数学与系统科学研究院

计算数学所学术报告

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报告题目：

Shape calculus in differential forms : theory and applications

邀请人：　　毛士鹏博士

报告时间：**2011 年 6 月 16 日（周四）**

　　　　　　　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：

We treat Zolesio's velocity method of shape calculus using the formalism of differential forms, in particular, the notion of Lie derivative. This provides a unified and elegant approach to computing even higher order shape derivatives of domain and boundary integrals and skirts the tedious manipulations entailed by classical vector calculus. Hitherto unknown expressions for shape Hessians can be derived with little effort.

The perspective of differential forms perfectly fits second-order boundary value problems. We illustrate its power by deriving the shape derivatives of solutions to second-order elliptic boundary value problems with Dirichlet, Neumann and Robin boundary conditions. A new dual mixed variational approach is employed in the case of Dirichlet boundary conditions. Moreover, applications to acoustic and Maxwell scattering problems will also be addressed.

欢迎大家参加！