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：

Sharp H^1-norm error estimates of two time-stepping schemes for reaction-subdiffusion problems

邀请人： 郑伟英 研究员

报告时间： 2018 年 8 月 31 日（周五）

上午 **10:00-11:00**

报告地点： 科技综合楼三层

311 报告厅

Abstract：

Due to the intrinsically initial singularity of solution and the discrete convolution form in numerical Caputo derivatives, the traditional H^1-norm analysis (corresponding to the case for a classical diffusion equation) to the time approximations of a fractional subdiffusion problem always leads to suboptimal error estimates (a loss of time accuracy). To recover the theoretical accuracy in time, we propose an improved discrete Gr\"{o}nwall inequality and apply it to the well-known L1 formula and a fractional Crank-Nicolson scheme. With the help of a time-space error-splitting technique and the global consistency analysis, sharp H^1-norm error estimates of the two nonuniform approaches are established for a reaction-subdiffusion problems. Numerical experiments are included to confirm the sharpness of our analysis. This is the joint work with Hong-lin Liao, Jiwei Zhang and Zhimin Zhang.

欢迎大家参加！