chairs: Marco Liserre, Helmut Weiss</p> <p>Keynote address 6 True smart grid with voltage and current controller Prof. Zbigniew Krzeminski, Gdansk University of Technology, Poland</p> <p>Invited paper 4 Review on Power Quality Issues in EV Charging <u>Dr. Zian Qin</u>, Lu Wang, Pavol Bauer</p>
10:30-11:00	Lobby, Coffee Break
11:00-13:00	<p>Oral sessions 4 (4 rooms, 22 papers)</p> <p>Room UI2, Power Electronic Converter Topologies, Design, Control and Reliability – 4 Chairs: Patrick Wheeler, Zian Qin PEMC22-000162, 060, 130, 006, 122, 160</p> <p>Room UI3, Power Electronics in Electrical Energy Generation and Distribution, Smart Grid, Renewable and Sustainable Energy – 4 Chairs: Seiichiro Katsura, Ilhami Colak PEMC22-000107, 026, 156, 161, 128, 134</p> <p>Room UI6, Power Electronics in Transportation, EV – 2 Chairs: Mariusz Stepien, Julius Rogowsky PEMC22-000022, 051, 080, 086, 089, 095</p> <p>Room UI7, Motion Control, Adjustable Speed Drives and Robotics & Underground Applications – 2 Chairs: Hadi Y. Kannaan, Peter Korondi PEMC22-000133, 021, 104, 111</p>
13:00-14:00	Lunch Lobby, Lunch
14:00-14:45	<p>Plenary session 6, Chairs: Pavol Bauer, Patrick Wheeler</p> <p>Keynote 7 Unlocking the Hidden Capacity of the Electrical Grid through Smart Transformer and Smart Transmission Prof. Marco Liserre, Kiel University, Germany</p>
14:45-15:30	Closing Ceremony, Chairs: Pavol Bauer, Mihai Cernat

Thursday, 29 September 2022

8:00-10:00	Registration
9:00-18:00	<p>Trip 1 (9 hours) Chair: Laurentiu Mihai Ivanovici Visit by bus to the UniTBv Research Center and Bran Castle, with lunch at a wonderful scenery (Fundata-Cheile Gradistei)</p> <p>The Research and Development Institute of Transilvania University of Brasov The Research and Development Institute of Transilvania University of Brasov was developed between 2009 and 2013 within a project financed by European structural funds, national funds and university funds. The 11 buildings of the Institute are designed to be energetically autonomous. They host a modern and complex research infrastructure consisting of integrated lines of high-tech equipment for advanced research in the broad field of sustainable development. By means of the multi- and interdisciplinary activities of its 29 research centers, the exploitation of the underlying multidisciplinary synergies, as well as by integrating Ph.D. and postdoctoral activities into the high-level research conducted within the research centers, the Institute aims at becoming a major pillar of research, development and innovation in the field of sustainable development. (http://old.unitbv.ro/icdt_en/ http://old.unitbv.ro/icdt_en/movie.html)</p> <p>Bran Castle is a castle in Bran, 25 kilometres (16 mi) southwest of Braşov. It is a national monument and landmark in Transylvania. The fortress is on the Transylvanian side of the historical border with Wallachia, on road DN73. Commonly known outside Transylvania as Dracula's Castle, it is marketed as the home of the title character in Bram Stoker's <i>Dracula</i>. There is no evidence that Stoker knew anything about this castle, which has only tangential associations with Vlad the Impaler, voivode of Wallachia, the putative inspiration for Dracula. Stoker's description of Dracula's crumbling fictional castle also bears no resemblance to Bran Castle. The castle is now a museum dedicated to displaying art and furniture collected by Queen Marie. Tourists can see the interior on their own or by a guided tour. At the bottom of the hill is a small open-air museum exhibiting traditional Romanian peasant structures (cottages, barns, water-driven machinery, etc.) from the Bran region. (https://en.wikipedia.org/wiki/Bran_Castle)</p>
9:00-18:00	<p>Trip 2 (9 hours) Chair: Radu Mihai Campeanu Mountain hiking in Poiana Brasov and Postavarul Massif, with lunch at the SKV cottage</p> <p>Poiana Braşov is a neighborhood of Braşov and a Romanian ski resort popular among visitors from many European states. The resort is located at about 1,020 metres (3,350 feet) above sea level near the city of Braşov in Romania and it is easily accessible by road. There are regular buses operated by Braşov Transit (RATBV) which serve the 12 km (7.5 mi) route between Braşov and Poiana Braşov (lines 20). Poiana Braşov is host to a number of hotels and restaurants, the majority of which cater for foreign tourists.</p> <p>The Postăvarul massif is a massif in Romania; it is part of the Romanian Carpathians, which in turn are part of the Carpathian Mountains range. The altitude of the highest peak, also named Postăvarul is 1799 metres. Geographically the Postăvarul Massif stands at the southern end of the grand arc of the Eastern Carpathians. Together with the neighboring Piatra Mare Massif it forms the Bârsei Mountains group, neighbouring the southern side of Țara Bârsei (Burzenland) depression. The peak of the mountain can be easily reached from the resort by cable car.</p>

Sunday, 25 September 2022

15:00-16:30	<p>UI2</p> <p>Tutorial - Smart Battery, a new technology of batteries that can breathe! - part 1</p> <p>Prof. Remus Teodorescu, Dr. Xin Sui, Aalborg University, Denmark</p>
	<p>UI3</p> <p>Tutorial - Big Data Analytics, Security and Privacy Issues in Smart Grid Systems - part 1</p> <p>Prof. Şeref Sağıroğlu, Gazi University, Ankara, Turkey</p>
	<p>UI6</p> <p>Tutorial - Damping of torsional vibrations in mechatronic systems using different control strategies - part 1</p> <p>Prof. Krzysztof Szabat, Wrocław University of Science and Technology, Poland, Prof. Seiichiro Katsura, Keio University, Yokohama, Japan, Dr. Karol Wróbel, Wrocław University of Science and Technology, Poland</p>
	<p>UI7</p> <p>Tutorial – Practical Digital Multi-Channel Measurement - part 1</p> <p>Prof. Helmut Weiss, Montanuniversität Leoben, Austria</p>
16:30-17:00	<p>Lobby</p> <p>Coffee Break</p>
17:00-18:30	<p>UI2</p> <p>Tutorial - Smart Battery, a new technology of batteries that can breathe! - part 2</p>
	<p>UI3</p> <p>Tutorial - Big Data Analytics, Security and Privacy Issues in Smart Grid Systems - part 2</p>
	<p>UI6</p> <p>Tutorial - Damping of torsional vibrations in mechatronic systems using different control strategies - part 2</p>
	<p>UI7</p> <p>Tutorial - Practical Digital Multi-Channel Measurement - part 2</p>
19:00-21:00	<p>Lunch Lobby</p> <p>Welcome cocktail</p>

Monday, 26 September 2022

<div style="background-color: #008080; color: white; padding: 2px;"><i>Aula</i></div> <p>08:30-09:00</p>	<p>Opening ceremony</p> <p>Chairs: Pavol Bauer, Mihai Cernat</p>
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<div style="background-color: #008080; color: white; padding: 2px;"><i>Aula</i></div> <p>09:00-10:30</p>	<p>Plenary session 1</p> <p>Chairs: Babak Nahid-Mobarakeh, Mihai Cernat</p>
	<p>09:00-09:45</p> <p>Keynote address 1</p> <p>Current Megatrends in Automotive Industry and Its Effects on Vehicle Architecture</p> <p>Dr. Christian von Albrichsfeld, General Chair of Continental Automotive, Romania</p>
	<p>09:45-10:30</p> <p>Keynote address 2</p> <p>Smart Battery, a New Technology</p> <p>Prof. Remus Teodorescu, Aalborg University, Denmark</p>

<div style="background-color: #008080; color: white; padding: 2px;"><i>Lobby</i></div> <p>10:30-11:00</p>	<p>Coffee Break</p>
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Monday, 26 September 2022

