

**Kozlov, V. V.**

**Remarks on a Lie theorem on the integrability of differential equations in closed form.**

(English. Russian original) [Zbl 1095.34501](#)

Differ. Equ. 41, No. 4, 588-590 (2005); translation from Differ. Uravn. 41, No. 4, 553-555 (2005).

The author proves the following theorem (main result): Let  $v_1(x), v_2(x), \dots, v_n(x)$  be a set of vector fields linearly independent at all points in  $\mathbb{R}^n = \{x\}$ . It is supposed that these fields generate a solvable Lie algebra  $g$  with respect to the ordinary commutator  $[\cdot, \cdot] : [v_k, v_j] = c_{1,j}^1 v_1 + c_{2,j}^2 v_2 + \dots + c_{k,j}^k v_k$ ,  $k, j = 1, 2, \dots, n$ . Then, each of the  $n$  differential equations  $\dot{x} = v_j(x)$ ,  $x \in \mathbb{R}^n$ ,  $j = 1, 2, \dots, n$ , is integrable by quadratures.

Reviewer: Vladimir L. Makarov (Kyiv)

**MSC:**

[34A05](#) Explicit solutions, first integrals of ordinary differential equations

Cited in **1** Review  
Cited in **4** Documents

**Keywords:**

Lie theorem; integrability of ordinary differential equations

**Full Text:** [DOI](#)

**References:**

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