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## **ST1: Antenna/Propagation and WiBEC project (APWiBEC)**

### **Organizing Chairs:**

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### **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, academic institution, hospitals, are involved from different EU countries ([www.wibec.eu](http://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:**

- Implanted antennas
- Fabric/textile antennas
- Metamaterial-based antennas
- Electromagnetic materials for antenna applications
- Multiple antenna systems
- Electromagnetic propagation analysis and modelling
- Numerical calculations
- Miniaturized smart antenna
- Hybrid integration with organic electronics
- Multiband, wideband, UWB antennas
- Antenna and human body interactions
- Microwave imaging antenna
- Cardiovascular implants
- Wireless capsule endoscopy
- Ultra low power in-body transmitter
- Ultra low power signal processing
- In-body sensing devices
- Wireless cardiac sensing network
- Wireless in-body localization and tracking