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：

Stability-preserving numerical methods for nonlinear functional differential equations

邀请人： 戴小英 副研究员

报告时间：2016 年 11 月 24 日（周四）

上午 10:00-11:00

报告地点： 数学院南楼二层

226 教室

Abstract：

This report presents a review of recent progress in the field of numerical solutions of a class of nonlinear neutral functional differential equations (NFDEs) which includes as an important special case the Volterra functional differential equations (VFDEs) .

A series of stability, contractivity, asymptotic stability and exponential asymptotic stability results of the theoretical solutions to nonlinear NFDEs in Banach spaces were obtained. From a numerical point of view, it is important to study the potential of numerical methods in preserving the qualitative behaviour of the underlying system. Consequently, these results presented in this report provide the theoretical foundation for analyzing the stability of the numerical methods when they are applied to these systems. The contractivity and asymptotic stability properties of the implicit Euler method for nonlinear functional differential equations (FDEs) are discussed. One of main result we established is that the implicit Euler method with linear interpolation can completely preserve these stability properties of the theoretical solution to such FDEs. We also review the results on one-leg methods for solving NDDEs and θ-methods for generized pantograph equations.

欢迎大家参加！