Article Abstract

Title:	**Explicit solutions of the Rand Equation**
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Abstract:	In this paper the meaning of a nonlinear partial differential equation (nPDE) of the third-order is shown to the first time. The equation is known as the 'Rand Equation' and belongs to a class of less studied nPDEs. Both the explicit physical meaning as well as the behaviour is not known until now. Therefore we believe it is indispensable to study this evolution equation in detail. We perform a classical Lie Group analysis to analyze the point symmetries. By using a similarity reduction we are able to deduce more classes of solutions of general character. Special nonlinear transformations are given in a most general form. In addition, we also study Lie's non-classical case relating to potential and generalized symmetries. Both the potential and approximate symmetries are discussed to the first time leading to new results. So we expect a better understanding and concrete physical as well as technical application in future.
Keywords:	Nonlinear partial differential equations, evolution equations, symmetries, similarity solutions, Rand Equation.