

MA-609 LIE ALGEBRAS

Definitions and Examples of Lie algebras; ideals and quotients; Simple, solvable and nilpotent Lie algebras; radical of a Lie algebra, Semisimple Lie algebras; Engel's nilpotency criterion; Lie's and Cartan theorems; Jordan-Chevalley decomposition; Killing forms; Criterion for semisimplicity; product of Lie algebras; Classification of Lie algebras upto dimension 4; Applications of Lie algebras.

RECOMMENDED BOOKS:

1. Humphreys, J.E., Introduction to Lie Algebras and Representation Theory, Springer Verlag, 1972.
2. Lepowsky, J. and McCollum, G.W., Elementary Lie algebra Theory, Yale University, 1974.
3. Jacobson, N., Lie algebras, Interscience, New York, 1962.
4. Miller, W. Jr., Symmetry Groups and their applications, Academic Press, 1972.
5. Kramer, D. Stephani, H., Herlt, E and MacCallum, M., Exact Solutions of Einstein's Fields Equations, Cambridge University Press, 1980.
6. O'Neill, B., Semi-Riemannian Geometry, Academic Press, 1983.