

Title of the special track: “Antenna/Propagation and WiBEC project (APWiBEC)”

Organizing Chairs:

- Qiong Wang and Dirk Plettemeier, Technische Universität Dresden, Germany

Abstract:

Antenna design and wave propagation for body area networks is highly subject to the surrounding operating medium, that is, the frequency-dependent dispersive biological body. In fact, antenna development and wave propagation characteristics for on-body/in-body environment are significantly different from that in free space. Due to the specific propagation characteristics in biological tissue environment, antenna will not vary in the same manner as in free space/vacuum. On-body/wearable antenna design may suffer from energy absorption/reflection/diffraction, or shadowing due to body structure or multipath fading due to body movement, while in-body/implanted antenna mainly involves severe signal decay, impedance mismatch and shortening effect.

For the wireless implanted environment applications, the on-going EU project WiBEC (Wireless In-Body Environment) focuses on development of the wireless technologies for novel deeply implantable devices that will contribute to the improvement in quality and efficacy of healthcare. It is in the framework of Horizon 2020 program and totally 10 partners, including industry companies, academic institutions and hospitals, are involved from different EU countries (www.wibec.eu). Novel RF technologies, algorithms and electronics are focused on in-body/implanted devices. In this respect, we would combine both antenna/propagation and WiBEC project in this special track.

The purpose of this special track is to provide a forum for researchers and engineers from antenna/propagation and in-body area communications/imaging/sensing fields to share, present, and to discuss recent advances in the technologies for antenna/propagation issues in body area network as well as implanted wireless technologies. Regular as well as short paper submissions are welcome.

Topics include, but are not limited to:

Antenna for BAN:

- Implanted antennas
- Wearable antennas
- Microwave imaging antennas
- Fabric/textile antennas
- Multiple antenna systems
- Multiband, wideband, UWB antennas
- Electromagnetic materials for antenna applications
- Antenna and human body interactions

Propagation in BAN:

- Electromagnetic propagation analysis
- Channel characterization and modelling
- Propagation model measurement using phantom
- Wireless in-body localization and tracking

AP related topics:

- Adaptive matching network
- Human body communications
- Hybrid integration with organic electronics
- Wireless power transfer
- Cardiovascular implants
- Wireless capsule endoscopy

TPC:

Ilangko Balasingham, Oslo University Hospital, Norway

Kimmo Kansanen, Norwegian University of Science and Technology NTNU, Norway

Ryuji Kohno, Yokohama National University, Japan

Narcis Cardona, Universitat Politècnica de València, Spain

Conchi Garcia Pardo, Universitat Politècnica de València, Spain

Jianqing Wang, Nagoya Institute of Technology, Japan

Daisuke Anzai, Nagoya Institute of Technology, Japan