

Annual Conference of the IEEE Industrial Electronics Society (IECON 2021)

Special Session on

“Modular Power Converters: Topologies, Control and Applications”

Organized by

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Call for Papers

Due to increased industrial demands of modularity, scalability and fault-tolerability, modular power converters have significant attention in last decade. Some of the application areas include high voltage dc transmission, medium voltage motor drives, traction systems, solar power conversion systems, marine systems and high power battery chargers etc. However, some challenges exist to implement such systems to achieve safety critical operations and fault-tolerant under fault conditions. Therefore, there is a scope to develop new power electronic converters, pulse width modulation schemes and control strategies under such stringent requirements. This special session mainly aims to cover advanced power converter topologies, design challenges, control strategies and their applications.

Topics of interest include, but are not limited to:

- New converter topologies (AC/DC, DC/DC, DC/AC and AC/AC)
- Modular multilevel converters

- Advanced pulse width modulation schemes
- Direct and indirect predictive control methods
- Fault detection, isolation and diagnosis techniques
- Fault reconfiguration control strategies
- Reliability and stability assessment of modular power converters,
- Predictive and corrective maintenance approaches
- High voltage dc grids
- Medium voltage motor drives
- Real-time simulation, hardware-in-the-loop and experimental verification of modular power converters

Submissions Procedure: All the instructions for paper submission are included in the conference website: <https://attend.ieee.org/iecon-2021/>

IES Technical Committee Sponsoring the Special Session (if any):
Power Electronics Technical Committee

Deadlines:

Full paper submission: June 25, 2021
Paper acceptance notification: July 30, 2021
Camera-ready paper submission: Aug. 27, 2021

Brief CV of SS Organizers:



Dr. Deepak Ronanki

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Dr. Deepak Ronanki (SM'20) received his Ph.D. degree in electrical and computer engineering at the University of Ontario Institute of Technology, Oshawa, Canada in 2019. From 2012 to 2016, he was a Power Converters Design Engineer with Electronics Division, Bharat Heavy Electricals Ltd., Bengaluru, India. He was involved in various projects include power converters for WAG-7 6000 HP AC LOCO, 1600 HP AC EMU, 500 kW solar power conversion systems, 500 kW hotel load converter for electric railway traction and static excitation systems for coal and hydropower plants. Dr. Ronanki currently working as an Assistant Professor at the Indian Institute of Technology Roorkee, India.

Dr. Ronanki was a recipient of the Ontario Graduate Scholarship from the Government of Ontario, Canada for his Ph.D. studies (2017-19). He received the Outstanding Reviewer Award for the year 2019 from the IEEE Transactions on Power Electronics in 2020 and, the Outstanding Doctoral Thesis Award from the University of Ontario Institute of Technology in 2020. He has published more than 50 peer-reviewed technical papers in IEEE journals and conferences, five book chapters and produced more than 2 technical reports for the industry. He is currently serving as an associate editor for IEEE Transactions on Transportation Electrification and Transportation Electrification Community (TEC) eNews Letter.



Dr. Apparao Dekka

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Dr. Apparao Dekka (SM'20) received the Ph.D. degree in electrical and computer engineering from Ryerson University, Toronto, Canada, in 2017. From 2010 to 2012, he was a Research Engineer with the Power Electronics Laboratory, The Petroleum Institute, Abu Dhabi, UAE. From 2017 to 2019, he was a Post-Doctoral Research Fellow with the Laboratory for Electric Drive Applications and Research, Ryerson University, Canada. Since 2019, he was with Lakehead University, Thunder Bay, Canada, where he is currently an Assistant Professor in the Department of Electrical Engineering. He has published more than 50 peer-reviewed technical papers, authored/coauthored a Wiley-IEEE press book on “Modular Multilevel Converters: Analysis, Control, and Applications” (January 2018), and six book chapters. His current research interests include high power converters, medium-voltage drives, renewable energy systems, electrified transportation, and advanced control schemes.

Dr. Dekka was the recipient of 2019 “IET Electric Power Applications” Premium Award and 2016 “IEEE Transactions on Power Electronics” Outstanding Reviewer Award.



Dr. Thanga Raj Chelliah

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Dr. Thanga Raj Chelliah received the Diploma from Government Polytechnic College, Nagercoil, India, in 1996, the B.Eng. degree from the Coimbatore Institute of Technology, Coimbatore, India, in 2002, the M.Eng. degree from Anna University, Chennai, India, in 2005, and the Ph.D. degree from the Indian Institute of Technology (IIT) Roorkee, Roorkee, India, in 2009, all in electrical engineering. He is currently working as an Associate Professor with the Department of Water Resource Development and Management, IIT Roorkee.

He has developed the Hydropower Simulation Laboratory, IIT Roorkee, in 2015, which is committed at present for the research funded by national agencies including THDC India Limited, Central Power Research Institute, National Mission on Power Electronics Technology, and Ministry of Shipping. He has authored or co-authored several research papers in various journals and conferences of national and international repute. His research interests include power electronics applications in large pumped storage plants, asynchronous generators, and marine propulsion systems. Dr. Chelliah was the recipient of the Institute Research Fellowship for Outstanding Young Faculty Award 2018 at the IIT Roorkee.



Dr. Ricardo Lizana Fuentes

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Dr. Ricardo Lizana Fuentes was born in Rancagua, Chile in 1985. He received his M.Sc. and D.Sc. degrees in electronic engineering from Universidad Tecnica Federico Santa Maria, Valparaiso, Chile, in 2011 and 2015, respectively. He joined Universidad Catolica de la Santisima Concepcion, Concepcion, Chile, in 2015, where he is currently a Assistant professor in Departamento de Medio Ambiente y Energia. During 2017 he was a postdoctoral fellow at Duke University. His main research interests include high power converters, HVDC transmission systems and renewable energy systems.

Dr. Lizana received the Ph.D. Scholarship from the Chilean National Commission for Scientific and Technological Research (CONICYT) in 2011, the Emerging Leaders in the Americas Program Scholarship from the Canadian Bureau for International Education in 2012 and the Second-Best Paper Award from the IEEE Transactions on Power Electronics in 2015.



Dr. Abdul Rahiman Beig
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Dr. Abdul Rahiman Beig (M'92-SM'03) received the B.E. degree from National Institute of Technology Karnataka, Suratkal, India, in 1989, the M. Tech .and PhD degree from Indian Institute of Science, Bangalore, India, in 1998 and 2004 respectively. He is currently an Associate Professor with the Department of Electrical Engineering, The Khalifa University of Science and Technology, Petroleum Institute, Abu Dhabi, UAE. His research interests include Multi-level inverters, PWM techniques, AC drives, HVDC, power quality and power electronics applications to power systems. He is currently serving as associate editor for IEEE Trasactiosn on Industry Applications.

