数学与系统科学研究院

计算数学所定期学术报告

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报告题目：

A sequential quadratic programming method without a penalty function or a filter for nonlinear equality constrained optimization

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Abstract:

We present a sequential quadratic programming method without using a penalty function or a filter for solving nonlinear equality constrained optimization. In each iteration, the linearized constraints of the quadratic programming are relaxed to satisfy two mild conditions, the step-size is selected such that either the value of the objective function or the measure of the constraint violations is sufficiently reduced. As a result, our method has two nice properties. Firstly, we do not need to assume the boundedness of the iterative sequence; Secondly, we do not need any restoration phase which is necessary for filter methods. We prove that the algorithm will terminate at either an approximate Karush-Kuhn-Tucker point or an approximate Fritz-John point, or an approximate infeasible stationary point which is an approximate stationary point for minimizing the ℓ_2 norm of the constraint violations. By controlling the exactness of the linearized constraints and introducing a second-order correction technique, without requiring linear independence constraint qualification, the algorithm is shown to be locally superlinearly convergent. The numerical results on small scale problems show that the algorithm is robust and efficient.

欢迎大家参加！