

数学与系统科学研究院

计算数学所学术报告

报告人: **Prof. Marc Teboulle**

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报告题目:

**Convex Duality in Nonconvex  
Quadratic Optimization**

邀请人: 优化与应用研究中心

报告时间: **2011 年 9 月 30 日 (周五)**

**上午 10: 30-11: 30**

报告地点: **科技综合楼三层 301**

**计算数学所小报告厅**

## **Abstract:**

Quadratic problems and their relatives, conic optimization problems, are currently one of the most active areas of research in optimization. These problems arise in a broad range of fields from mathematics, engineering and control to hard combinatorial problems.

This talk will overview some of the key mathematical tools for their analysis such as: the convexity of the range of quadratic maps, the S-Lemma, and semidefinite relaxations of combinatorial optimization problems, and some recent theoretical and algorithmic results we have obtained for solving various instances of nonconvex quadratic optimization problems.

The main theme is to show that convex duality plays a central role, and can be successfully used to identify classes of problems where a dual bound is exact; to derive global optimality conditions; to detect hidden convexity in seemingly hard nonconvex quadratic problems, and to show that dual approximations problems are somehow providing best computationally tractable bounds.

The talk is intended to a wide audience. We will assume (almost) no prior knowledge in continuous optimization, convex duality, and on the aforementioned topics.

**欢迎大家参加!**