

Finitely presented restricted metabelian Lie algebras over perfect fields

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Abstract. Lie algebras over fields of characteristic $p > 0$ often have an additional structure involving a special class of applications of given algebra in itself and whose properties related the elevate to the p -th power and the Lie bracket. Such a structure was first studied by Jacobson in [6] and called by him *restricted Lie algebras*. Intuitively, we can consider a restricted Lie algebra as an algebra with a double structure, the first one, the usual Lie algebra given by its product and, a second one, the restricted structure given by the new operation defined in it. The restricted Lie algebras and their homological properties are our object of study.

Little is known about homological properties of the restricted Lie algebras and its finite presentability. The main objective of our research is to determine a criterion to study when a restricted metabelian Lie algebra is finitely presented and when is the homological type FP_2 . Using this restricted homology techniques and the results obtained by Bryant and Groves (see [1] and [2]) for the case of the metabelian Lie algebra we give an answer to the problem in the specific case that the Lie algebra is defined over a perfect field of positive characteristic.

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