MÉCANIQUE DES SOLIDES DÉFORMABLES ASPECTS EXPÉRIMENTAUX

EXPERIMENTAL ANALYSIS IN CONTINUUM AND SOLID MECHANICS

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| Lecturers : 0.0 | TC : 0.0 | PW : 16.0 | Autonomy : 0.0 | Study : 4.0 | Project : 0.0 | Language : FR

Objectives

(1) become aware of physical phenomena in mechanics,
(2) know different techniques for measuring useful variables in mechanics (extensometry, accelerometry, photoelasticimetry, stroboscopy, etc.),
(3) develop the practical implementation of theoretical concepts and thus promote their assimilation,
(4) knowing how to validate experimental results: critical analysis of the quality and relevance of the measurements carried out, comparing experimental results and results from theoretical or numerical approaches,

Keywords : Deformations, stresses, equilibrium, eigenmodes, resonance, static and dynamic measurements, experimental and numerical methods, finite element method

Programme

- Discovery labs: Study of the resonance phenomena of a flexible structure. Photoelasticimetry: understanding and analysis of the phenomenon of stress-induced birefringence; isocline and isochromatic; comparison with an explicit solution.
- Practical work Measurements and analyses: Determination of the eigenmodes of continuous elastic structures. Measurements by strain gauges with calculation of the tensor, application to the determination of the stress field, comparison and verification of the balance.
- "Finite elements" design office: Calculation of structures using software. Interpretation of static and dynamic cases.

Learning outcomes

- Master the basic notions of deformations and stresses for the deformable solid.
- Understand the link between assumptions, modeling and associated physical phenomena.
- Know how to identify the elements of a measurement chain.
- Know how to write a report of practical work and design office.

Independent study

Objectifs : This activity is not concerned with framed autonomy activities outside personal work.

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Core texts

Assessment