

FSI3110 Group and Representation Theory, 7.5 credits

Course main content

This is a course in group and representation theory, with weight on Lie groups useful in applications in particle physics and quantum field theory.

Course outline

Group theory, definitions and examples of groups. Homomorphism, isomorphism, Permutation groups, Group representation: reducibility, equivalence, Schur's lemma. Lie groups and Lie algebra's. Representations of simple Lie algebras, $SO(n)$, Lorentz group. Symmetries in physical systems

Literature

M. Hamermesh, Group Theory and its Application to Physical Problems; W.-K. Tung, Group Theory in Physics; J.F. Cornwell, Group Theory in Physics (vol. 1 and 2); Z.-Q. Ma, Group Theory for Physicists; H. Georgi, Lie Algebras in Particle Physics

Requirements for final grade

The course is completed by reading appropriate literature and doing homework exercises (four sets). Either written or oral examination.

Examiner and contact

Guest professor Sandhya Choubey (choubey@kth.se)

Schedule (16 x 2 h. = 32 h.)

1. Tuesday May 3, 2016, 10:15–12:00 (room A4:1041)
2. Wednesday May 4, 2016, 10:15–12:00 (room A4:1069)
3. Monday May 9, 2016, 10:15–12:00 (room A4:1069)
4. Thursday May 12, 2016, 10:15–12:00 (room A4:1069)
5. Monday May 16, 2016, 10:15–12:00 (room A4:1069)
6. Thursday May 19, 2016, 10:15–12:00 (room A4:1069)
7. Monday May 23, 2016, 10:15–12:00 (room A4:1069)
8. Thursday May 26, 2016, 10:15–12:00 (room A4:1069)
9. Monday May 30, 2016, 10:15–12:00 (room A4:1069)
10. Thursday June 2, 2016, 10:15–12:00 (room A4:1069)
11. Tuesday June 7, 2016, 10:15–12:00 (room A4:1069)
12. Thursday June 9, 2016, 10:15–12:00 (room A4:1069)
13. Monday June 13, 2016, 10:15–12:00 (room A4:1069)
14. Thursday June 16, 2016, 10:15–12:00 (room A4:1069)
15. Monday June 20, 2016, 10:15–12:00 (room A4:1069)
16. Thursday June 23, 2016, 10:15–12:00 (room A4:1069)