

论文与报告

非线性控制系统的全局输出调节

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摘要

讨论了非线性控制系统的全局输出调节. 首先推广精确线性化方法, 通过状态反馈和微分同胚将非线性系统的全局输出调节问题, 转化为线性系统对非线性系统的跟踪问题. 通过提出可解性的概念, 得到线性系统对非线性系统全局跟踪的条件, 该结果是线性系统结果的推广. 在反馈同胚变换全局成立条件下, 得到非线性控制系统全局输出调节问题的充分条件, 该条件对外部系统只做较弱的可解性假设, 在反馈同胚变换局部成立的条件下, 可得局部结果.

关键词 [非线性系统](#) [输出调节](#) [微分同胚](#)

分类号

Global Output Regulation for Nonlinear Control Systems

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Abstract

Global output regulation problems for nonlinear control systems are discussed. First, a state feedback diffeomorphic coordination transformation is introduced to transform the nonlinear system into the system which consists of a linear system and a nonlinear exosystem. Then solvability of output regulation is defined to discuss the global output regulation problems of this special control systems. The result is an extension to that of the linear systems. Finally, it is shown that if the exo-system is the solvable and the condition of global exact feedback linearization is satisfied then the global output regulate problem for nonlinear systems is solvable. If only local feedback coordination transformation exists, we can obtain the local results.

Key words [Nonlinear control systems](#) [output regulation](#) [exact feedback linearization](#)

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