

数学与系统科学研究院

计算数学所学术报告

报告人: Prof. Ricardo Nochetto
(University of Maryland, College Park)

报告题目:

Quasi-Optimal Convergence Rates for
Adaptive Finite Element Methods

邀请人: 陈志明研究员

报告时间: 2009年6月22日(周一)

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 analyze the simplest and most standard adaptive finite element method (AFEM), with any polynomial degree, for general second order linear, symmetric elliptic operators. As it

is customary in practice, AFEM marks exclusively according to the error estimator and performs a minimal element refinement without the interior node property. We prove that AFEM is a contraction for the sum of energy error and scaled error estimator, between two consecutive adaptive loops. This geometric decay is instrumental to derive optimal cardinality of AFEM. We show that AFEM yields a decay rate of total error –energy error plus oscillation– in terms of number of degrees of freedom as dictated by the best approximation for this combined nonlinear quantity. We discuss the connection, or lack of it, between the total error and standard approximation classes. This work is joint with J.M. Cascon, C. Kreuzer, and K.G. Siebert. Moreover, together with A. Bonito we extend these results to cG and dG with hanging nodes.

欢迎大家参加！