Non-Lie Symmetry Groups of (2+1)-Dimensional Nonlinear Systems

 MA Hong-Cai[1] and LOU Sen-Yue[2,3]

[1] Department of Mathematics, Donghua University, Shanghai 200051, China
[2] Department of Physics, Shanghai Jiao Tong University, Shanghai 200030, China
[3] Center of Nonlinear Science, Ningbo University, Ningbo 315211, China

Abstract: A modified direct method is developed to find finite symmetry groups of nonlinear mathematical physics systems. Applying the modified direct method to the well-known (2+1)-dimensional asymmetric Nizhnik-Novikov-Vesselov equation and Nizhnik-Novikov-Vesselov equation, both the Lie point symmetry groups and the non-Lie symmetry groups are obtained. The Lie symmetry groups obtained via traditional Lie approaches are only special cases. Furthermore, the expressions of the exact finite transformations of the Lie groups are much simpler than those obtained via the standard approaches.

[Full text: PDF]

Close