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Nonclassical Symmetries for Nonlinear Partial Differential Equations via Compatibility

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Abstract

GENERAL

The determining equations for the nonclassical symmetry reductions of nonlinear partial differential equations with arbitrary order can be obtained by requiring the compatibility between the original equations and the invariant surface conditions. The (2+1)-dimensional shallow water wave equation, Boussinesq equation, and the dispersive wave equations in shallow water serve as examples illustrating how compatibility leads quickly and easily to the determining equations for their nonclassical symmetries.

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