

Author's Accepted Manuscript

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PII: S0947-3580(16)30055-3
DOI: <http://dx.doi.org/10.1016/j.ejcon.2016.06.002>
Reference: EJCON177

To appear in: *European Journal of Control*

Received date: 31 March 2016
Revised date: 30 May 2016
Accepted date: 20 June 2016

Cite this article as: D.Yu. Karamzin, V.A. de Oliveira, G.N. Silva and F.L. Pereira, Minimax Optimal Control Problem with State Constraints, *European Journal of Control*, <http://dx.doi.org/10.1016/j.ejcon.2016.06.002>

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Minimax Optimal Control Problem with State Constraints

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Abstract

In this article, nondegenerate necessary conditions of optimality are derived and discussed for the so-called “mini-max” optimal control problems with state constraints. In this class of problems, the data depends on an unknown parameter that takes values in a given compact set called “uncertainty set”. The solution of the problem is considered for the worst case value of the unknown parameter. The result is obtained in the two stages: after the basic necessary conditions of optimality are derived, additional conditions ensuring their nondegeneracy in the minimax context are obtained.

Keywords: minimax control, state constraints, maximum principle

2010 MSC: 49K15, 49K21, 49K35

1. Introduction

In this article we study a minimax optimal control problem with state constraints. As a starting point of our investigation, we consider the article [1] by

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