

INTERNATIONAL JOURNAL OF

# APPLIED ELECTROMAGNETICS and MECHANICS



 **IOS Press**

## International Journal of Applied Electromagnetics and Mechanics

### Call for Papers:

### Special issue "Spintronics: Fundamental and Applications"

The *International Journal of Applied Electromagnetics and Mechanics* (JAEM) invites submissions for the special issue "Spintronics: Fundamental and applications".

#### Issue topic and list of subjects

Spintronics is one of the emerging fields for the next-generation nanoscale devices offering better memory and processing capabilities with improved performance levels. It demonstrates great potential in the post-Moore era. Since the discovery of Giant Magneto-Resistance (GMR) effect in 1988, spintronics has shown a rapid progress. Recent advances have expanded this technology to the entire electronics industry of sensors, memories, oscillators, quantum information processors, computer architecture, brain inspired computing, and various other fields.

This special issue of IJAEM will feature the most recent developments and the state-of-the-art in the field of spintronic devices, hybrid CMOS/spintronic circuits, and new architectures for high performance. It will be the first collection of articles related to the state-of-the-art of the research activity within the project PRIN2020 "The Italian factory of micromagnetic modeling and spintronics" funded by the Italian MUR. While some papers in this special issue will be related to the PRIN2020 project, we invite submissions that are not related to the project but are within the issue scope. Topics of interest include, but are not limited to:

- 1) Materials: Ferromagnets, Antiferromagnets, Ferrimagnets, 2D material for better spin manipulation and spin logic devices.
- 2) Transport mechanism: Spin accumulation, injection and detection in spin devices, spin pumping techniques, angular momentum transportation by spin polarized currents, spin waves, magnons, spin hall effect, spin transfer torque, enhancement in spin diffusion length and coherence time.
- 3) Spintronics devices: STT-MRAM, SOT-MRAM, VCMA-MRAM, domain-wall, skyrmions, nano-oscillators, sensors etc. Low power and high-speed switching schemes for spintronic devices.
- 4) Memories: High storage density MRAM, enhancement in power efficiency and speed. In-memory computing: Spintronics based in-memory computing/ processing circuits/ architectures and applications.
- 5) Probabilistic Computing: computation and sensing, algorithms, spin pbit, systems and applications, spintronics-based probabilistic devices.
- 6) Neuromorphic computing: Hardware implementation of neural networks, analog and digital, architectures and applications.

7) Fabrication: Fabrication and characterization of novel materials and devices, hybrid spintronics integration and fabrication.

8) Spintronics based circuits: Reconfigurable and programmable spintronics based circuits, Security

### **Journal information and manuscript submission**

*International Journal of Applied Electromagnetics and Mechanics* is indexed in Web of Science with an Impact Factor of 0.706. The journal is also indexed in Scopus and Ei Compendex, among others. Please see [Abstracted/Indexed in](#) for further details.

The peer review process will follow the journal's practice; please carefully revise the author guidelines before submitting. Authors are requested to submit their manuscript electronically to the journal's Editorial Management System.

### **Important dates**

Submission deadline: September 30, 2022

Expected notification of first decision: December 21, 2022

Expected notification of final decision: March 31, 2023

Expected publication: Spring 2023

### **Guest editor**

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Mario Carpentieri received his MS degree in Electronic Engineering and PhD degree in Advanced Technologies for the Optoelectronic, Photonic and Electromagnetic Modeling from the University of Messina, Italy, in 1999 and 2004, respectively.

He was a Visiting Researcher in the Department of Applied Physics, University of Salamanca, Spain during 2003-2005, and an Assistant Researcher at the University of Perugia and University of Calabria, Italy from 2005 to 2011. Since 2012, Prof. Carpentieri has been with the Department of Electrical and Information Engineering, Politecnico di Bari, where he was an Assistant Professor, became an Associate Professor in 2015, and full professor in 2019. His current research interests include micromagnetic modeling of a variety of spintronic nanostructured materials and devices, including microwave nano-oscillators and diodes based on the spin-torque and spin-orbit effects. He is co-inventor of 2 patents, and co-author of more than 130 articles published in well-established international journals. He is co-founder of one start-up company for the development of parallel computation. He served on many technical program committees of international conferences and organized two international conferences as general chair. Prof. Carpentieri is currently an Associate Editor of the IEEE Transactions on Magnetics, and of Scientific Reports.