

Integrability of systems of ordinary differential equations via Lie point symmetries

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Abstract

The existing literature discusses different strategies to solve a scalar ordinary differential equation using Lie point symmetries. We focus on three of these strategies in order to frame methods for finding solutions of non-linear systems of ordinary differential equations. These include Lie's integration theorem, method of successive reduction of order and the method of using the invariants of the admitted symmetry generators. Illustrative examples and those taken from mechanics are presented to highlight the use of these methods.

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