ID de Contribution: **3** Type: **Non spécifié**

Time Iteration Methods for Controllability

This course explores several important strategies ubiquitous in control theory, presenting them as time iteration methods, where each time step progressively brings us closer to achieving the control objective. This course aims to provide an accessible introduction to these techniques.

For ordinary differential equations (ODEs), we will focus on the tangent vector method, which allows us to prove local exact controllability for a nonlinear ODE starting from approximately reachable directions.

For partial differential equations (PDEs), we will survey the classical Lebeau-Robbiano method and its more recent adaptations by Beauchard, Miller, and Pravda-Starov. This method combines spectral inequalities and dissipation estimates to prove the exact controllability of a linear PDE.

We will also describe the Liu-Takahashi-Tucsnak method, which establishes the local controllability of a nonlinear PDE by analyzing the control cost of its linearized version.

Finally, we will sketch how time iteration methods can be applied to stabilization problems.

Orateur: MARBACH, Frédéric (DMA, ENS Ulm, CNRS)