

PHYS-731

**Magnetic confinement**

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<b>Cursus</b>	<b>Sem.</b>	<b>Type</b>
Physics		Obl.

Language of teaching	English
Credits	4
Session	
Exam	Oral
Workload	120h
<b>Hours</b>	<b>56</b>
Courses	28
Exercises	28
<b>Number of positions</b>	

**Frequency**

Every 2 years

**Remark**

Remarque : Every 2 years / Next time: Fall 2018

**Summary**

The course provides an overview of the fundamentals of magnetic confinement of plasmas for fusion. The different magnetic confinement configurations are presented, with a description of their operating regimes. The basic elements of particle and energy transport are introduced.

**Content**

The course will consist of three parts:

- an overview of the different magnetic confinement configurations (tokamaks, stellarator, RFPs, ...) and of the operating regimes (L mode, H mode, ...), with an introduction to the plasma-wall interaction (5 lectures);
- introduction to particle and energy transport in magnetic confinement devices (classical, neoclassical, and turbulent transport) (6 lectures);
- basic principles of plasma heating and current drive, including heating due to fusion-generated alpha particles (3 lectures).