

1145-17-2028      **Olga Kharlampovich\***, okharlampovich@gmail.com. *Diophantine problem in free Lie algebras.*

Using the undecidability of the Diophantine problem in integers we show that the Diophantine problem in a free Lie algebra  $L$  of rank  $> 2$  over a field or an integral domain is undecidable.

First-order theory of a free Lie algebra over a field of characteristic 0 (even without coefficients) is undecidable.

This answers questions by Baudisch (86) and by Bokut' and Kukin (94) (also attributed to Malcev). These are joint results with A. Miasnikov. (Received September 24, 2018)