

Lie algebras of cohomological dimension one

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ABSTRACT

The Stallings-Swan theorem says that groups of cohomological dimension one are free. An immediate consequence of this result is Schreier's theorem saying that subgroups of a free group are free. Witt proved that subalgebras of a free Lie algebra over a field are free and he also showed that this does not necessarily hold for free Lie algebras over more general commutative rings. It is also known that modular Lie algebras of cohomological dimension one are not necessarily free. Nevertheless this still might hold for Lie algebras over fields of characteristic zero or restricted Lie algebras in prime characteristic. In this talk I will discuss all these matters.

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