



PHY1321 Mathematical methods in Physics

[30h+30h exercises] 4 credits

This course is not taught in 2005-2006

This course is taught in the 1st semester

Language: French

Level: First cycle

Aims

The course is centered on the study of the essential tool of quantum mechanics, the Hilbert space. The abstract notions are brought progressively, starting from concrete cases ("special" functions; Fourier series) and are illustrated by applications taken from theoretical physics (in particular quantum mechanics).

Main themes

- Fourier series
- Special functions: orthogonal polynomials (Legendre, Laguerre, Hermite), Bessel functions
- Hilbert space
- Operators in Hilbert space, spectral theory, special types of operators
- Introduction to the theory of distributions

Other information (prerequisite, evaluation (assessment methods), course materials recommended readings, ...)

Prerequisites: candidature level in algebra, analyse and general physics.

Evaluation: written and oral examination.

Support: syllabus.

Openings: Teaching of quantum mechanics (PHYS 2290, PHYS 2300, PHYS 2310); Advanced formation on functional analyse and quantum theory (fields theory).