

Miniworkshop
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Completeness of Riemannian metrics:
Application to control of nonholonomic systems

David Martin de Diego
(ICMAT, Madrid)

We introduce a new technique to study mechanical systems simultaneously subjected to nonholonomic and unilateral constraints. Our method is based on approximating incomplete Riemannian metrics by complete ones, modifying the kinetic energy of the system near a boundary and finding admissible controls satisfying simultaneously the nonholonomic constraints and the prescribed unilateral constraints.

As a result, we obtain a new nonholonomic system with modified kinetic energy that by construction avoid the obstacle. Moreover, we identify this modification as a control of the initial system.