<div style="background-color: #008080; color: white; padding: 2px; font-weight: bold;">UI2</div> <p style="margin-top: 10px;">11:00-13:00</p>	<p>Oral sessions 1</p> <p>Power Electronic Converter Topologies, Design, Control and Reliability – 1</p> <p>Chairs: Dmitri Vinnikov, Dan Lascu</p> <hr/> <p>PEMC22-000005, Cooling Channel Optimization in Power Inverter Design <i>Razvan Cristian Panati, Fabio Alpiovezza, <u>Giuseppe De Luca</u>, Gianluca Francesconi</i></p> <p>PEMC22-000012, Comparative Evaluation of Isolated dc-dc Converters for Low Power Applications <i><u>Mohammadreza Azizi</u>, Oleksandr Husev, Dmitri Vinnikov, Oleksandr Veligorskyi</i></p> <p style="color: #008080;">PEMC22-000019, Switching Frequency Modulation of a 27 kW DC-DC Converter with Si-IGBTs in Light-Load Operation <i><u>Noass Kunstbergs</u>, Hartmut Hinz, Nigel Schofield, Seval Mengüs</i></p> <p>PEMC22-000024, Impact of the Various Components Consideration on Choosing Optimal Redundancy Strategy in MMC <i><u>Miad Ahmadi</u>, Aditya Shekhar, Pavol Bauer.</i></p> <p>PEMC22-000028, Design Challenges of Bidirectional Interleaved DC-DC Converter for Energy Storage Systems in Elevator Applications <i><u>Martin Makar</u>, Martina Kutija, Luka Pravica, Viktor Šunde</i></p> <p>PEMC22-000055, Reconfigurability, Modularity and Redundancy Trade-offs for Grid Connected Power Electronic Systems <i><u>Miad Ahmadi</u>, Aditya Shekhar, Pavol Bauer.</i></p>
<div style="background-color: #008080; color: white; padding: 2px; font-weight: bold;">Lunch Lobby</div> <p style="margin-top: 10px;">13:00-14:00</p>	<p style="font-size: 24px; font-weight: bold; text-align: center;">Lunch</p>

Monday, 26 September 2022


<div style="background-color: #008080; color: white; padding: 2px; font-weight: bold;">UI3</div> <p style="margin-top: 10px;">11:00-13:00</p>	<p>Oral sessions 1</p> <p>Power Electronics in Electrical Energy Generation and Distribution, Smart Grid, Renewable and Sustainable Energy – 1</p> <p>Chairs: Krzysztof Stankiewicz, Marcin Kasprzak</p> <hr/> <p>PEMC22-000034, Research on control strategy of permanent magnet direct drive WindPower Generation System <i><u>Junrui Wang</u>, Libao Wang, Bingchao Bai, Li Dai, Xuanjing Qiao, Dongqi Zhao</i></p> <p>PEMC22-000025, Benchmarking methods for parameters identification of supercapacitors using Typhoon HiL <i>Adrian-Augustin Pop, <u>Mircea Ruba</u>, Raul-Octavian Nemes, Raluca Raia, Claudia Martis, Calin Husar.</i></p> <p>PEMC22-000153, Optimal Scheduling of on-Street EV Charging Stations <i>Murat Akil, Emrah Dokur, <u>Ramazan Bayindir</u></i></p> <p>PEMC22-000036, Current Sensorless Individual Mppt Control on a Cascaded H-Bridge Multilevel Inverter <i><u>Thibault Bertin</u>, Ghislain Despesse, Rémy Thomas</i></p> <p>PEMC22-000043, Concept of Solar Street Lighting with Hexagonal Solar Panels <i><u>Bedrich Bednar</u>, Jiri Ocenasek, Miroslav Tyrpekl, Jan Michalik, Tomas Kosan</i></p> <p>PEMC22-000057, Virtual thermal prototyping of the power module of the PCA-1 drivetrain <i>Jaroslav Tokarczyk, Krzysztof Stankiewicz, <u>Marcin Skora</u>, Przemyslaw Deja, Dariusz Michalak</i></p>
<div style="background-color: #008080; color: white; padding: 2px; font-weight: bold;">Lunch Lobby</div> <p style="margin-top: 10px;">13:00-14:00</p>	<p>Lunch</p>

Monday, 26 September 2022

<div style="background-color: #008080; color: white; padding: 2px; font-weight: bold;">UI6</div> 11:00-13:00	<p>Oral sessions 1</p> <p>Power Electronics in Electrical Machines and Actuators – 1</p> <p>Chairs: Karol Kyslan, Prasanth Venugopal</p> <hr/> <p>PEMC22-000003, High performance small ALA-rotor reluctance synchronous motor: preliminary design for variable speed with key FEM validation <i>Ileana Torac, <u>Lucian Tutelea</u>, Ion Boldea</i></p> <p>PEMC22-000029, Understanding rotor losses in high-speed permanent magnet rotor with copper shield under variable frequency drive supply <i>Ramdane Lateb, Julien Boisson, Joaquim Da Silva</i></p> <p>PEMC22-000038, Analysis of stator current reconstruction method after current sensor faults in vector controlled induction motor drives <i>Michal Adamczyk, Teresa Orłowska-Kowalska</i></p> <p>PEMC22-000069, Comparison of Permanent Magnet Electric Motors Used in Electric Vehicles <i>Emir Alaca, <u>Necibe Fusun Oyman Serteller</u>, Guven Komurgoz</i></p> <p>PEMC22-000144, Axially-Laminated-Anisotropic-rotor Reluctance Synchronous Motor characterization: analytical design, key FEM validations and preliminary experiments: 10kW, 2.4-4.8krpm <i>Ion Boldea, Ileana Torac, Adrian Martin, Danut Vitan, <u>Lucian Tutelea</u></i></p>
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<div style="background-color: #008080; color: white; padding: 2px; font-weight: bold;">Lunch Lobby</div> 13:00-14:00	<p>Lunch</p>
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Monday, 26 September 2022

 11:00-13:00	<p>Oral sessions 1</p> <p>Sensors, Measurement and Observation Technique & Machine Learning – 1</p> <p>Chairs: Krzysztof Szabat, Lucian-Mihai Itu</p> <hr/> <p>PEMC22-0000016, Sensor Fault Diagnosis Based on Wavelet Analysis and LSTM Neural Network <i>Zhi-hong Dan, Song Zhang, Zi-fan Li, <u>Rui Chang</u>, Zhi-feng Ye, BinWang</i></p> <p>PEMC22-000009, Statistical Evaluation of Velocity Estimations from TemporalFluoroscopic Angiography <i><u>Irina Andra Tache</u></i></p> <p>PEMC22-000027, Deep Learning based Coronary Stent Detection and Residual StenosisAssessment in Optical Coherence Tomography <i><u>Gabriela-Dorina Aldea</u>, Diana-Ioana Stoian, Andrei-Bogdan Gheorghita, Laurentiu-Horea Onea, Dan-Mircea Olinic, Călin Homorodean, Mihail Spinu, Maria Olinic, Lucian-Mihai Itu</i></p> <p>PEMC22-000037, Missing Values Imputation in the SEPHAR IV Echocardiographic Study <i><u>Ioana Antonia Taca</u>, Antonia Teodora Mohaiu, Lucian Mihai Itu, Maria Dorobantu, Cosmin Cojocaru, Oana Florentina Fronea, Aura Elena Vijiiac, Anamaria Vizitiu</i></p> <p>PEMC22-000075, Deep Learning based Aortic Valve Detection and State Classificationon Echocardiographies <i><u>Cosmin-Andrei Hatfaludi</u>, Costin Florian Ciusdel, Alina Toma, Lucian Mihai Itu</i></p> <p>PEMC22-000032, Modeling a Time Domain Reflectometer using Matlab/Simulink for detection of faults in electrical cables <i><u>Ana-Maria Moldovan</u>, Mircea IonBuzdugan, Sanda Oltean</i></p>
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 13:00-14:00	<p>Lunch</p>
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Monday, 26 September 2022

Aula

14:00-15:15

Plenary session 2

Chairs: Bülent Ertan, Remus Teodorescu

14:00-14:45

Keynote address 3

Motor Control for Electrified Transportation Systems

Prof. Babak Nahid-Mobarakeh, McMaster University, Hamilton, ON, Canada.

