PHY1221 Group theory

[22.5h+15h exercises] 5 credits

Teacher(s): Philippe Ruelle
Language: French
Level: First cycle

Aims

To give a systematic introduction to the theory of groups and their representations, and to demonstrate its usefulness in physics through selected applications.

Main themes

1. Finite groups: fundamental notions and examples ; representations (tensors) ; characters ; tensor products (tensor algebra) ; illustrations on important finite groups (permutations and Young tableaux) ; applications ;
2. Lie groups and Lie algebras: generators ; classical groups ; representations of algebras ; representations of su(2) and tensor products ; lifting to SO(3) ; the su(3) algebra ; representations of linear groups and Young tableaux ; applications.

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

Prerequisites
BAC1 courses in algebra and calculus.

Other credits in programs

MAP22	Deuxième année du programme conduisant au grade d'ingénieur civil en mathématiques appliquées	(4 credits)