

Unified Symmetry of Nonholonomic Mechanical Systems with Non-Chetaev's Type Constraints

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Abstract: Based on the total time derivative along the trajectory of the system, the unified symmetry of nonholonomic mechanical system with non-Chetaev's type constraints is studied. The definition and criterion of the unified symmetry of nonholonomic mechanical systems with non-Chetaev's type constraints are given. A new conserved quantity, as well as the Noether conserved quantity and the Hojman conserved quantity, deduced from the unified symmetry, is obtained. Two examples are given to illustrate the application of the results.

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Key words: nonholonomic mechanical system of non-Chetaev's type, unified symmetry, conserved quantity

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