



IEEE Workshop on Emerging Energy Harvesting Solutions for 5G Networks (5GNRG)

Our environment provides numerous virtually cost-free sources of energy, e.g., heat, light and wind, which have customarily been exploited to scavenge power for human activities. Recently, their exploitation in the context of wireless communication has been envisioned to power many elements of the network, as well as yielding cost reductions in terms of electricity supply, maintenance monitoring and battery management. Energy harvesting technologies have gained prominence in the last decade as promising solutions to increase both portable devices lifetime and energy efficiency of communication networks. Remarkably, ambient sources of energy are not the only resource that could be exploited for harvesting purposes. For instance, an abundance of fully controllable sources of energy is naturally present in wireless networks; in the form of massively deployed radio transmitters, which typically broadcast a significant amount of radio frequency (RF) energy to remote devices. As a consequence, a growing interest has recently emerged by researchers in wireless communications to develop wireless energy transfer and harvesting solutions for fifth generation (5G) networks. The variety of settings in which energy harvesting and transfer technologies can be adopted, e.g., wireless sensor networks, mobile ad hoc networks, delay tolerant networks, smart cities and so on, is certainly noteworthy. The identification of novel network architectures, protocols and algorithms to integrate energy harvesting solutions in wireless communications networks is paramount to guarantee their effectiveness.

This workshop aims at bringing researchers together to discuss the opportunities and challenges in the research, design, and engineering of energy harvesting solutions for 5G networks. Accordingly it will focus on, but will not be limited to, the following subjects of interest

- Simultaneous wireless information and power transfer
- Energy cooperation strategies for energy harvesting devices
- Network architecture and protocol design for energy harvesting and transfer
- Large scale heterogeneous energy harvesting networks
- Energy harvesting economics
- Waveform optimization for wireless power transfer
- Energy harvesting for machine-to-machine (M2M) and device to device (D2D) communications
- Energy harvesting oriented evolution of PHY layer for 5G networks
- Standardization and architecture of energy harvesting networks
- Energy harvesting applications and solutions for the Internet of Everything/Things (IoE/IoT)
- Energy harvesting and transfer for wireless sensor networks
- MAC and routing protocols for energy harvesting systems
- Characterization of light, thermal, vibration, RF, motion, wind energy harvesting
- Network-wide distributed energy management
- Optimal control for energy harvesting systems
- Measurement and prediction of energy intake and consumption
- Power management circuit and systems for energy harvesting
- Prototypes and testbeds of energy harvesting systems and energy transfer technologies
- Modeling, simulation, and tools for effective design of energy harvesting systems
- Self-sustainable transmissions and network design

Important Dates:

Paper Submission: 02 December 2016
Notification Date: 17 February 2017
Final Paper: 10 March 2017

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