Abstract

On Classification of Symmetry Reductions for Partial Differential Equations †

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Symmetry reduction is one of the most powerful tools for the investigation of partial differential equations. In particular, for this purpose, we can use a classical Lie method. To try to explain some of the differences in the properties of the reduced equations, we suggest investigating the relationship between the structural properties of nonconjugate subalgebras of the Lie algebras belonging to the symmetry groups of the equations under consideration and the properties of the reduced equations corresponding to them.In our talk, we plan to present some of the results concerning the relationship between the structural properties of low-dimensional (dim $L \leq 3$) nonconjugate subalgebras of the Lie algebra of the generalized Poincaré group $P(1,4)$ and the types of symmetry reduction for some $P(1,4)$-invariant equations in the space $M(1,3) \times R(u)$. More details on this theme can be found in:Fedorchuk V., Fedorchuk V. On Classification of Symmetry Reductions for the Eikonal Equation. Symmetry, 2016, 8, Art. 51, 32pp; doi:10.3390/sym8060051.