Proposition de recherche doctorale

Statistical analysis and modeling of soft or flexible antennas in fluctuating conditions

Mots clés :
- Directeur de thèse : Christophe Roblin
- Co-encadrant(s) :
- Unité de recherche : Laboratoire Traitement et Communication de l'Information
- Ecole doctorale : École Doctorale Informatique, Télécommunications, Électronique de Paris
- Domaine scientifique principal: Divers

Résumé du projet de recherche (Langue 1)
Small to moderate size antennas for communication terminals or for other applications such as RFID systems are most often used in fluctuating conditions: this can result from the variability of the close environment (due to nearby scatterers such as supports, furniture, walls, human body, etc.) or from some deformations of the radiator element itself in the context of soft or flexible electronics (based on polymers) or in tissues ("smart clothes"). For the first, the resulting randomness is usually partly taken into account through the propagation channel model, although a statistical modeling of "environed antennas" can provide a finer description. Our group has been involved in research on statistical methods for antennas for almost ten years. It aims to provide finer abstraction models of antennas combined to channel models, for the evaluation of communications systems performance at various levels (physical or radio link layers, ray tracing based radio channel simulators etc.). The antenna resilience to these perturbing effects may also have many benefits for applications in several domains.

Résumé du projet de recherche (Langue 2)
1. Statistical modelling of antennas variability - Methodology: Design of experiment based on electromagnetic simulations and measurement campaigns, - Implementation of "modern" statistical techniques: Response surface methodology (chaos polynomials method, kriging, etc.) 2. Experimental implementation for characterising deformable antennas

Informations complémentaires (Langue 1)
The statistical approach of antennas is an emerging topic which has been progressively considered by more and more research teams worldwide these last years. This interest is not anymore confined to niche applications such as Wireless Body Area Networks, but concerns larger domains today, such as RFIDs or new communication generations: femtocells, 5G, etc.