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：

Pointwise-in-time error estimates for an optimal control problem with subdiffusion constraint

邀请人： 龚伟 副研究员

报告时间：2017 年 8 月 24 日（周四）

下午 16:00-17:00

报告地点： 科技综合楼三层

311 报告厅

Abstract：

In this work, we present numerical analysis for a distributed optimal control problem, with box constraint on the control, governed by a subdiffusion equation which involves a fractional derivative of order $\alpha\in(0,1)$ in time. The fully discrete scheme is obtained by applying the conforming linear Galerkin finite element method in space, with L1 scheme or backward Euler convolution quadrature in time, and the control variable by a variational type discretization. With a space mesh size h and time stepsize τ, we prove the following order of convergence for the numerical solutions of the optimal control problem: $O(\tau^{\min({1}/{2}+\alpha-\epsilon,1)}+h^2)$ in the discrete $L^2(0,T;L^2(\Omega))$ norm and $O(\tau^{\alpha-\epsilon}+\ell_h^2h^2)$ in the discrete $L^\infty(0,T;L^2(\Omega))$ norm, with an arbitrarily small positive number ϵ and a logarithmic factor $\ell_h=\ln(2+1/h)$. Numerical experiments are provided to support the theoretical results.

欢迎大家参加！