





Call for Papers

IEEE Journal of Emerging and Selected Topics in Power Electronics

Special Issue on Design and Validation Methodologies for Power Electronics Components and Systems

In the emerging and fast-evolved applications such as renewables, energy storage, power grid and electrified transportations, power electronics converters are imposed with growing size and power capacity, reducing price per kW, more complicated control functions, and more complex working conditions. Under this scenario, it is essential to accurately evaluate more aspects and details of performance metrics with high confidence level, not only for the metrics of efficiency and power density, but also for the metrics of temperature, insulation, stability, and reliability. This paradigm shift calls for more advanced methods for the design and validation of power electronics components/systems, by means of FEM/HiL simulation, multi-physics/multi-timescales modelling, mission profile emulation, design automation, and artificial intelligence, etc.. On the other hand, the design targets are not only limited to power semiconductors, but also for the passive components, software, test bench and extensive part of power electronics-related systems. This special issue serves to foster and collect new research achievements within the scope of advanced design and validation methods in the field of power electronics. Topics of interest of this special issue include, but are not limited to:

- Characterization, monitoring, packaging and sizing of power electronics components/materials
- Thermal modelling, estimation, and management
- Lifetime evaluation and reliability testing
- Mission profile emulation technologies including virtual machine and grid emulator, etc.
- Specialized testing bench and software tools

- Advanced modelling/simulation based on multiobjectives, multi-timescales, and multi-physics
- Hardware-In-the-Loop and real-time simulations
- Design automation and optimization
- Artificial intelligence in the design, monitoring and validation of power electronics
- White paper, road map and standards

All submissions should be made through *Manuscript Central* at <u>http://mc.manuscriptcentral.com/jestpe-ieee</u>. The cover page should be clearly marked with "Special Issue on Design and Validation Methodologies for Power Electronics Components and Systems" and the appropriate manuscript type should be selected when uploading the submission. Manuscripts submitted for this special issue will be handled by the guest editorial board outlined below. For more information on special issues and electronic submissions, please go to <u>http://www.ieee-pels.org/publications/jestpe</u>. **Note:** The core of JESTPE is power electronics, to be accepted, papers must include relevant contents in this area, and experimental verification is compulsory, otherwise papers will be considered out of scope.

Deadline for Submission of Manuscript: January 15, 2024

Guest Editors

- **Ke Ma** (Shanghai Jiao Tong University, China)
- Yarui Peng (Arkansas University, USA)
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- Giovanni De Carne (Karlsruhe Institute of Technology, Germany)
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Proposed Timeline (Preliminary)

- Marta Molinas (NTNU, Norway)
- Haoze Luo (Zhejiang University, China)
- **Binbin Li** (Harbin Institute of Technology, China)
- Qianwen Xu (KTH Royal Institute of Technology, Sweden)

- Oct 1. 2023: Call for papers to IEEE JESTPE Editorial Office
- Jan 15. 2024: Manuscript submission deadline
- May 1. 2024: Final acceptance notification

- June 2024: Manuscript forwarded to IEEE for publication
- July 2024: Special Issue appears in IEEE JESTPE