数学与系统科学研究院

计算数学所学术报告

报告人： 曹俊英 教授

（ 贵州民族大学理学院 ）

报告题目：

A class high order schemes for the numerical solution of the fractional ordinary differential equations

邀请人： 唐贻发 研究员

报告时间：2016 年 4 月 18 日（周一）

上午 10:30-11:30

报告地点： 数学院南楼七层

702 会议室

Abstract：

We present a general technique to construct high order schemes for the numerical solution of the fractional ordinary differential equations (FODEs). This technique is based on the so-called p-block-by-block approach, which is a common method for the integral equations. In our approach, the classical p-block-by-block approach is improved in order to avoiding the coupling of the unknown solutions at each block step with an exception in the first p-steps, while preserving the good stability property of the p-block-by-block schemes. By using this new approach, we are able to construct a class high order schemes for FODEs of the order . The stability and convergence of the schemes are rigorously established. We prove that the numerical solution converges to the exact solution with order are：(1) order $p+1+\alpha$ for $0 < \alpha \leq 1$, and order $p+2$ for $\alpha > 1$ when p is even, (2) order $p+\alpha$ for $0 < \alpha \leq 1$, and order $p+1$ for $\alpha > 1$ when p is odd. A series of numerical examples are provided to support the theoretical claims.

Keywords: Fractional ordinary differential equations; High order scheme; Stability and convergence analysis

欢迎大家参加！