

数学与系统科学研究院

计算数学所学术报告

报告人: Prof. Hermann Brunner

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报告题目: On the numerical
solution of Volterra integral
equations of the first kind

邀请人: 周爱辉研究员

报告时间: 2009年11月17日(周二)

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: The first part of this talk will deal
with a brief review of numerical methods for solving

Volterra integral equations of the first kind. Since such problems are ill-conditioned, numerical schemes based on higher-order quadrature formulas or on collocation using continuous piecewise polynomials are in general unstable, and one has to look for alternative approximation methods, such as discontinuous Galerkin (DG) methods.

In the second part I shall describe recent and ongoing joint work with P.J. Davies (University of Strathclyde) and D.B. Duncan (Heriot-Watt University) on DG and related discontinuous collocation methods for first-kind Volterra integral equations. The convergence analysis of these methods is now quite well understood, except when the kernels of the integral equations are weakly singular or highly oscillatory. For such equations, as well as for equations with delays, the analysis of DG and collocation methods remains essentially open -- a great challenge for numerical analysts.

欢迎大家参加！

