

Automorphisms of free metabelian Lie algebras

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It is shown that every automorphism of a free metabelian Lie algebra M_n of rank $n \geq 4$ over an arbitrary field K is almost tame, that is, it is a product of so-called Chein automorphisms (or one-row transformations). Moreover, the group of all automorphisms $\text{Aut}(M_n)$ of M_n of rank $n \geq 4$ over a field K of characteristic $\neq 3$ is generated by all linear automorphisms, as well as one quadratic and one cubic automorphism. The same result holds for fields of any characteristic if $n \geq 5$. The question of whether wild automorphisms exist for a free metabelian Lie algebra M_n of rank $n \geq 4$ is still open, as it does for polynomial and free associative algebras. However, in this case, the problem is reduced to examining a specific cubic automorphism.

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