

Hamiltonian mechanics

Introducing

Description

Newtonian mechanics, D'Alembert's principle and virtual work, Lagrangian formulation and Hamilton's principle of least action, Hamiltonian formulation, Canonical transformations and Poisson's bracket

Objectives

At the end of this module, the student should have understood and be able to explain (main concepts):

D'Alembert's principle, principle of least action, Lagrangian and Hamiltonian formulation of mechanics, notion of generalized coordinates and generalized forces, canonical transformations, Poisson representation of Hamiltonian mechanics, notion of phase space.

Students should be able to use the Euler-Lagrange and Hamiltonian equations to study the motion of an object.

Necessary prerequisites

Newtonian mechanics

Évaluation

L'évaluation des acquis d'apprentissage est réalisée en continu tout le long du semestre. En fonction des enseignements, elle peut prendre différentes formes : examen écrit, oral, compte-rendu, rapport écrit, évaluation par les pairs...

Practical info

Location(s)

 Toulouse