14:45-15:15

Invited paper 1

Technical and Non-Technical Challenges for Sustainable Transportation Electrification: A Case for Urban Catenary Buses (PEMC22-000132)

Ibrahim Diab, Gautham Ram Chandra Mouli, Prof. Pavol Bauer, Department of Electrical Sustainable Energy, Delft University of Technology, Netherlands

Monday, 26 September 2022

UI2 +

Poster Room 1

15:15-17:45

Dialogue session 1 + Coffee

Chair: Catalin Ion

PEMC22-000039, **High-Frequency Soft-Switching DC-DC Converter With Simple Secondary Turn-Off Snubber**

Marek Pastor, Jaroslav Dudrik, Richard Michal

PEMC22-000072, **Advanced Battery Management Systems with Integrated Battery Electronics**

Reyhaneh Eskandari, Prasanth Venugopal, Gert Rietveld

PEMC22-000109, **Double Pulse Test of the Paralleled Power MOSFETs in High Current 48V Inverter Design**

Oguz Tahmaz, Fatma Bay, Alperen Yazar

PEMC22-000129, **Design and Simulation Verification of Planar Transformer for Multiport Power Converters**

Adrián Marcinek, Želmíra Ferková, Marek Pástor

PEMC22-000139, **Tapped inductor Boost with exploitation of the stray energy**

Felix Himmelstoss, Michael Windisch

PEMC22-000154, **Controller Design of Dual Active Bridge Converter for Electric Vehicle Fast DC Charger Applications**

Ozgur Can Milletsever, Veysel Tutku Buyukdegirmenci, Murat Yilmaz

PEMC22-000083, **EV-Powertrain Test Bench for Digital Twin Development**

Viktor Rjabtsikov, Mahmoud Ibrahim, Anton Rassölkin, Toomas Vaimann, Ants Kallaste

Monday, 26 September 2022

<div style="background-color: #008080; color: white; padding: 2px; font-weight: bold; font-size: small;">UI3+</div> <div style="background-color: #008080; color: white; padding: 2px; font-weight: bold; font-size: small;">Poster Room 2</div> <div style="font-weight: bold; font-size: small; margin-top: 10px;">15:15-17:45</div>	<p style="font-weight: bold; font-size: large; margin-top: 0;">Dialogue session 2 + Coffee</p> <p>Chair: Ioan Serban</p>
<p>PEMC22-000023, Locked-rotor analysis of a Prius 2004 IPMSM motor with Digital-Twin Distiller <i>Mihály Katona, Tamás Orosz</i></p> <p>PEMC22-000030, Internet Based Control of a Servo Motor with a Sliding Mode Based Observer for Chattering Reduction <i>Robert Mikuska, Szilárd Balázs, Dávid Dobák, Péter-Tamás Szemes</i></p> <p>PEMC22-000050, Comparison and simulation of two loss minimization algorithms for field-oriented control of induction motor <i>Tomáš Lažek, Ivo Pazdera, Marek Toman</i></p> <p>PEMC22-000091, Fuzzy Model Development for a Continuous Dynamic Black-Box System <i>Marek Fedor, Pavol Fedor, Daniela Perdukova, <u>Viliam Fedak</u></i></p> <p>PEMC22-000116, Analysis of Unbalanced Dual Induction Motor Drive Configuration Supplied by Single Inverter for Parameter Estimation <i>Eduardo Rodriguez Montero, Markus Vogelsberger, Thomas Wolbank</i></p> <p>PEMC22-000125, Finite control set model predictive current control for reluctance synchronous motor <i>Robert Surus, Lukasz J. Niewiara, Tomasz Tarczewski, Lech M. Grzesiak</i></p> <p>PEMC22-000151, Preliminary Analysis of Global Parameters of Induction Machine for Fault Prediction in Rotor Bars <i>Karolina Kudelina, Hadi Ashraf Raja, Siarhei Autsou, Bilal Asad, Toomas Vaimann, Anton Rassõlkin, Ants Kallaste</i></p> <p>PEMC22-000140, Robust Estimation of the State Variables of Two-Mass System using Multilayer Observer <i>Kacper Sleszycki, Karol Wrobel, <u>Krzysztof Szabat</u>, Seiichiro Katsura</i></p>	

Monday, 26 September 2022

UI6+Poster
Room 3

15:15-17:45

Dialogue session 3 + Coffee

Chair: Ilhami Çolak

PEMC22-000094, Energy Trading Market Blockchain-based Social Simulations

Boumaiza Ameni, Antonio Sanfilipo

PEMC22-000105, Project Based Learning to Approach the Topic of Efficient Energy Conversion By Integrating Responsive Building Elements

Gabriel-Ionut Petropol-Serb Gabriela-Dana Petropol-Serb,

PEMC22-000137, Study of Overvoltages Due to Single Phase Defects in Networks With Insulated Neutral and Shunt Breaker

Ion Marin, Doru Ursu, Paul-Mihai Mircea, Marian Ciontu, Ion Mircea

PEMC22-000164, An Efficient Voltage Control Methodology in LV Networks Integrating PV Prosumers Using Distribution Transformers with OLTC

Livia Noroc, Gheorghe Grigoras, Vasilica Dandea, Ecaterina Chelaru, Bogdan-Constantin Neagu

PEMC22-000014, Conceptual Modelling of an EV-Permanent Magnet Synchronous Motor Digital Twin

Mahmoud Ibrahim, Viktor Rjabtsikov, Sergei Jegorov, Anton Rassõlkin, Toomas Vaimann, Ants Kallaste

PEMC22-000155, Design of an Individual Fingers Rehabilitation Device

Mayar Abdullah Talab, Peter Korondi, Husam A. Almusawi

PEMC22-000099, 3D CAD design of KUKA robot arm & integration into AR environment to educational purposes

Timotei-Istvan Erdei, Rudolf Krakó, Dávid-Peter Nusser, Géza Husi, Gyula Korsoveczki

Tuesday, 27 September 2022

<p><i>Aula</i></p> <p>09:15-10:30</p>	<p>Plenary session 3</p> <p>Chairs: Zbigniew Krzeminski, Pavol Bauer</p> <hr/> <p>09:15-10:00</p> <p>Keynote address 4</p> <p>Trends and Challenges in Electrification of Aircraft Propulsion Systems</p> <p>Prof. Patrick (Pat) Wheeler, University of Nottingham, UK</p> <hr/> <p>10:00-10:30</p> <p>Invited paper 2</p> <p>Designing High Power Density Induction Motors for Electric Propulsion</p> <p>Prof. H. Bülent Ertan, Middle East Technical University & Atılım University, Ankara, Turkey</p>
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<p><i>Lobby</i></p> <p>10:30-11:00</p>	<p>Coffee Break</p>
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Tuesday, 27 September 2022

<div style="background-color: #00AEEF; color: white; padding: 2px; font-weight: bold; font-size: 0.8em;">UI2</div> <p style="margin-top: 10px;">11:00-13:00</p>	<p>Oral sessions 2</p> <p>Power Electronic Converter Topologies, Design, Control and Reliability – 2</p> <p>Chairs: Aditya Shekhar, Kaspars Kroics</p> <hr/> <p>PEMC22-000056, ZVS Turn-on integrated Triangular Current Mode Three-phase PFC for EV On-board Chargers <i>Jian Sun, <u>Yang Wu</u>, Thiago Batista Soeiro, Zian Qin, Pavol Bauer.</i></p> <p>PEMC22-000065, Fixed-Frequency Sliding Mode Control in Synchronous Reference Frame for Three-Phase LCL Filtered Active Front-End Converter <i>Cagdas Hisar, Ibrahim Sefa, Necmi Altin</i></p> <p>PEMC22-000070, Switched-Capacitor Boost Converter for Low Step-Up Applications <i>Delia-Anca Botila, Ioana-Monica Pop-Calimanu, Dan Lascu</i></p> <p>PEMC22-000073, Series-Resonant DC-DC Interface Converter for Battery Integration into DC Microgrids <i>Vadim Sidorov, Andrii Chub, Dmitri Vinnikov.</i></p> <p>PEMC22-000074, Educational Platform for Remote Power Electronics Laboratory Classes <i>Krzysztof Przybyła, Krystian Frania, <u>Mariusz Stępień</u>, Marcin Kasprzak</i></p> <p>PEMC22-000077, Modular Pulsed Electric Field Generator Based on Modular Multilevel Converter Topology with Four Half Bridge Submodules to Experience with Biologic Loads <i>Övül Eski, Sevilay Cetin</i></p>
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<div style="background-color: #00AEEF; color: white; padding: 2px; font-weight: bold; font-size: 0.8em;">Lunch Lobby</div> <p style="margin-top: 10px;">13:00-14:00</p>	<p>Lunch</p>
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Tuesday, 27 September 2022

