HE316 JAN 3:0

Group theory and applications in physics

Instructor

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Teaching Assistant

Email:

Department: Centre for High Energy Physics

Course Time: Tue., Thu., 9:30 - 11 AM

Lecture venue: LH3, New Physical Science Building

Detailed Course Page:

Announcements

Brief description of the course

Introduction to finite and continuous groups. Group representations and operations on them. Permutation group and its representations. Lie groups and Lie algebras. SU(3) and applications. Roots and weights. Dynkin diagrams. Classification of compact simple Lie algebras. Exceptional groups. The Lorentz Group, Poincare Group, and their representations.

Prerequisites

None

Syllabus

Georgi H., Lie Algebras in Particle Physics (Second edition),

Perseus Books, 1999.

Mukhi S. and Mukunda N., Introduction to Topology, Differential Geometry and Group Theory for Physicists, W iley Eastern, 1990.

Hamermesh M., Group Theory and its Applications to Physical Problems,

Addison-W esley, 1962.

Course outcomes

Knowledge of group theory as is necessary for the study of relativistic particle physics

Grading policy

35% Mid-term

65% Final

Assignments

Assignments will be approximately fortnightly. They are for practice and self-study, and will not be graded.

Resources

Georgi H., Lie Algebras in Particle Physics (Second edition),

Perseus Books, 1999.

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and Group Theory for Physicists, W iley Eastern, 1990.

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