

数学与系统科学研究院

计算数学所学术报告

报告人: **Prof. Jinyun Yuan**

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报告题目:

**Study of Newton method on
Riemann manifolds**

邀请人: 刘歆 副研究员

报告时间: **2017 年 8 月 30 日 (周三)**

下午 16:00-17:00

报告地点: 科技综合楼三层

311 报告厅

Abstract:

The talk presents some works on Newton's method for finding a singularity of a differentiable vector field defined on a Riemannian manifold. For the first work, under the assumption of invertibility of the covariant derivative of the vector field at its singularity, Newton's method is well-defined in a suitable neighborhood of this singularity. Moreover, the sequence generated by Newton's method converges to the solution at a super-linear rate. The main result was applied to find eigenvalues of a positive definite symmetric matrix and minimizers of a function defined on a Riemannian manifold. The second work is in the context of the globalization of Newton's method. Until now, studies on globalization strategies in a Riemannian setting have been restricted to the optimization problem, e.g., Newton's method with the Hessian of the objective function updated by the Broyden-Fletcher-Goldfarb-Shanno (BFGS) family, Trust-Region methods, and Levenberg-Marquardt methods. A damped Newton's method for finding singularities of vector fields defined on a Riemannian manifolds with a linear search together with a merit function. Hence, the convergence rate of the proposed method is super-linear/quadratic.

欢迎大家参加！