

## Perturbation to Lie Symmetry and Adiabatic Invariants for General Holonomic Mechanical Systems

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**Abstract:** Based on the concept of adiabatic invariant, the perturbation to the Lie symmetry and adiabatic invariants for general holonomic mechanical systems are studied. The exact invariants induced directly from the Lie symmetry of the system without perturbation are given. The perturbation to the Lie symmetry is discussed and the adiabatic invariants that have the different form from that in [Act. Phys. Sin. 55 (2006) 3236 (in Chinese)] of the perturbed system, are obtained.

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**Key words:** Lie symmetry, perturbation, adiabatic invariant, general holonomic mechanical system

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