

Form Invariance and Conserved Quantity for Non-holonomic Systems with Variable Mass and Unilateral Constraints

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Abstract: The paper studies the form invariance and a type of non-Noether conserved quantity called Mei conserved quantity for non-holonomic systems with variable mass and unilateral constraints. According to the invariance of the form of differential equations of motion under infinitesimal transformations, this paper gives the definition and criterion of the form invariance for non-holonomic systems with variable mass and unilateral constraints. The condition under which a form invariance can lead to Mei conservation quantity and the form of the conservation quantity are deduced. An example is given to illustrate the application of the results.

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Key words: variable mass, unilateral constraint, non-holonomic system, form invariance, conserved quantity

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