THE TRANSFER OF A COMMUTATOR LAW FROM A NIL-RING TO ITS ADJOINT GROUP

DAVID M. RILEY AND VLADIMIR TASIĆ

Abstract. For every field $F$ of characteristic $p > 0$, we construct an example of a finite dimensional nilpotent $F$-algebra $R$ whose adjoint group $A(R)$ is not centre-by-metabelian, in spite of the fact that $R$ is Lie centre-by-metabelian and satisfies the identities $x^{2p} = 0$ when $p > 2$ and $x^8 = 0$ when $p = 2$. The existence of such algebras answers a question raised by A. E. Zalesskii, and is in contrast to positive results obtained by Krasilnikov, Sharma and Srivastava for Lie metabelian rings and by Smirnov for the class Lie centre-by-metabelian nil-algebras of exponent 4 over a field of characteristic 2 of cardinality at least 4.

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