<div style="background-color: #00AEEF; color: white; padding: 2px; font-weight: bold; font-size: 0.8em;">UI3</div> <p style="margin-top: 10px;">11:00-13:00</p>	<p>Oral sessions 2</p> <p>Power Electronics in Electrical Energy Generation and Distribution, Smart Grid, Renewable and Sustainable Energy – 2</p> <p>Chairs: Ramazan Bayindir, Krzysztof Szabat</p> <hr/> <p>PEMC22-000066, Stability Analysis of Weak Grid Totem-Pole PFC Based on Stroboscopic Mapping <i>Kai He, Yihe Shen, Yuhan Gao, Yijung Yang</i></p> <p>PEMC22-000068, Stochasticity Control Strategy Based on Discrete Model for the Power System with Wind Farm Incorporating Stochastic Sources <i>Runsheng Zheng, Qunying Liu, Rui Xia, Zhen Guo, Xin Ge, An Wen</i></p> <p>PEMC22-000076, Wireless capacitive energy transfer system – preliminary results <i>Marcin Skóra, Piotr Hylla, Zbigniew Kaczmarczyk, Marcin Kasprzak, Kamil Kierepka, Krzysztof Przybyła</i></p> <p>PEMC22-000079, Analysis and Comparison of Supercapacitor Constant Current, Voltage and Power Charging Strategies for Power Backup Applications <i>Girts Stana, Kaspars Kroics</i></p> <p>PEMC22-000081, Impact of Discharge Current Profiles on Li-ion Battery Pack Degradation <i>Maarten Appelman, Prasanth Venugopal, Gert Rietveld</i></p> <p>PEMC22-000082, A modular time domain model of single-phase photovoltaic inverters enabling realistic harmonic large-scale simulations in low voltage networks <i>Elias Kaufhold, Jan Meyer, Peter Schegner</i></p>
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<div style="background-color: #00AEEF; color: white; padding: 2px; font-weight: bold; font-size: 0.8em;">Lunch Lobby</div> <p style="margin-top: 10px;">13:00-14:00</p>	<p style="font-size: 1.2em; font-weight: bold;">Lunch</p>
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Tuesday, 27 September 2022

<div style="background-color: #00a0e3; color: white; padding: 2px; font-weight: bold; font-size: 0.8em;">UI6</div> <p style="margin-top: 10px;">11:00-13:00</p>	<p>Oral sessions 2</p> <p>Power Electronics in Electrical Machines and Actuators – 2</p> <p>Chairs: Jan Michalik, Karol Wrobel</p> <hr/> <p>PEMC22-000100, Single and Multi-Objective Optimization of Permanent Magnet Synchronous Motor <i>Goga Cvetkovski, Lidija Petkovska</i></p> <p>PEMC22-000131, Manufacturing of IE4 Induction Motors <i>Catalin Ion, Ioan Peter</i></p> <p>PEMC22-000146, Fault detection in PMSM by using indexed based methods <i>Daijiry Narzary, <u>KalyanaChakravarthy Veluvolu</u></i></p> <p>PEMC22-000157, A Method for the Determination of Fault and Wear Types in Induction Motor's Bearings <i>Florian Floh, <u>Helmut Weiss</u></i></p> <p>PEMC22-000035, Preliminary Design and Comparison of 5 Phase and 6 Phase Fault Tolerant Outer Rotor Permanent Magnet Synchronous Machines with Different Electrical Steel <i>Vitaliy Sizonenko, Ondrej Vitek</i></p> <p>PEMC22-000053, Applicability of 6/10 Switched Reluctance Motor as a Mid Drive e-Bike Propulsion <i>Mladen V. Terzic, Dragan Mihic, Zarko Koprivica</i></p>
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<div style="background-color: #00a0e3; color: white; padding: 2px; font-weight: bold; font-size: 0.8em;">Lunch Lobby</div> <p style="margin-top: 10px;">13:00-14:00</p>	<p>Lunch</p>
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Tuesday, 27 September 2022

<div style="background-color: #00aaff; color: white; padding: 2px; font-weight: bold; font-size: 0.8em;">UI7</div> <p style="margin-top: 10px;">11:00-13:00</p>	<p>Oral sessions 2</p> <p>Sensors, Measurement and Observation Technique & Machine Learning – 2</p> <p>Chairs: Stefan Janous, Razvan Panati</p> <hr/> <p>PEMC22-000052, Optimizing microstrip antennas and antenna arrays using evolutionary algorithms <i><u>Kornél Illyés</u>, Eszter Kiss, Ádám Novák, Imre Skublics, István Balajti</i></p> <p>PEMC22-0000108, Design of IoT based flood monitoring and alerting system <i>Emil Maer, <u>Adrian-Augustin Pop</u></i></p> <p>PEMC22-000138, Estimating Inductances of Coils with Ferromagnetic Cores with a Data Acquisition System in a Noisy Environment <i>Ileana Diana Nicolae, Petre-Marian Nicolae, <u>Ilie Gheorghe</u>, Daniel Cirstea, Anca Purcaru (Albita).</i></p> <p>PEMC22-000097, Current Sensor Fault-Tolerant Induction Motor Drive with Online Rotor Resistance Adaptation <i><u>Michał Adamczyk</u>, Szymon Niczyporuk, Teresa Orłowska-Kowalska</i></p> <p>PEMC22-000071, Detection of cyber attack in smart grid: A Comparative Study <i><u>Junjie Xiao</u>, Lu Wang, Zian Qin, Pavol Bauer.</i></p>
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<div style="background-color: #00aaff; color: white; padding: 2px; font-weight: bold; font-size: 0.8em;">Lunch Lobby</div> <p style="margin-top: 10px;">13:00-14:00</p>	<p style="font-size: 1.2em; font-weight: bold;">Lunch</p>
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Tuesday, 27 September 2022

Aula	<p>Plenary session 3</p> <p>Chairs: Peter Korondi, Viliam Fedak</p>
14:00-15:15	<p>14:00-14:45</p> <p>Keynote address 5</p> <p>DC systems and Storage integration: Two key technologies for energy transition</p> <p>Prof. Pavol Bauer, Delft University of Technology, Netherlands</p>
14:45-15:15	<p>Invited paper 3</p> <p>Applications for Large Lithium-Ion Batteries Including Safety Issues and Precautions</p> <p>Univ.-Prof. Dr. Helmut Weiss, Montanuniversitaet Leoben, Austria</p>

Lobby	<p>Coffee Break</p>
15:15-15:45	

Tuesday, 27 September 2022

<div style="background-color: #00AEEF; color: white; padding: 2px; font-weight: bold; font-size: 0.8em;">UI2</div> <p style="margin-top: 10px;">15:45-17:45</p>	<p>Oral sessions 3</p> <p>Power Electronic Converter Topologies, Design, Control and Reliability – 3</p> <p>Chairs: Helmut Weiss, Levon Gevorkov</p> <hr/> <p>PEMC22-000087, Turn-off Angle Analytical Calculation Method of a Passive Boost Converter with Parallel Type Capacitors for Switched Reluctance Motors <i><u>Yuanfeng Lan</u>, Julien Croonen, Kritika Deepak, Yassine Benomar, Mohamed El Baghdadi, Omar Hegazy.</i></p> <p>PEMC22-000092, Current-Fed Dual Inductor Push-Pull Partial Power Converter <i><u>Omar Abdel-Rahim</u>, Dmitri Vinnikov, Andrii Chub, Andrei Blinov.</i></p> <p>PEMC22-000093, A Comparative Analysis on a Single-Phase Inverter With a Reduced Component Count Power Decoupling Circuit <i><u>Ronald Musona</u>, Ioan Serban</i></p> <p>PEMC22-000101, FPGA-Based High-Speed CHiL Simulations of Dual Active Bridge Converter Employing LB-LMC <i><u>Dhiman Chowdhury</u>, Castulo A. de la O, Md Multan Biswas, Michele Difronzo, Herbert L. Ginn, Andrea Benigni</i></p> <p>PEMC22-000114, Interoperability of the Voltage/Current Doubler Converter Employing Bipolar Pads with the SAE J2954 VA WPT2/Z2 for EV Wireless Charging <i><u>Francesca Grazian</u>, Thiago Batista Soeiro, Pavol Bauer.</i></p> <p>PEMC22-000120, Power Electronics Control with System-on-a-Chip-Based Platforms <i><u>Marco Guerreiro</u>, Shrikant Kharade, Pedro dos Santos, Steven Liu</i></p>
<p>19:30-23:59</p>	<p style="background-color: #00AEEF; color: white; padding: 2px;"><i>Restaurant Kronwell, Blvd. Garii 7A, 500203 Brasov</i></p> <p>Gala dinner</p>

