# IEEE Transactions on Industrial Informatics

# CALL FOR PAPERS

## for Special Section on

## "Multi-Megahertz Wireless Power Transfer: Design, Optimization, and Control"

**The Theme:** In recent years, wireless power transfer (WPT) using inductive resonance coupling has become increasingly popular. The technology is now being applied to charge many consumer and industrial electronic devices, and even electric vehicles. WPT working at kilohertz (kHz) has made significant progress in terms of power level, system design, and applications. In order to improve the spatial freedom of WPT, i.e., a longer transfer distance and a higher tolerance to coil misalignment, it is usually desirable to further increase the operating frequency to multi-megahertz (MHz) such as 6.78, 13.56, and 27.12 MHz. Higher operating frequencies also result in more compact and lighter WPT systems. However, the increased frequency presents technical challenges such as potentially higher switching loss of inverters/power amplifiers and rectifiers, low quality factor of coils and inductors, and severe EMI issues, etc. And the reactance caused by the parasitic capacitance of switching device becomes non-neglectable at multi-MHz. This further complicates design and control of the WPT systems. Some of the challenges could be partly overcome thanks to the development of new-generation wide-band-gap semiconductors. However, innovations on circuit design, parameter optimization, and control methods are still of paramount important to enable high performance multi-MHz WPT systems.

This Special Section on "Multi-megahertz wireless power transfer: Design, Optimization and Control" is focused on the development, adoption and application of new circuit and coil designs, system-level optimization, and novel control methods for multi-MHz WPT systems. Topics include, but are not limited to, the following research topics and technologies relevant to multi-MHz WPT:

- High-frequency power converters;
- High-frequency magnetics and coils (e.g., 2D and 3D);
- High-frequency rectifiers;
- Multiple-transmitter and/or multiple-receiver architectures;
- Component-/system-level modeling and analysis;
- Optimization and parameter design;
- Sensing, control, and their implementation;
- Electromagnetic interference issues;
- Dynamic charging and its applications.

All contributions must focus on the use of design, optimization, and control technologies in multi-MHz WPT systems. Results obtained by simulations must be validated in bounds by experiments or analytical results.

### Manuscript Preparation and Submission

Follow the guidelines in "Information for Authors" in the IEEE- IES website: http://www.ieee-ies.org/pubs/transactions-on-industrial-informatics. Please submit your manuscript in electronic form through Manuscript Central web site: https://mc.manuscriptcentral.com/tii . On the submitting page #1 in popup menu of manuscript type, select: SS on **Multi-Megahertz Wireless Power Transfer: Design, Optimization, and Control**

Submissions to this Special Section must represent original material that has been neither submitted to, nor published in, any other journal. Regular manuscript length is 8 pages.

**Note:** The recommended papers for the section are subject to final approval by the Editor-in-Chief. Some papers may be published outside the special section, at the EIC discretion.

**Timetable:** **Deadline for manuscript submissions** **October 31, 2018 (extended to Dec. 30, 2018)**
**Expected publication date (tentative)** **June 2019**

### Guest Editors:

Dr. **Chengbin Ma**, Shanghai Jiao Tong University, China, *chbma@sjtu.edu.cn*
Dr. **Ming Liu**, Princeton University, USA, *ml45@princeton.edu*
Prof. **Patrick Chi-Kwong Luk**, Cranfield University, U.K., *p.c.k.luk@cranfield.ac.uk*