中国科学院数学与系统科学研究院
应用数学研究所
华罗庚应用数学青年论坛

报告题目： A Squared Smoothing Newton Method for Semidefinite Programming

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摘　　要： This paper proposes a squared smoothing Newton method via the Huber smoothing function for solving semidefinite programming problems (SDPs). We first study the fundamental properties of the matrix-valued mapping defined upon the Huber function. Using these results and existing ones in the literature, we then conduct rigorous convergence analysis and establish convergence properties for the proposed algorithm. In particular, we show that the proposed method is well-defined and admits global convergence. Moreover, under suitable regularity conditions, i.e., the primal and dual constraint nondegenerate conditions, the proposed method is shown to have a superlinear convergence rate. To evaluate the practical performance of the algorithm, we conduct extensive numerical experiments for solving various classes of SDPs. Comparison with the state-of-the-art SDP solver SDPNAL+ demonstrates that our method is also efficient for computing accurate solutions of SDPs.

个人简介：现为柏林威尔斯特拉斯应用与分析研究所访问博士后。本科毕业于中国科技大学, 2021 年博士毕业于新加坡国立大学(导师 Kim-Chuan Toh)。研究方向为最优化、数据驱动优化与控制等。研究成果发表于 Mathematical Programming, SIAM Journal on Optimization, Mathematics of Operations Research 等期刊。