Group foliation and non-invariant solutions of some conformal invariant PDEs

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Abstract

Recently we suggested the method of the group foliation as a tool for obtaining non-invariant solutions of PDEs in the context of theory of symmetries [1, 2]. Here we further develop and apply this method to obtain non-invariant solutions of PDEs which admit the conformal symmetry group. The examples are the porous-medium equation and the heavenly equation. The main difficulty with this method is how to solve the resolving equations. We develop here some new technique for obtaining solutions of the resolving equations and show how non-invariant solutions of the original equations could be reconstructed from the corresponding solution of the resolving equations.
References
