

23rd International Conference on Telecommunications

ICT2016 "Expansion to Small"

May 16 - 18, 2016

Thessaloniki, Greece | Makedonia Palace Hotel

Technical Sponsorship



Special Session

Exploiting interference towards energy efficient and secure wireless communications

Organizers: **Christos Masouros**, *University College London, UK*, **Ioannis Krikidis**, *University of Cyprus, Cyprus*, **Gan Zheng**, *Loughborough University, UK*

Call for Papers

Interference has long been the central focus for meeting the ever increasing requirements on quality of service (QoS) in modern and future wireless communication systems. Traditional approaches aim to minimise, cancel or avoid interference. Contrary to this traditional view, which treats interference as a detrimental phenomenon, recent interest has emerged on innovative approaches that consider interference as a useful resource for developing energy efficient and secure 5G communication systems. These include exploiting constructive interference as a source of useful signal power at the modulation level by use of practical multiuser downlink precoding, and also the use of radio frequency radiation for energy harvesting that handles interference and unintended signals as a source of green energy. These techniques open new exciting opportunities in wireless communications by enabling energy self-sustainable and environmentally friendly networks with extended lifetimes, untethered mobility and independence from the power grid, and joint distribution of information and energy within networks. Interference is also being used for physical layer secrecy, as an efficient means to jam potential eavesdroppers. This is particularly useful in networks without infrastructure to secure wireless links without the computational overhead imposed by standard cryptographic techniques. These research streams introduce a new vision about interference in wireless networks and motivate a plethora of potential new applications and services.

The main purpose of this special session is to bring together contributions from researchers and practitioners in the area of signal processing for wireless communications with an emphasis on new methods for exploiting interference including symbol level precoding, physical layer security, radiated energy harvesting and wireless power transfer. Topics of interest include, but are not limited to the following:

- Modulation level precoding for interference exploitation,
- Interference exploitation in the presence of channel state information errors, limited feedback and hardware imperfections,
- Energy harvesting, cooperation and relaying in wireless networks,
- Time switching, power splitting and antenna switching for simultaneous energy and information transfer,
- Joint optimisation of the baseband processing and RF circuit design for energy harvesting,
- Joint interference exploitation and wireless power transfer techniques at the transmitter,
- Security concerns in energy harvesting networks,
- Signal processing for information-theoretic privacy,
- PHY layer secrecy and jamming,
- Introducing artificial and controlled interference for enhancing wireless security,
- Beamforming for PHY-layer secrecy and energy harvesting,
- Interference exploitation and management in coexisting wireless communications and power transfer systems

Prospective authors are invited to submit high-quality original technical papers following the rules of the Main Track of ICT 2016 for presentation at the conference and **publication in the ICT 2016 Proceedings and IEEE Xplore**, via EDAS, using <https://edas.info/newPaper.php?c=21703&track=78319>.

Important Dates

Paper submission deadline: **February 20, 2016**

Paper acceptance notification: **March 5, 2016**

Camera Ready Papers: **March 15, 2016**

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