



PHYS2122 Theoretical and mathematical physics II

[22.5h+15h exercises] 3 credits

This course is taught in the 2nd semester

Teacher(s): Jean-Pierre Antoine, Jean Bricmont, Philippe Ruelle
Language: French
Level: Second cycle

Aims

Introduction to physical ideas of certain important theories of contemporary physics. Implementation of associated mathematical techniques

Main themes

The contents can vary from year to year, depending on the interests of the auditorium and the teacher that effectively gives the course. The subjects looked upon will be chosen in the following list:

1. Theory of distributions
2. Differential operators and integral operators in Hilbert space, and physical applications
3. Linear and nonlinear partial derivative equations, solitons
4. Lie groups and Lie algebras, and their representations
5. Stochastic methods in physics: Markov chains, functional integration, statistical mechanics of non-equilibrium, renormalization group and critical phenomena, random walk.

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

Prerequisites: candidature level in algebra, analyse and general physics, PHYS 2121.

Evaluation: written and oral examination.

Support: syllabus.

Openings: theoretical physics teaching in PHYS 22; thesis and research in theoretical physics and mathematics.

Other credits in programs

MATH21/G Première licence en sciences mathématiques (Général) (3 credits)