

## Call for Papers

### IEEE JSTSP Special Issue on SIGNAL PROCESSING ADVANCES in WIRELESS TRANSMISSION OF INFORMATION AND POWER

Wireless Power Transfer (WPT) via radio-frequency (RF) radiation has long been regarded as a possibility for energizing low-power devices. It is, however, not until recently that WPT has become recognized as being feasible, due to reductions in power requirements of electronics and smart devices. Far-field WPT using RF could be used for long-range power delivery to increase user convenience. Recent research advocates for a future of wireless networking that goes beyond conventional communication-centric transmission. In the same way that wireless has disrupted mobile communications, wireless will disrupt the delivery of mobile power. However, current wireless networks have been designed for communication purposes only. Moreover the transmissions of energy and information have traditionally been treated separately. Recognizing that radio waves carry both energy and information simultaneously, imagine instead a wireless network where information and energy flow together through the wireless medium. Wireless communication, or Wireless Information Transfer (WIT), and WPT would then refer to two extreme strategies, respectively, targeting communication-only and power-only. A unified design of Wireless Information and Power Transmission (WIPT) would on the other hand have the ability to softly evolve in between those two extremes to make the best use of the RF spectrum/radiation and the network infrastructure to both communicate and energize.

This special issue has the objective of bringing the above vision closer to reality and will provide a comprehensive overview of the state-of-the-art signal processing techniques in WIPT. Prospective authors are invited to submit original manuscripts on topics including, but not limited to:

- WIPT building blocks: wireless energy harvesting and power transfer, simultaneous wireless information and power transfer, wirelessly powered (backscatter) communication
- Fundamental limits of WIPT and communications and signal design for WIPT
- Analytical models of wireless energy harvesters for signal design, processing and optimization
- Basic signal processing for WIPT (waveform, modulation, coding, transceiver and channel acquisition)
- Multi-antenna/MIMO signal processing for WIPT
- Optimization for WIPT signal processing
- Machine learning for WIPT signal processing
- Physics-based artificial intelligence for WIPT signal processing
- WIPT in point-to-point, broadcast, multiple access, interference, and relay channels
- Multi-node/point signal processing for WIPT (coordinated, cooperative, and distributed processing)
- Signal processing for WIPT networking (wireless charging control, resource allocation, and scheduling)
- Signal processing for spectrum sharing and interference management in WIPT
- Prototyping and experimentation of WIPT signal processing techniques
- Application of WIPT signal processing in wireless sensor networks, machine-to-machine, device-to-device, Internet-of-Things (IoT), WiFi, cellular networks and 6G

Wireless power is an essential part of this special issue and papers addressing WIT-only will not be considered.

#### Submission Guidelines

Prospective authors should follow the instructions given on the IEEE JSTSP webpages:

<https://signalprocessingsociety.org/publications-resources/ieee-journal-selected-topics-signal-processing>, and submit their manuscript with the web submission system at: <https://mc.manuscriptcentral.com/jstsp-ieee>.

Deadline  
Extensions

#### Important Dates

Manuscript submission date: ~~Nov 30th~~, 2020  
First Review Completed: ~~Jan 21th~~, 2021 Feb 28  
Revised Manuscript Due: March 15th, 2021  
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May 15  
Second Review Completed: ~~April 30th~~, 2021  
Final Manuscript Due: June 15th, 2021  
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