

Algebraic method

Theorem (see [1])

Let G be the point-symmetry pseudogroup of the PDE $L(x, u^{(n)}) = 0$, \mathfrak{g} is the maximal Lie invariance algebra of this PDE, $\Phi \in G$ is a point symmetry. Then, the pushforward Φ_* is an automorphism of the Lie algebra \mathfrak{g} .

Definition (see [2])

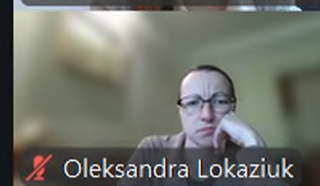
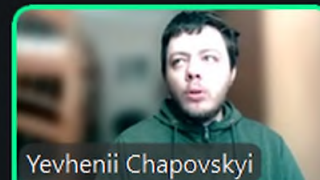
A subspace \mathfrak{m} in the Lie algebra \mathfrak{g} is called megaideal if $\Phi(\mathfrak{m}) \subset \mathfrak{m}$ for all $\Phi \in \text{Aut } \mathfrak{g}$.



Hydon P.E., Discrete point symmetries of ordinary differential equations, *R. Soc. Lond. Proc. Ser. A Math. Phys. Eng. Sci.* **454** (1998), 1961–1972.



Bihlo A. and Popovych R.O., Point symmetry group of the barotropic vorticity equation, *Proceedings of 5th Workshop "Group Analysis of Differential Equations and Integrable Systems" (June 6–10, 2010, Protaras, Cyprus)*, University of Cyprus, Nicosia, 2011, 15–27, arXiv:1009.1523.

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