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：

Finite difference methods with non-uniform meshes for FDEs

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报告时间：**2017 年 5 月 22 日（周一）**

上午 10:00-11:00

报告地点： 科技综合楼三层

301 小报告厅

Abstract：

Generally speaking, the fractional differential equations (FDEs) are quite different from the integer-order differential equations. For the former, even if the resource item and the initial/boundary value conditions are smooth enough, the solutions of the corresponding equations can be non-smooth. On the other hand, for the given fractional differential equations, even if the resource item and the initial/boundary value conditions are non-smooth in the given domain, their solutions can be smooth enough in the same domain. These mean that poor convergent rate may be obtained if uniform meshes are used.

In this talk, finite difference methods with non-uniform meshes for solving nonlinear FDEs are presented, where the non-equidistant stepsize is non-decreasing. The rectangle formula and trapezoid formula are proposed based on the non-uniform meshes. Combining the above two methods, we then establish the predictor-corrector scheme. The error and stability analysis are investigated. At last, numerical examples are carried out to verify the theoretical analysis. Besides, the comparisons between non-uniform and uniform meshes are given, where the non-uniform meshes show the better performance when dealing with the less smooth problems.

欢迎大家参加！