Tuesday, 27 September 2022

<div style="background-color: #0070C0; color: white; padding: 2px; font-weight: bold; font-size: 0.8em;">UI3</div> <p style="margin-top: 10px;">15:45-17:45</p>	<p>Oral sessions 3</p> <p>Power Electronics in Electrical Energy Generation and Distribution, Smart Grid, Renewable and Sustainable Energy – 3</p> <p>Chairs: Mariusz Stepień, Denes Fodor</p> <hr/> <p>PEMC22-000085, High Voltage High Frequency Single Wire Energy Transfer <i><u>Marcin Kasprzak</u>, Zbigniew Kaczmarczyk, Krystian Frania, Kamil Kierepka, Krzysztof Przybyła, Piotr Zimoch</i></p> <p>PEMC22-000103, Design of the AC Filter for Two-Level Converter Operating in IT Grids <i>Marcin Zygmanski, Grzegorz Jarek, <u>Jarosław Michalak</u>, Michał Jeleń</i></p> <p>PEMC22-000112, Maximum Power Point Tracking Techniques Based on M5P Indirect Control of Doubly Fed Induction Generator for Wind Energy Systems <i><u>Ilhami Colak</u>, Mounira Ali, İlhan Garip</i></p> <p>PEMC22-000115, Adaptive Modularity for Power Electronics Based Electrolysis Systems for Green Hydrogen <i><u>Rohan Shailesh Deshmukh</u>, Aditya Shekhar, Pavol Bauer</i></p> <p style="color: #0070C0;">PEMC22-000123, A Novel Quaternion-based Method to Calculate Solar Irradiation on a Surface <i><u>Attila Knolmayer</u>, Attila Fodor, Ágnes Vaty-Fogarassy</i></p> <p>PEMC22-000121, Real-Time Simulations for Testing of a Low-Voltage Microgrid with MMC-DSTATCOM <i>M. Mustafa Ertay, <u>Dhiman Chowdhury</u>, Md Multan Biswas, Herbert L. Ginn</i></p>
<p>19:30-23:59</p>	<p style="background-color: #0070C0; color: white; padding: 2px;"><i>Restaurant Kronwell, Blvd. Garii 7A, 500203 Brasov</i></p> <p>Gala dinner</p>

Tuesday, 27 September 2022

<div style="background-color: #00AEEF; color: white; padding: 2px; font-weight: bold; font-size: 0.8em;">UI6</div> <p style="margin-top: 10px;">15:45-17:45</p>	<p>Oral sessions 3</p> <p>Power Electronics in Transportation, EV - 1</p> <p>Chairs: Gautham Ram Chandra Mouli, Ramdane Lateb</p> <hr/> <p>PEMC22-000001, Nonlinear optimal control of power chains in hybrid electric vehicles <i><u>Gerasimos Rigatos</u>, Patrice Wira, Mohamed Hamida, Masoud Abbaszadeh</i></p> <p>PEMC22-000018, Power Sharing Algorithm for a Dual Inverter Fed Open-End Winding Induction Motor in HEVs <i>Khaled Safsouf, Jean Sawma, <u>Hadi Y. Kanaan</u></i></p> <p>PEMC22-000045, Enhancing Home-Powered EV Fast-Charging Using a Hybrid Integrated Charger with Rooftop Solar and Local Battery Storage <i>Osama Bin Rizwan, <u>Reza Sabzehgar</u>, Mohammad Rasouli, Poria Fajri</i></p> <p>PEMC22-000135, Efficient Method of Identifying a Li-Ion Battery Model for an Electric Vehicle <i><u>Danko Marušić</u>, Mario Vašak</i></p> <p>PEMC22-000059, Health and Charge Indicators for Battery Energy Storage Systems in Electric Vehicles Applications <i><u>Rolando Antonio Gilbert Zequera</u>, Anton Rassõlkin, Toomas Vaimann, Ants Kallaste</i></p> <p>PEMC22-000159, Overcurrent protection for auxiliary loads in Electric Vehicles with E-Fuse <i><u>Mihai Popa</u>, Octavian Luca</i></p>
<p>19:30-23:59</p>	<p style="background-color: #00AEEF; color: white; padding: 2px;"><i>Restaurant Kronwell, Blvd. Garii 7A, 500203 Brasov</i></p> <p>Gala dinner</p>

Tuesday, 27 September 2022

<div style="background-color: #00AEEF; color: white; padding: 2px; font-weight: bold; font-size: 0.8em;">UI7</div> <p style="margin-top: 10px;">15:45-17:45</p>	<p>Oral sessions 3 Motion Control, Adjustable Speed Drives and Robotics & Underground Applications – 1</p> <p>Chairs: Husam A. Almusawi, Marcin Skora</p> <hr/> <p>PEMC22-000041, Adaptive Neural Controller for Speed Control of PMSM with Torque Ripples <i>Tomasz Pajchrowski, Przemysław Siwek, <u>Adrian Wojcik</u></i></p> <p>PEMC22-000044, Predictive control of induction motor fed by LC filter and transformer <i><u>Stepan Janous</u>, Ondrej Suchy, Jakub Talla, Zdenek Peroutka, Tomas Kosan</i></p> <p>PEMC22-000063, Anisotropy-Based Position Sensorless Control for Safety Functionality Applied to Synchronous Machines in Electric Vehicles <i><u>Julius Rogowsky</u>, Johannis Thomsen, Joachim Böcker</i></p> <p>PEMC22-000098, Comparison of square-wave and sinusoidal signal injection in sensorless polarity detection for PMSMs <i><u>István Szalay</u>, Dénes Fodor, Krisztián Enisz</i></p> <p>PEMC22-000083, EV-Powertrain Test Bench for Digital Twin Development <i><u>Viktor Rjabtšikov</u>, Mahmoud Ibrahim, Anton Rassölkin, Toomas Vaimann, Ants Kallaste</i></p>
<p>19:30-23:59</p>	<div style="background-color: #00AEEF; color: white; padding: 2px; font-weight: bold; font-size: 0.8em;">Restaurant Kronwell, Blvd. Garii 7A, 500203 Brasov</div> <p style="margin-top: 5px;">Gala dinner</p>

Wednesday, 28 September 2022

<div style="background-color: #008080; color: white; padding: 2px; font-weight: bold; font-size: 0.8em;">Aula</div> <p style="margin-top: 10px;">09:15-10:30</p>	<p style="font-weight: bold; font-size: 1.2em;">Plenary session 4</p> <p>Chairs: Marco Liserre, Helmut Weiss</p>
<p style="margin-top: 10px;">09:15-10:00</p>	<p>Keynote address 6</p> <p style="font-weight: bold; font-size: 1.2em;">True smart grid with voltage and current controller</p> <p>Prof. Zbigniew Krzeminski, Gdansk University of Technology, Poland</p>
<p style="margin-top: 10px;">10:00-10:30</p>	<p>Invited paper 4</p> <p style="font-weight: bold; font-size: 1.2em;">Review on Power Quality Issues in EV Charging (PEMC22-000067)</p> <p><u>Dr. Zian Qin</u>, Lu Wang, Prof. Pavol Bauer Department of Electrical Sustainable Energy, Delft University of Technology, Netherlands</p>

<div style="background-color: #008080; color: white; padding: 2px; font-weight: bold; font-size: 0.8em;">Lobby</div> <p style="margin-top: 10px;">10:30-11:00</p>	<p style="font-weight: bold; font-size: 1.2em;">Coffee Break</p>
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Wednesday, 28 September 2022

<div style="background-color: #0070c0; color: white; padding: 2px; font-weight: bold;">UI2</div> <p style="margin-top: 10px;">11:00-13:00</p>	<p>Oral sessions 4</p> <p>Power Electronic Converter Topologies, Design, Control and Reliability – 4</p> <p>Chairs: Patrick Wheeler, Zian Qin</p> <hr/> <p>PEMC22-000162, Research on the Amplitude Frequency Decoupled AC Heater for Lithium Ion Battery and Its Onboard Implementation <i>Shuaikang Lu, Ming Huang, Shu Liu, <u>Furong Liu</u>, Changjun Xie, Zhongxiaobang Hu</i></p> <p>PEMC22-000060, Experiments of SiC MOSFETs in high DC bus voltage Boostapplications <i>Miaoguang Bai, Qing Guo, Li Liu, Hengyu Wang, Na Ren, Kuang Sheng</i></p> <p>PEMC22-000130, Improvements to the VSM current controller for better gridperformance <i>Zeev Kustanovich, <u>Hang Yin</u>, George Weiss</i></p> <p>PEMC22-000006, Improved Efficiency and Power Density in EV Inverter Design Using a Novel SiC Power Module with Direct-Cooled Substrate <i>Andrea Dappiano, Razvan C. Panati, Riccardo De Filippi, <u>Fabio Bernardi</u></i></p> <p>PEMC22-000122, Comprehensive Reliability Assessment of Buck Quasi-Resonant Converter <i>Mohammadhesam Hasanisadi, Hadi Tarzamni, <u>Farzad Tahami</u></i></p> <p>PEMC22-000160, A Novel Fourth-Order Buck-Boost Converter <i><u>Gabriela-Madalina Jude</u>, Ioana-Monica Pop-Calimanu, Dan Lascu</i></p>
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<div style="background-color: #0070c0; color: white; padding: 2px; font-weight: bold;">Lunch Lobby</div> <p style="margin-top: 5px;">13:00-14:00</p>	<p style="font-size: 24px; font-weight: bold; margin: 0;">Lunch</p>
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Wednesday, 28 September 2022

