Magnetically levitated motor systems based around bearingless motors and generators and magnetic bearings offer a potential step change improvement in motor system lifetime and efficiency, solve critical challenges related to oil-lubricated contact bearings, and feature prognostic capabilities for condition-based maintenance. Acceptance of this technology has been historically limited by challenges related to cost, design and control complexity, manufacturing issues, and low force density. However, recent advances in supporting technologies enable new approaches to address these challenges. These advancements include the commercialization of wide bandgap semiconductor devices, high performance and low-cost embedded systems, additive manufacturing of metals, advanced iron alloys, and a new generation of simulation and design software. By leveraging these advancements, fundamentally new magnetically levitated motor system concepts are now possible, as well as significant improvement to existing levitation technology. High impact applications span the entire range of motor and generator technology, including compressor systems, high speed alternators, flywheel energy storage equipment, and low speed direct-drive motor systems. This special section is intended to attract papers which address important and timely topics related to the design, development, analysis, and operation of magnetically levitated motor technology. Contributions which report on recent advancements in enabling and supporting technologies to increase the overall system performance in terms of efficiency, power density, reliability, lifetime and production costs are particularly encouraged.

Topics of interest include, but are not limited to:

- Optimal and/or multiphysics design and modelling of bearingless motors/generators and magnetic bearings
- Advanced magnetic suspension drive topologies for high speed motor/generator systems
- Basic research on bearingless motors/generators and magnetic bearings
- Innovations that increase the power density and efficiency of bearingless motor/generator technology
- Medium/high power bearingless motor/generator technology for industrial applications
- Topologies that rely on partial passive stabilization, including bearingless slice motors and single drive bearingless motors
- Passive magnetic levitation systems based on either electrodynamic principles or superconducting diamagnetic principles
- Combined motor windings capable of producing both magnetic suspension forces and torque
- Self-sensing and low-cost sensing for magnetic levitation technology
- Advanced and intelligent control methods for magnetic levitation technology
- Techniques for magnetically-levitated motor/generator system condition monitoring and predictive maintenance
- Applications, such as flywheel energy storage, that are either only possible or significantly improved by use of magnetically levitated motors and generators

**Important Dates**

January 1, 2020: Call for papers issued  
June 12, 2020: Deadline for submitting an invitation request  
July 10, 2020: Deadline for submitting initial manuscript  
January 8, 2021: Notification of final decisions  
February 5, 2021: Deadline for submission of final files
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