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Ideally r -Constrained Graded Lie Subalgebras of Maximal Class Algebras

Let $E \supseteq F$ be a field extension and M a graded Lie algebra of maximal class over E . We investigate the F -subalgebras L of M , generated by elements of degree 1. We provide conditions for L being either ideally r -constrained or not just infinite. We show by an example that those conditions are tight. Furthermore, we determine the structure of L when the field extension $E \supseteq F$ is finite. A class of ideally r -constrained Lie algebras which are not $(r - 1)$ -constrained is explicitly constructed, for every $r \geq 1$.

Keywords: Ideally r -constrained Lie algebras, Lie algebras of maximal class, just-infinite dimensional Lie algebras, thin algebras, graded Lie algebras.

MSC: 17B70; 17B65, 17B50.