MATH2401 Lie groups

[22.5h+7.5h exercises] 2.5 credits

This course is not taught in 2005-2006
This course is taught in the 2nd semester
Language: French
Level: Second cycle

Aims

This course proposes an introduction to the theory of Lie groups, from the point of view of differential geometry. It is a natural continuation of the course MATH 2480, where the basic tools have been elaborated.

Main themes

A Lie group is a differential variety with a group structure compatible with the differential structure. The group structure induces an additional structure on the tangent space to the unit, called a Lie algebra. The course will study the fundamental concepts of the theory of Lie groups and Lie algebras. It also introduces to the basic notions of representation theory. It leads to the study of the Kostant-Kirillov co-adjoint orbits. These co-adjoint orbits offer an important class of symplectic varieties, that have applications in numerous problems coming from mechanics and mathematical physics.

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

Prerequisites: basics in differential geometry corresponding to the course MATH 2480.
References: Duistermaat J.-J., Kolk J.A.C., Lie groups, Universitext, Springer, 1999. Brocker T., Tom Dieck T., Representations of compact Lie groups, Graduate texts in Mathematics 98, Springer, 1985.

Other credits in programs

MATH21/G	Première licence en sciences mathématiques (Général)	(2.5 credits)
MATH22/G	Deuxième licence en sciences mathématiques	(2.5 credits)