



PHYS2221 Special question about mathematical physics

[22.5h] 4 credits

This course is not taught in 2006-2007

This course is taught in the 2nd semester

Language: French

Level: Second cycle

Aims

Further training in field theory, both classical and quantum. In certain cases, support for a master thesis.

Main themes

The contents can vary from year to year, depending on the interests of the audience. The following subjects have been covered during the last few years:

1. Complements of quantum field theory: renormalization problems; infrared problem; dimensional regularization; rigorous approaches
2. Nonlinear differential equations: general properties, solitons; conservation laws; Bäcklund transformations; inverse scattering methods, Lax pairs; sigma models and the ZMS method
3. Coherent states and applications: Canonical coherent states; generalizations; wavelets.

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

Prerequisites: course of quantum mechanics; PHYS 2610 Quantum electrodynamics.

Evaluation: written and oral examination.

Support: syllabus.

Reference book: Ali Antoine Gazeau, Coherent states, Wavelets and their generalizations.

Openings: thesis in theoretical physics, 3d cycle teaching and research in theoretical physics.

Other credits in programs

PHYS22/G Deuxième licence en sciences physiques (4 credits)