Systems and Complex Fluids

Component
École Nationale Supérieure d'Électrotechnique d'Électronique

In brief

Code ELP: N7AM03A

Presentation

Objectives

The objective of the module is to understand the complexity of flows due to:

- rheological properties of the fluid
- interactions with the environment

Four examples are developed:

1. Hydraulic transmission
2. Vibrations under Turbulent flows
3. Porous media
4. Complex Fluids

Description

Hydraulic Transmission: Study of a "Servo-Hydraulic-Actuator"

- Hydraulic Modeling and Control
- Influence of compressibility on performance
- Mechatronic simulation

Vibrations Under Turbulent Flows: Study of aeroelastic interactions (lock-in, flutter)

- Spectral and correlation analysis "real time" vibrations of a flexible structure in a turbulent flow (Welch periodogram)

- Identification of aeroelastic coupling by filtering relations (Wiener-Lee)

Porous media

Complex Fluids