ABELIAN SUBALGEBRAS AND IDEALS OF MAXIMAL DIMENSION IN NILPOTENT AND SUPERSOLVABLE LIE ALGEBRAS

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Let $\alpha(L)$ (respectively $\beta(L)$) denote the maximum dimension of an abelian subalgebra (respectivelt, ideal) in a Lie algebra L. These invariants are important for many reasons: for example, in the study of contractions and degenerations. For semisimple Lie algebras L over an algebraically closed field of characteristic zero, the invariant $\alpha(L)$ was completely determined by Malcev. In this talk I will present some new results concerning these invariants for nilpotent and supersolvable Lie algebras. For solvable Lie algebras over algebraically closed fields of characteristic zero the two invariants coincide, but that is not always the case over more general fields.

REFERENCES:

1. A.Malcev, *Commutative subalgebras of semisimple Lie algebras*, Amer. Math. Soc. Transl. **40** (1951), 15p.
2. M. Ceballos and D.A. Towers, *On abelian subalgebras and ideals of maximal dimension in supersolvable Lie algebras*, J. Pure Appl. Alg. **218** (2014), 497-503.