PhD offer :

Modeling of transparent mesh technology - Application to the design of antennas and radio frequency circuits

For discretion purposes and in addition to miniaturization techniques applied to microwave functions, it is interesting to design radio front-ends on transparent materials. The solutions implementing mesh metallization seem to offer the best compromise between transparency and HF performance. Nevertheless, the meshing cells having very short dimensions compared to wavelengths, the implementation of this kind of solution leads to the modification of dispersion parameters of the structures. The work carried out during a first PhD on the design of discrete antennas highlighted this need to reconsider the modeling of mesh structures. The idea is then to see how it is possible to model the behavior of simple structures (lines, discontinuities, filter, …) for which it will be necessary to identify the equivalent parameters (characteristic impedance, propagation mode dispersion, discontinuity parameters) as a function of the geometry of the structure and the physical parameters of the supporting technology. The objective is to develop the classic dispersion models validated for opaque structures and to extend these classic models to lattice solutions.

Background :

HF propagation, HF measurement techniques, VNA, HF simulation and characterization, Matlab and/or Phython.

Research Laboratory : Institut d'Electronique et des Technologies du numéRique (https://www.ietr.fr/) (IETR UMR CNRS 6164)

Locality : Polytech Nantes and UFR Sciences et Techniques at Nantes Université

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