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Jörg Feldvoss* (jfeldvoss@southalabama.edu), Department of Mathematics and Statistics, University of South Alabama, Mobile, AL 36688-0002, **Salvatore Siciliano** (salvatore.siciliano@unisalento.it), Dipartimento di Matematica e Fisica, Università del Salento, I-73100 Lecce, Italy, and **Thomas Weigel**, Dipartimento di Matematica e Applicazioni, Università degli Studi di Milano-Bicocca, I-20125 Milano, Italy. *Split abelian chief factors and Lie algebra cohomology.*

In this talk we explain the relation between the multiplicities of split abelian chief factors of finite-dimensional Lie algebras and 1-cohomology. In particular, we obtain a characterization of solvable Lie algebras over fields of prime characteristic in terms of the vanishing of 1-cohomology or in terms of the multiplicities of split abelian chief factors. The analogues of these results are well known in the modular representation theory of finite groups. An important tool in the proof of these results is a refinement of a non-vanishing theorem of Seligman for the 1-cohomology of non-solvable finite-dimensional Lie algebras in prime characteristic. All this is joint work with Salvatore Siciliano and Thomas Weigel. (Received August 24, 2012)