Multiphysics Models

Component
École Nationale Supérieure d'Électrotechnique d'Électronique

In brief

- **Ametys Code:** N9EE11B
- **Open to exchange students:** Yes

Presentation

Objectives

Discover the challenges of multiphysics modeling; learn how to use multiphysics simulation software based on the finite element method; learn how to perform geometric modeling, physical description of media, choice of meshing strategies, definition of stationary, parametric, and frequency analyses, and finally data exploitation, including the deduction of global parameters using curvilinear, surface, or volume integrals.

Description

The module consists of two parts:
• a session presenting the issues of multiphysics modeling and numerical methods,
• BE sessions covering the learning of the COMSOL Multiphysics multiphysics simulation software, ending with the design of a microwave applicator in a metal resonant cavity, and the simulation of microwave and thermal performance.

Pre-requisites

Basic elements of electromagnetism, electrostatics, microwave engineering, partial differential equations, linear equation systems, 1D/2D/3D integrations, vector analysis.