MTH G364 Topics in Representation Theory

Fall 2005

Course Information

Course:	MTH G364 Topics in Representation Theory
Instructor:	Professor Andrei Zelevinsky
Time and Place:	TBA
Textbook:	W. Fulton, J. Harris. Representation Theory. A first course (Grad. Texts in Math. 129), Springer-Verlag, 1991

Course Description

The representation theory is one of the cornerstones of modern mathematics. It provides a mathematical formalism for studying symmetry, and has a very wide range of applications to other mathematical disciplines and other branches of science (physics, chemistry, economics, etc.). The course focuses on finite-dimensional representations of semisimple complex Lie groups and Lie algebras. Despite being one of the best developed parts of the representation theory, this field is still full of natural open problems and is a subject of an active current research. The required background is some basic algebra (main concepts of linear algebra and the theory of groups, rings and modules) and analysis. No knowledge of representation theory is assumed; the course will provide an introduction to its basic concepts and techniques. An emphasis will be made on a detailed study of specific examples such as the general linear group, other classical groups and their Lie algebras. The course grade will be determined according to homework assignments. It might be possible to replace part of the assignments by students' presentations on some topics of current research.

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