

# DERIVED CONES TO REACHABLE SETS OF A SECOND-ORDER EVOLUTION INCLUSION \*

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Dedicated to Professor Mihail Megan  
on the occasion of his 70th anniversary

## Abstract

We consider a class of second-order evolution inclusions and we prove that the reachable set of a certain second-order variational inclusion is a derived cone in the sense of Hestenes to the reachable set of the initial differential inclusion. This result allows to obtain a sufficient condition for local controllability along a reference trajectory.

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**keywords:** derived cone, mild solution, local controllability

## 1 Introduction

The concept of derived cone to an arbitrary subset of a normed space has been introduced by M.Hestenes in [8] and successfully used to obtain necessary optimality conditions in Control Theory. Afterwards, this concept has been largely ignored in favor of other concepts of tangents cones, that may intrinsically be associated to a point of a given set: the cone of interior directions, the contingent, the quasitangent and, above all, Clarke's tangent cone

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