数学与系统科学研究院

计算数学所定期学术报告

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报告题目：

Second Order Analysis for Optimal Control Problems: Improving Results Expected from Abstract Theory

邀请人：　龚伟 博士

报告时间：**2014 年 5 月 22 日（周四）**

下午 16：00~17：00

报告地点：　科技综合楼三层 **311**

计算数学所报告厅

Abstract：

It is well known that second order optimality conditions play a crucial role in the numerical analysis of optimization problems. They are an essential tool to analyze the convergence order of algorithms as well as to derive discretization error estimates. In this talk, we are concerned with second order optimality conditions for control problems. As in any infinite-dimensional optimization problem, we have to take care of the so-called two-norm discrepancy and some other differences to the finite-dimensional optimization. The direct application of the methods and theorems of abstract optimization theory to control problems has frequently lead to results that are not optimal. We will present some improvements of these results that are meaningful for the applications. In the second order analysis of an optimal control problem, we have to distinguish two cases depending whether the Tikhonov regularizing term is present or not in the cost functional. In the first case, the second order optimality conditions for the control problems are very close to that of the finite-dimensional optimization problems. However, in the absence of the Tikhonov term, the situation is very different: the gap between the necessary and sufficient conditions is bigger, and the formulation of the second order conditions is unexpected.

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