

FDITE21 Lie algebras in physics 1

lecturer: Laszlo Feher

Topics:

Symmetries and conservation laws, space time symmetry groups, angular momentum, $sl(2)$, further examples. General notions and results about Lie algebras (from basic definition to the Levi decomposition). Elements of linear representations (fundamental definitions, Schur lemmas). Structure and classification of finite dimensional complex semisimple Lie algebras. Real forms. Definition of Kac-Moody algebras, Dynkin diagrams of affine Lie algebras. An overview of Lie group.

Recommended literature:

- Fuchs J., Schweigert C.: Symmetries, Lie Algebras and Representations, CUP, Cambridge, 1997
- Humphreys J. E.: Introduction to Lie Algebras and Representation Theory, Springer, Berlin, 1972