

数学与系统科学研究院
计算数学所学术报告

报告人: **Prof. John Butcher**

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报告题目: **Order and effective order
of Runge-Kutta methods**

邀请人: 洪佳林研究员

报告时间: **2010年6月30日(周三)**
下午4:00

报告地点: **科技综合楼三层 311**
计算数学所报告厅

Abstract:

Early theories of the order of Runge-Kutta methods were based on a scalar differential equation $y'=f(x,y)$. However, the modern theory based on a high dimensional problem $y'=f(y)$, can give slightly more conditions. This means that it is possible to find a method with order 5 for a scalar problem and order only 4 for a general system of differential equations. This talk will also discuss the order that can be achieved with different numbers of stages and it will be shown that for order 5 it is necessary to have 6 stages. This difficulty can be overcome by generalizing the meaning of order to what is called "effective order". To explain this idea, it is necessary to look at compositions of Runge-Kutta methods using B-series.

欢迎大家参加!