

数学与系统科学研究院

计算数学所学术报告

报告人: **Prof. Oleg Burdakov**

( *Linköping University, Sweden* )

报告题目:

**Limited-memory Methods with  
Shape Changing Trust Region**

邀请人: 袁亚湘 院士

报告时间: **2013 年 7 月 5 日 (周五)**

**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:**

Limited-memory quasi-Newton methods and trust-region methods represent two efficient approaches used for solving unconstrained optimization problems. A straightforward combination of them deteriorates the efficiency of the former approach, especially when the problems are of large scale. For this reason, the limited memory methods are usually combined with a line-search. The trust region is usually determined by a fixed norm, typically, scaled  $l_2$  or  $l_\infty$  norms.

We present a trust-region approach where the model function is based on a limited-memory quasi-Newton approximation of the Hessian, and the trust region is defined by a special norm. Since this norm depends on certain properties of the Hessian approximation, the shape of the trust region changes with every iteration. This allows for efficiently solving the subproblem.

We prove global convergence of our limited-memory methods with shape changing trust region. We also present results of numerical experiments that demonstrate the efficiency of our approach in the case of large-scale test problems.

欢迎大家参加!