



Post-Doctoral Position on 60-GHz BAN

(IETR, Rennes, France)

ANTENNA DESIGN AND PROPAGATION FOR FUTURE 60-GHz BODY AREA NETWORKS

Context:

Wireless body area networks (BAN) are highly attractive for a number of applications including sport, personal healthcare, entertainment, smart home, and other body-centric communication systems. Today, there is a growing interest in investigating the performance of BAN operating in the 60-GHz band, since they offer numerous advantages compared to those operating at lower microwave frequencies. First, very high data rates may be reached (up to 5 Gb/s). Second, security and low interference with adjacent BAN related to the strong attenuation of the 60-GHz signals in the atmosphere. Finally, the size of the on-body antennas is significantly reduced compared to similar microwave systems.

Objectives:

The purpose of the post-doctoral research project will be to contribute to current research activities of the IETR on (1) design and optimization of wearable millimeter-wave antennas for on- / off-body high-data-rate communications (integration with textile, miniaturized flexible antennas, etc.); (2) characterization of the on-body propagation channel using numerical and experimental phantoms; (3) development of an experimental prototype for a representative scenario of 60-GHz on- or off-body communication.

Job description:

The Post-Doctoral Researcher will work at the Antennas & Microwaves Department of the Institute of Electronics and Telecommunications of Rennes (IETR, www.ietr.fr). The Department is often cited as one of the world leaders in research at millimeter waves for applications on antennas design and propagation, bioelectromagnetics, and body-centric wireless communications.

Successful candidate is expected to contribute to one or several of the following research directions:

- Design and characterization of on-body antennas for future 60-GHz BAN. The emphasis will be placed on flexible antennas and their integration with the clothing.
- Development of reconfigurable active integrated textile antennas for on- and off-body communications with reduced interaction with the human body.
- Investigation of on- and/or off-body propagation using full-wave approaches and ray tracing algorithms for channel modeling at 60 GHz.

This list is not exhaustive and other BAN related research topics can be also considered.

Candidate:

Required education level: PhD or equivalent.

Required background: antennas, propagation, free-space and on-phantom measurements, numerical modeling, ray tracing technique.

Duration and funding:

Annually renewable position beginning as soon as possible funded by the French National Research Agency (ANR) project "Bio-electromagnetic compatibility of emerging body-centric wireless networks".

Contacts:

To apply please provide a motivation cover letter, CV, recommendation letters and / or references, and copy of PhD diploma.

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