<div style="background-color: #008080; color: white; padding: 2px; font-weight: bold; font-size: 0.8em;">UI3</div> <p style="margin-top: 10px;">11:00-13:00</p>	<p>Oral sessions 4</p> <p>Power Electronics in Electrical Energy Generation and Distribution, Smart Grid, Renewable and Sustainable Energy – 4</p> <p>Chairs: Seiichiro Katsura, Ilhami Colak</p> <hr/> <p>PEMC22-000107, Dynamic characteristic of swash-plate mechanism applied in quasi- free-piston generator <i><u>Lei Zhang</u>, Hai-jun Xu, Teng-an Zou, Xiang Zhang</i></p> <p>PEMC22-000026, Assessing the Demand Response Potential of Heat Pumps in All- Electric Buildings Equipped with PV, EV (V2G) and BES to Minimize Energy Costs <i>David Gaona, <u>Wiljan Vermeer</u>, Gautham Ram Chandra Mouli, Pavol Bauer</i></p> <p>PEMC22-000156, Simulation Method for Energy Estimation of Variable Speed Pump for Heating System <i><u>Levon Gevorkov</u>, José-Luis Domínguez-García</i></p> <p>PEMC22-000161, Design of Two-Channel LED Stand-Alone Solar Lamp Driver Prototype for Biodynamic Application <i><u>Jiri Ocenasek</u>, Bedrich Bednar, Miroslav Tyrpekl, Jan Michalik, Tomas Kosan</i></p> <p style="color: #008080;">PEMC22-000128, Increasing the Regional Energy System Reliability in the Context of the Reconstruction of the OTL-110 kV: Technical and Economic Justification <i>Mahbuba Avezova, Muhayo Toshkhodzhaeva, Elena Gracheva, Olga Shumikhina, <u>Stanimir Valtchev</u></i></p> <p>PEMC22-000134, Phillips-Heffron Model And Damping Torque Analysis of Synchronverter <i><u>Hang Yin</u>, Jyun Lin</i></p>
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<div style="background-color: #008080; color: white; padding: 2px; font-weight: bold; font-size: 0.8em;">Lunch Lobby</div> <p style="margin-top: 10px;">13:00-14:00</p>	<p style="font-size: 1.2em; font-weight: bold;">Lunch</p>
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Wednesday, 28 September 2022

<div style="background-color: #008080; color: white; padding: 2px; font-weight: bold;">UI6</div> <p style="margin-top: 10px;">11:00-13:00</p>	<p>Oral sessions 4</p> <h3 style="margin: 0;">Power Electronics in Transportation, EV – 2</h3> <p>Chairs: Mariusz Stepień, Julius Rogowski</p> <hr/> <p>PEMC22-000022, Analysis of Effect of Increasing Motor Voltage from 690-V to 1000-V on 1.5-MW Motor Drive Design for Large-Scale Electric Propulsion Ship <i>Jiho Song, Jongseok Kim, Sanghyun Kim, Youngho Cho, Ki-Bum Park</i></p> <p>PEMC22-000051, Electrical Parametric Design of Permanent Magnet based Machine for High Power Urban Electric Vehicles <i>Samiksha Rawat, Krishna Raj R</i></p> <p>PEMC22-000080, Practical Challenges in Design of Omnidirectional, Medium Distance, Device Agnostic Wireless Power Transfer System <i>Patrick Koch, Georgios Erotas, Johan Dijkstra, Anand Nateshan, Prasanth Venugopal</i></p> <p>PEMC22-000086, A Battery Digital Twin Based on Neural Network for Testing SoC/SoH-Algorithms <i>Roberta Di-Fonso, Pallavi Bharadwaj, Remus Teodorescu, Carlo Cecati</i></p> <p>PEMC22-000089, Minimum Copper Losses Per Torque Optimization on Electrically Excited Synchronous Motors for Electric Vehicles Applications <i>Charbel Zaghrini, Gabriel Khouri, Maurice Fadel, Ragi Ghosn, Flavia Khatounian</i></p> <p>PEMC22-000095, Energy Consumption Simulation and Economic Benefit Analysis for a Light Duty Urban Commercial Electric Vehicle <i>Aminu Babangida, Péter-Tamás Szemes</i></p>
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<div style="background-color: #008080; color: white; padding: 2px; font-weight: bold;">Lunch Lobby</div> <p style="margin-top: 10px;">13:00-14:00</p>	<h2 style="margin: 0;">Lunch</h2>
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Wednesday, 28 September 2022

<div style="background-color: #008080; color: white; padding: 2px; font-weight: bold; font-size: 0.8em;">UI7</div> <p style="margin-top: 10px;">11:00-13:00</p>	<p>Oral sessions 4</p> <p>Motion Control, Adjustable Speed Drives and Robotics & Underground Applications – 2</p> <p>Chairs: Hadi Y. Kannaan, Peter Korondi</p>
	<p>PEMC22-000133, Novel Driving Method for Brushless DC Motors Based on Higher Time-Harmonics in Input Voltages <i>Jan Stejskal</i></p> <p style="color: #008080;">PEMC22-000021, A Comparison of DPWM and Inverter Loss Energy Based FCS-MPC for IPMSM <i>Jongseok Kim, Jiho Song, Kyunghwan Choi, Ki-Bum Park</i></p> <p>PEMC22-000104, Underground Mine Monitoring System <i>Marian Gaiceanu, Răzvan Buhosu, Răzvan Solea, Epure Silviu, Krzysztof Stankiewicz, Marcin Skora</i></p> <p>PEMC22-000111, Optimization of Injected Voltage Amplitude for Low-Speed Sensorless Control of PMSM with High-Frequency Pulse Signal Injection <i>Viktor Petro, Karol Kyslan, Peter Bober, Milan Lacko</i></p>

<div style="background-color: #008080; color: white; padding: 2px; font-weight: bold; font-size: 0.8em;">Lunch Lobby</div> <p style="margin-top: 10px;">13:00-14:00</p>	<p style="font-size: 1.2em; font-weight: bold;">Lunch</p>
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Wednesday, 28 September 2022

Aula 14:00-14:45	Plenary session 5 Chairs: Pavol Bauer, Patrick Wheeler <hr/> Keynote address 7 Unlocking the Hidden Capacity of the Electrical Grid through Smart Transformer and Smart Transmission Prof. Marco Liserre, Kiel University, Germany
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Aula 14:45-15:30	Closing ceremony Chairs: Pavol Bauer, Mihai Cernat
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Reviewer List

Sorin Florica	Abagiu
Ali	Abedi
Adnan	Ahmad
Miad	Ahmadi
Emir	Alaca
Joel	Alpizar-Castillo
Petra	Aradi
Goce	Arsov
Sandy	Atanalian
Seyedreza	Azizighalehsari
Rosanna	Babagiannou
Mohammad	Babaie
Aminu	Babangida
Ali	Bakbak
Ramazan	Bayindir
Bedrich	Bednar
Dávid	Bodnár
Radu	Bojoi
Paulo	Bonifacio
Aleksandar	Boricic
Pablo	Briceño
fernando	briz
Stefan	Brock
Concettina	Buccella
Dan	Butnicu
Corneliu	Buzduga
Marius	Calin
Zhi	Cao
Massimo	Caruso
Mihai	Cernat
Yun	Chen
Demetris	Chrysostomou
chenglong	Chu
Marian	Ciontu
Calin	Ciufudean
Costin Florian	Ciusdel
Jose	Cobos
Florin	Condrea
Sorina	Costinas
Goga	Cvetkovski
Manuela-Daniela	Danu
Ridvan	Demir
Junyun	Deng
Rohan	Deshmukh
Ibrahim	Diab
Jianning	Dong

