

数学与系统科学研究院

计算数学所学术报告

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报告题目：

A New Computational Approach for Optimal Control Problems with Multiple Time-Delay

邀请人：刘歆副研究员

报告时间：2017年11月9日(周四)

上午 8:30-9:30

报告地点：数学院科技综合楼

三层 301 报告厅

报告摘要：

In this paper, we consider a class of nonlinear optimal control problems with multiple time-delay subject to

canonical equality and inequality constraints.

Since it is well known that, when applying the control parametrization method, standard gradient-based optimization algorithms struggle to optimize variable switching times for control functions, we develop a novel transformation procedure that converts a given time-delay system into an equivalent system---defined on a new time scale---in which the control switching times are fixed, but the dynamic system contain multiple variable time-delay that depend on the durations of basis functions in the original system. Despite the challenge posed by the variable time-delay, we show that an optimal control policy for the equivalent system can be obtained efficiently using gradient-based optimization techniques. This optimal control policy can then be used to determine the optimal switching times and optimal control variables for the original system. We conclude the paper by solving various types of example problems.

欢迎大家参加！