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:

Fundamental Convergence Rates of Convex Operator Splitting Schemes

邀请人： 刘歆 博士

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下午 15:30-16:30

报告地点： **科技综合楼三层 311**

计算数学所报告厅

Abstract：

Splitting schemes are the backbone of many first-order algorithms, ranging from alternating projection for finding the intersection of two sets, to splitting algorithms for solving PDEs, and to alternating direction method of multipliers (ADMM) for minimizing complicated convex functions. They are simple, versatile, and nearly state-of-the-art in solving problems with multiple parts (of monotone operators, constraint sets, or objective functions).

However, except for very few recent results for specific algorithms, their rates of convergence are largely unknown. This talk first overviews a set of fundamental algorithms based on operator splitting such as Douglas-Rachford, Peaceman-Rachford, and nonexpansive KM iterations. Then, it gives their new rate-of-convergence results in a variety of senses by new analysis techniques that tackle splitting. Next, it argues by counter examples that many of those rates are in fact tight. These results give us several insights into splitting based algorithms and also allow us to compare their performance to those of other algorithms.

This is joint work with Damek Davies (UCLA).

欢迎大家参加！