Yunlu	Du
Jaroslav	Dudrik
Mateusz	Dybkowski
Georgios	Erotas
Reyhaneh	Eskandari
Övül	Eski
Viliam	Fedak
Florian	Floh
Denes	Fodor
Fredrik	Fossan
Mladen	Gagic
Dhanashree Ashok	Ganeshpure
Baoyun	Ge
Levon	Gevorkov
Sohrab	Ghafoor
MOHSEN	GHRIBI
Eva	González-Romera
Francesca	Grazian
Marian	Greconici
Gheorghe	Grigoras
Marco	Guerreiro
Baocheng	Guo
Hilmi	Gurleyen
Kyaw	Hein
Mickaël	Hilairat
Felix	Himmelstoss
Csongor	Horváth
Krisztián	Horváth
Mahmoud	Ibrahim
Remzi	İnan
Catalin	Ion
Erdal	Irmak
Alina	Itu
Mirjana	Ivanovic
Stepan	Janous
Gojko	Joksimovic
Jacek	Kabziński
Marcin	Kaminski
Hadi	Kanaan
Faezeh	Kardan
Marcin	Kasprzak
Seiichiro	Katsura
Patrick	Koch
Imre	Kocsis
Peyman	Koohi
Gyula	Korsoveczki

Radek	Kot
Szilveszter	Kovacs
Karolina	Kudelina
Noass	Kunstbergs
Karol	Kyslan
Milan	Lacko
Yuanfeng	Lan
Dan	Lascu
Ramdane	Lateb
Cristian-George	Lazaroiu
Antti	Lehikoinen
Aleksandra	Lekić
Horia	Leonte
Zhengzhao	Li
Septimiu	Lica
Evelyn-Astrid	Lovasz
Barote	Luminita
Tianming	Luo
Dingsihao	Lyu
Alice	Maimeri
Martin	Makar
Dmytro	Mamchur
Tamás	Mankovits
Adrian	Marcinek
Antonio J.	Marques Cardoso
Luis	Martinez-Salamero
Catalin	Mihai
Robert	Mikuska
Mihai	Mircea
Radu	Miron
Reza	Mirzadarani
Vitor	Monteiro
Nazih	Moubayed
Nicolae	Muntean
Krste	Najdenkoski
Anand	Nateshan
Ahmad Ali	Nazeri
Dorin	Neacsu
Regis	Nibaruta
Nuno	Nogueira
Farshid	Norouzi
Iulian Alexandru	Ogrezeanu
Svetlana	Orlova
Teresa	Orlowska-Kowalska
Tamás	Orosz
necibe fusun	oyman serteller
Engin	Ozdemir
Sadik	Ozdemir

Tomasz	Pajchrowski
Nanda Kishor	Panda
Marek	Pastor
Toma	Patarau
Predrag	Pejovic
Carlos	Pena
Lidija	Petkovska
Dorin	Petreus
Du	Phan
Vitor	Pires
Raimondas	Pomarnacki
Ovidiu	Pop
Ioana-Monica	Pop-Calimanu
Andreea Bianca	Popescu
Mihaela	Popescu
Adrian	Popovici
Namireddy	Praveen
Alfan	Presekai
Andrei	Puiu
Sohaib	Qazi
Jacek	Rabkowski
Anton	Rassõlkin
Akshay Kumar	Rathore
Avo	Reinap
Calvin	Riekerk
Gautam	Rituraj
Anna	Rizzo
Eduardo	Rodriguez Montero
Enrique	Romero-Cadaval
Stefan	Rosu
Khaled	Safsouf
Kornél	Sarvajcz
Jean	Sawma
Ibrahim	Sefa
Alex	Serban
Ioan	Serban
Piotr	Serkies
Aditya	Shekhar
Hou	Shengren
Ajay	Shetgaonkar
Wenli	Shi
Siddhesh	Shinde
Vadim	Sidorov
Dario	Slafstein
Dorel	Stanescu
Marco	Stecca
Mariusz	Stepien
Prashant	Surana

Constantin Vlad	Suru
Jakub	Svatos
Csaba	Szász
Peter	Szemes
Gusztáv Áron	Sziki
Ferenc	Szodrai
Jian	Tan
Bas	Ten Have
Ileana	Torac
Daniel	Trip
Fatih	Tuztasi
Konrad	Urbanski
Neda	Vahabzad
Arjen	van der Meer
Lukas	Veg
Prasanth	Venugopal
Wiljan	Vermeer
Karoly	Veszpremi
Baiba	Vilne
Ondřej	Vítek
Anamaria	Vizitiu

Valentin	Vlad
Faisal	Wani
Helmut	WEISS
Sheldon	Williamson
Thomas	Wolbank
Yang	Wu
Junjie	Xiao
Haiwei	Xie
Sachin	Yadav
Yu	Yao
Guangyao	Yu
Evangelia	Zacharaki
Krzysztof	Zawirski
Emrah	Zerdali
Rawad	Zgheib
Guoqiang	Zhang
Jiaxin	Zhou
Gangwei	Zhu
Sa	Zhu
Zichong	Zhu
Frank	Zoellner

Author index

Abbaszadeh	Masoud	31
Abdel-Rahim	Omar	29
Adamczyk	Michal	17, 27
Ahmadi	Miad	15
Akil	Murat	16
Alaca	Emir	17
Aldea	Gabriela-Dorina	18
Ali	Mounira	30
Almusawi	Husam A.	22
Alpiovezza	Fabio	15
Altin	Necmi	24
Ameni	Boumaiza	22
An	Wen	25
Appelman	Maarten	25
Asad	Bilal	21
Autsou	Siarhei	21
Avezova	Mahbuba	35
Azizi	Mohammadreza	15
Babangida	Aminu	37
Bai	Bingchao	16
Bai	Miaoguang	34
Balajti	István	27
Balázs	Szilárd	21
Bauer	Pavol	15,19,24,27,29,30,35
Bay	Fatma	20
Bayindir	Ramazan	16
Bednar	Bedrich	16,35
Benigni	Andrea	29
Benomar	Yassine	29
Bernardi	Fabio	34
Bertin	Thibault	16
Bharadwaj	Pallavi	37
Bin	Wang	18
Bin-Rizwan	Osama	31
Biswas	Md-Multan	29,30
Blinov	Andrei	29
Bober	Peter	38
Böcker	Joachim	32
Boisson	Julien	17
Boldea	Ion	17
Botila	Delia-Anca	24
Buhosu	Răzvan	38
Buyukdegirmenci	Veysel-Tutku	20
Buzdugan	Mircea Ion	18
Cecati	Carlo	37
Cetin	Sevilay	24
Chakravarthy-Veluvolu	Kalyana	26

Chelaru	Ecaterina	22
Cho	Youngho	37
Choi	Kyunghwan	38
Chowdhury	Dhiman	29,30
Chub	Andrii	24,29
Ciontu	Marian	22
Cirstea	Daniel	27
Ciusdel	Costin-Florian	18
Cojocaru	Cosmin	18
Colak	Ilhami	30
Croonen	Julien	29
Cvetkovski	Goga	26
Dai	Li	16
Dandea	Vasilica	22
Dappiano	Andrea	34
Da-Silva	Joaquim	17
Deepak,	Kritika	29
De-Filippi	Riccardo	34
Deja	Przemyslaw	16
Dela-O	Castulo A.	29
De-Luca,	Giuseppe	15
Deshmukh	Rohan Shailesh	30
Despesse	Ghislain	16
Diab	Ibrahim	9,19
Di-Fonso	Roberta	37
Difronzo	Michele	29
Dijkstra	Johan	37
Dobák	Dávid	21
Dokur	Emrah	16
Domínguez-García	José-Luis	35
Dorobantu	Maria	18
Dos-Santos	Pedro	29
Dudrik	Jaroslav	20
El-Baghdadi	Mohamed	29
EniszK	Krisztián	32
Epure	Silviu	38
Erdei	Timotei-Istvan	22
Erotas	Georgios	37
Ertan	Bulent	10,23
Ertay	M. Mustafa	30
Eskandari	Reyhaneh	20
Eski	Övül	24
Fadel	Maurice	37
Fajri	Poria	31
Fedak	Viliam	21
Fedor	Marek	21
Fedor	Pavol	21
Ferková	Želmíra	20
Floh	Florian	26
Fodor	Attila	30
Fodor	Dénes	32
Francesconi	Gianluca	15

