

数学与系统科学研究院

计算数学所学术报告

报告人: **Dr. Christian Clason**

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报告题目:

**PDE-constrained optimization with
L1-type functionals**

邀请人: **郑伟英副研究员**

报告时间: **2010年8月18日(周三)**

上午 10:00~11:00

报告地点: **科技综合楼三层 311**

计算数学所报告厅

Abstract:

This talk is concerned with optimization problems for partial differential equations, where the functional to be minimized involves L1-type norms. The motivation for such problems comes from the fact that L1-type norms promote sparsity, i.e., smallness of support. However, such problems are not differentiable, so their numerical solution is challenging.

We present a framework based on Fenchel duality and Moreau-Yosida approximation, which allows replacing the original problem with an equivalent differentiable problem subject to simple box constraints. In this way, superlinearly convergent semi-smooth Newton methods become applicable.

After giving an overview of this framework, we discuss its application to two different problems: Optimal control with sparsity constraints (where the control cost is of L1-type), and inverse source problems for impulsive noise (where the data fit term is the L1 norm). For the latter, we also present an automatic regularization parameter choice method involving a fixed point iteration based on the model function approach.

欢迎大家参加!