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：

Worst case complexity of nonconvex non-Lipschiz minimization for sparse approximation

邀请人：　优化与应用研究中心

报告时间：**2013 年 7 月 25 日（周四）**

　　　　　　上午 11:00-12:00

报告地点：　科技综合楼三层 **311**

　　　　　　计算数学所报告厅

Abstract:

We consider evaluation complexity of minimization problems with nonconvex, non-Lipschitz regularization terms. For *L2-Lp* non-Lipschitz regularized minimization, we show that finding a global optimal solution is strongly NP-hard. We propose a smoothing quadratic regularization algorithm for unconstrained problems and a first-order interior point algorithm for a class of problems with box constraints. Both algorithms are easy to implement and the worst-case iteration complexity for finding an epsilon scaled first order stationary point is $O(epsilon^{-2})$. Moreover, we develop a second-order interior point algorithm using the Hessian matrix, and solve a quadratic program with a ball constraint at each iteration. Although the second-order interior point algorithm costs more computational time than that of the first order algorithm in each iteration, its worst-case iteration complexity for finding an epsilon scaled second-order stationary point is reduced to $O(epsilon^{-3/2})$.

Examples are presented to illustrate the theory and algorithms.

Joint work with Wei Bian, Dondong Ge, Zizhou Wang, Yinyu Ye

欢迎大家参加！