Différences finies

Component
École Nationale Supérieure d'Électrotechnique d'Électronique

In brief

> **Code:** N6EM01A

Presentation

Objectives

At the end of this course, the student must be able to propose a relevant discretization for a linear PDE using the finite difference method and to analyze the convergence (consistency and stability) and accuracy.

Description

The finite difference method is first introduced for the discretization of the model equations (advection equation and diffusion equation). Convergence (consistency and stability) and precision analysis techniques are discussed using the Lax theorem and the matrix method. These analysis tools are then used to choose discretization schemes adapted to each of the linear EDP families. The analysis of the error committed (diffusion, dispersion) is finally introduced.