Generalized Lutzky Conserved Quantities of Holonomic Systems with Remainder Coordinates Subjected to Unilateral Constraints

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Abstract: This paper focuses on studying the relation between a velocity-dependent symmetry and a generalized Lutzky conserved quantity for a holonomic system with remainder coordinates subjected to unilateral constraints. The differential equations of motion of the system are established, and the definition of Lie symmetry for the system is given. The conditions under which a Lie symmetry can directly lead up to a generalized Lutzky conserved quantity and the form of the new conserved quantity are obtained, and an example is given to illustrate the application of the results.

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