Discussiones Mathematicae
Differential Inclusions, Control and Optimization 42 (2022) 27–28
https://doi.org/10.7151/dmdico.1229

OPTIMAL VECTOR MEASURES AND RELAXED CONTROLS FOR A CLASS OF NONLINEAR SYSTEMS

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Abstract

In this paper we consider a class of nonlinear systems driven by relaxed controls and vector measures. We present existence of optimal control policies and develop necessary conditions of optimality whereby one can determine the optimal controls. Further we consider non-convex control problems as special cases where the relaxed controls specialize to switching controls, generalizing the bang-bang principle. We conclude the paper with a numerical example involving the dynamics of a flying object called quadcopter.

Keywords: vector measure, relaxed control, optimization, nonlinear systems, quadcopter.

2010 Mathematics Subject Classification: 49J15, 49J27, 49J30, 49J45, 49J50, 46K15, 49K27, 49K30, 93C15.

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Received 19 June 2021
Accepted 20 September 2021