

Vortices in hydrodynamics

The aim of this course is to familiarize students with one of the central concepts of fluid mechanics: vorticity. We will demonstrate by numerous examples the presence of coherent structures of the vortex type in very diverse flows of fundamental nature (turbulence), geophysical and environmental, or applied (aeronautics in particular). The analytical and numerical aspects will be covered. This course is also intended for doctoral students.

Prerequisite:

Basic Notions of Fluid Mechanics (Navier-Stokes)

Bibliography:

Hydrodynamique Physique, Guyon Petit et Hulin
Elementary fluid dynamics, Acheson

Timing: The Course is offered in the second part of the M2 year.

Credits: 3 ECTS

Hours: 30 hours.