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：

Optimal estimates for elliptic equations and systems from composite material

邀请人：　许现民 副研究员

报告时间：**2017** 年 **11** 月 **9** 日（周四）

上午 **10:00-11:00**

报告地点：　数学院综合楼三层

311 报告厅

报告摘要：

We study a class of second-order elliptic equations and systems of divergence form, with discontinuous

coefficients and data, arising from the study of composite materials. For the original problem concerning the system of linear elasticity, we develop an iteration technique with respect to the energy integral to overcome the difficulty from the lack of maximal principles and obtain the optimal blow-up rates of the gradients when two inclusions are close to touch. Our results hold for convex inclusions with arbitrary shape and in all dimensions. For the scalar case, we first establish the explicit dependence of the gradient on the ellipticity coefficients and the distance between interfacial boundaries of inclusions, which unifies the known results in the literature and answers open problem (b) proposed by Li-Vogelius (2000). Secondly, more interesting higher-order derivative estimates are also obtained, answering open problem (c) of Li-Vogelius (2000). This is based on joint work with Professor Jiguang Bao(BNU), Hongjie Dong(Brown), and Yanyan Li(Rutgers).

欢迎大家参加！