Frania	Krystian	24, 30
Fronea	Oana Florentina	18
Gaiceanu	Marian	38
Gaona	David	35
Garip	Ilhan	30
Gevorkov,	Levon	35
Gheorghe	Ilie	27
Gheorghita	Andrei-Bogdan	18
Ghosn	Ragi	37
Ginn	Herbert L	29,30
Gracheva,	Elena	35
Grazian	Francesca	29
Grigoras	Gheorghe	22
Grzesiak	Lech M.	21
Guerreiro	Marco	29
Guo	Qing	34
Hamida	Mohamed	31
Hasanisadi	Mohammadhesam	34
Hatfaludi	Cosmin-Andrei	18
Hegazy	Omar	29
Himmelstoss	Felix	20
Hinz	Hartmut	15
Hisar	Cagdas	24
Homorodean	Călin	18
Hu	Zhongxiaobang	34
Huang	Ming	34
Husar	Calin	16
Husev	Oleksandr	15
Husi	Géza	22
Hylla	Piotr	25
Ibrahim,	Mahmoud	20,22,30
Illyés	Kornél	27
Ion	Cătălin	26
Itu	Lucian-Mihai	18
Janous	Stepan	32
Jarek	Grzegorz	30
Jegorov,	Sergei	22
Jeleń	Michal	30
Jude	Gabriela-Madalina	34
Kaczmarczyk	Zbigniew	25,30
Kai	He	25
Kallaste	Ants	20,21,22,31,32
Kanaan	Hadi Y	31
Karolina	Kudelina	21
Kasprzak	Marcin	24,25,30
Katona	Mihály	21
Katsura	Seiichiro	8,21
Kaufhold	Elias	25
Kharade,	Shrikant	29
Khatounian	Flavia	37
Khoury	Gabriel	37
Kierepka	Kamil	25,30

Kim	Jongseok	37
Kim	Jongseok	38
Kim	Sanghyun	37
Kiss	Eszter	27
Knolmajer	Attila	30
Koch	Patrick	37
Komurgozfu	Guyen	17
Koprivica	Zarko	26
Korondi	Peter	22
Korsoveczki	Gyula	22
Kosan	Tomas	16,35
Kosaner	Tomas	32
Koushan	S.	10
Krakó	Rudolf	22
Kroics	Kaspars	25
Krzeminski	Zbigniew	11,33
Kunstbergs	Noass	15
Kustanovich	Zeev	34
Kutija,	Martina	15
Kyslan	Karol	38
Lacko	Milan	38
Lan	Yuanfeng	29
Lascu	Dan	24,34
Lateb	Ramdane	17
Lažek	Tomáš	21
Lin	Jyun	35
Liserre	Marco	11
Liu	Furong	34
Liu	Li	34
Liu	Shu	34
Liu	Steven	29
Lu	Shuaikang	34
Luca	Octavian	31
Maer	Emil	27
Makar	Martin	15
Marcinek	Adrián	20
Marin	Ion	22
Martin	Adrian	17
Martis	Claudia	16
Marušić	Danko	31
Mengüs	Seval	15
Meyer	Jan	25
Michal	Richard	20
Michalak	Darriusz	16
Michalak	Jarosław	30
Michalikar	Jan	16, 35
Mihic	Dragan	26
Mikuska	Robert	21
Milletsever	Ozgur-Can	20
Mircea	Ion	22
Mircea	Paul-Mihai	22
Mohaiu	Antonia-Teodora	18

Moldovan	Ana-Maria	18
Mouli	Chandra	35
Musona	Ronald	29
Nahid-Mobarakeh	Babak	9,19
Narzary	Daijiry	26
Nateshan	Anand	37
Neagu	Bogdan-Constantin	22
Nemes	Raul-Octavian	16
Nicolae	Ileana-Diana	27
Nicolae	Petre-Marian	27
Niczyporuk	Szymon	27
Niewiara	Lukasz J	21
Noroc	Livia	22
Novák	Ádám	27
Nusser	Dávid-Peter	22
Ocenasek	Jiri	16,35
Olinic	Dan-Mircea	18
Olinic	Maria	18
Oltean	Sanda	18
Onea	Laurentiu-Horea	18
Orlowska-Kowalska	Teresa	17,27
Orosz	Tamás	21
Oyman-Serteller	Necibe Fusun	17
Pajchrowski	Tomasz	13,32
Panati	Razvan-Cristian	15,34
Park	Ki-Bum	37,38
Pástor	Marek	20
Pazdera,	Ivo	21
Perdukova	Daniela	21
Peroutka	Zdenek	32
Peter	Ioan	26
Petro	Viktor	38
Petropol-Serb	Gabriela-Dana	22
Petropol-Serb	Gabriel-Ionut	22
Petrovka	Lidija	26
Pop	Adrian-Augustin	16, 27
Popa	Mihai	31
Pop-Calimanu	Ioana-Monica	24,34
Pravica	Luka	15
Przybyla	Krzysztof	24,25,30
Purcaru-Albita	Anca	27
Qiao	Xuanjing	16
Qin	Zian	11,24,27,33
Qunying	Liu	25
Raia	Raluca	16
Raj	Krishna	37
Raja	Hadi-Ashraf	21
Ram- Chandra-Mouli	Gautham	19,35
Rasouli	Mohammad	31
Rassólkin	Anton	20,21,22,31,32
Rawat	Samiksha	37
Ren	Na	34

Rietvelde	Gert	20,25
RietveldGerteld	Gert	25
Rigatos	Gerasimos	31
Rjabtsikov	Viktor	20,22,32
Rodriguez-Montero	Eduardo	21
Rogowsky	Julius	32
Ruba	Mircea	16
Rui	Chang	18
Rui	Xia	25
Runsheng	Zheng	25
Sabzehgar	Reza	31
Safsouf	Khaled	31
Sađirođlu	Şeref	8
Sanfilipo	Antonio	22
Sawma	Jean	31
Schegner	Peter	25
Schofield	Nigel	15
Sefa	Ibrahim	24
SerbanSe	Ioan	29
Shekhar	Aditya	15,30
Sheng	Kuang	34
Shumikhina	Olga	35
Siddique	S.	10
Sidorov	Vadim	24
Siwek	Przemysław	32
Sizonenko	Vitaliy	26
Skora	Marcin	16, 25, 38
Skublics	Imre	27
Sleszycki	Sleszycki,	21
Soeiro	Thiago Batista	24,29
Solea	Răzvan	38
Song	Jiho	37,38
Song	Zhang	18
Spinu	Mihail	18
Stana	Girts	25
Stankiewicz	Krzysztof	16,38
Stejskal	Jan	38
Stępień	Mariusz	24
Stoian	Diana-Ioana	18
Suchy	Ondrej	32
Sui	Xin	8
Sun	Jian	24
Šunde	Viktor	15
Surus	Robert	21
Szabat	Krzysztof	8,21
Szalay	István	32
Szemes	Péter-Tamás	21,37
Taca	Ioana-Antonia	18
Tache	Irina-Andra	18
Tahami	Farzad	34
Tahmaz	Oguz	20
Talab	Mayar-Abdullah	22

Talla	Jakub	32
Tarczewski,	Tomasz	21
Tarzamni	Hadi	34
Teodorescu	Remus	8,37
Terzic	Mladen V	26
Thomas	Rémy	16
Thomsen	Johannis	32
Tokarczyk	Jaroslav	16
Toma	Alina	18
Toman	Marek	21
Torac	Ileana	17
Toshkhodzhae	Muhayo	35
Tutelea	Lucian	17
Tyrpekl	Miroslav	16,35
Ursu	Doru	22
Vaimann	Toomas	20,21,22,31,32
Valtchev	Stanimir	35
Vašak	Mario	31
Vaty-Fogarassy	Ágnes	30
Veligorskyi	Oleksandr	15
Venugopal	Prasanth	20, 25,37
Vermeer	Wiljan	35
Vijjiac	Aura-Elena	18
Vinnikov	Dimitri	15, 24
Vinnikov	Dmitri	29
Vitan	Danut	17
Vitek	Ondrej	26
Vizitiu	Anamaria	18
Vogelsberger	Markus	21
Von-Albrichsfeld	Christian	9
Wang	Hengyu	34
Wang	Junrui	16
Wang	Libao	16
Wang	Lu	11,27,33
Weiss	George	34
Weiss	Helmut	10,26
Wheeler	Patrick	10,23
Windisch	Michael	20
Wira	Patrice	31
Wojcik	Adrian	32
Wolbank	Thomas	21
Wróbel	Karol	8,21
Wu	Yang	24
Xiao,	Junjie	27
Xie	Changjun	34
Xin	Ge	25
Xu	Hai-jun	35
Yazar	Alperen	20
Yihe	Shen	25
Yijumg	Yang	25
Yilmaz	Murat	20
Yin	Hang	34,35

Yuhan	Gao	25
Zaghrini	Charbel	37
Zequera	Rolando-Antonio-Gilbert	31
Zhang	Lei	35
Zhang	Xiang	35
Zhao	Dongqi	16
Zhen	Guo	25
Zhi-feng	Ye	18
Zhi-hong	Dan	18
Zi-fan	Li	18
Zimoch	Piotr	30
Zou	Teng-an	35
Zygmanowski	Marcin	30