ICTP DIPLOMA PROGRAMME IN HIGH ENERGY PHYSICS 2013-14

SYLLABUS

Lie Groups & Lie Algebrac - {24 Lectures = 36 hours} G. Thompson

1. Introduction
2. Basics of Groups
3. 1-Dimensional Lie Groups
4. Infinitesimal Transformations, Symmetries and Conserved Charges
5. The Groups SU(2) and SO(3; R)
6. Representations of the Lie Algebra of SU(2)
7. Tensor Representations and Young Tableaux
8. SU(3) and its Lie Algebra
9. Lie Algebras, Sub-Algebras and Ideals
10. Matrix Groups and their Lie Algebras
11. The Cartan-Killing Form and Root Spaces
12. Simple and Semi-Simple Lie Algebras
13. The Classical Lie Groups
14. The Cartan Matrix and Dynkin Diagrams