



Output Tracking of Some Class Non-minimum Phase Nonlinear Uncertain Systems

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Abstract: In this paper, we present the output tracking for a class of non-minimum phase nonlinear uncertain systems. To achieve the output tracking, we will apply the modified steepest descent control. To apply the modified steepest descent control, the output of the system will be redefined so that the system will become minimum phase with respect to a new output.

Keywords: *relative degree of system; minimum phase system; non-minimum phase system; modified steepest descent control.*

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1 Introduction

In the output tracking theory, the input-output linearization is one of the most available methods [1]. Output tracking problems for nonlinear non-minimum phase systems are a rather difficult issue in control theory. Most of researchers restrict their research to some special nonlinear classes only. The stable inversion proposed in [2], [3] is an iterative solution to the tracking problem with the unstable zero dynamics. This method requires the system to have well defined relative degree and hyperbolic dynamics, i.e. no eigenvalues on the imaginary axis. In [4], control design procedure for the output tracking was proposed. The design procedure consists of two steps. At the first step, the

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