

Systèmes et Fluides Complexes



Component École Nationale Supérieure d'Électrotechnique d'Électronique

In brief

> Code: 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