SYLLABUS DEL CORSO

Eigenvalues of singularly perturbed problems

2425-131R011

Title

Eigenvalues of singularly perturbed problems

Teacher(s)

Veronica Felli

Language

English

Short description

This course focuses on the behavior of eigenvalues of elliptic operators under singular perturbations. After an introduction to the basics of spectral theory for elliptic operators, we will discuss the problem of spectral stability for various types of singular perturbations, including the removal of small holes in the domain under Dirichlet or Neumann boundary conditions. In the case of a small set removed from the domain, we will develop a perturbative theory, considering the capacity of the removed set as the perturbation parameter in the Dirichlet case, or a notion of boundary torsional rigidity in the Neumann case. Additionally, a blow-up analysis for capacitary potentials and eigenfunctions will be used to derive explicit asymptotic expansions in some cases.

CFU / Hours

3 cfu / 24 hours

Teaching period

April-May 2025

Sustainable Development Goals