

数学与系统科学研究院

计算数学所学术报告

报告人: **Prof. Arieh Iserles**

( *Department of Applied Mathematics and Theoretical Physics,  
University of Cambridge, UK* )

报告题目:

**Fast computation of the semiclassical  
Schrödinger equation**

邀请人: 唐贻发 研究员

报告时间: **2014年5月5日 (周一)**

**下午 15:00~16:00**

报告地点: **科技综合楼三层 311**

**计算数学所报告厅**

## **Abstract:**

The computation of the semiclassical Schrödinger equation is challenging because of the presence of high oscillation and the need to respect unitarity. Typical strategies involve a spectral method in space and Strang splitting in time, but are of low accuracy and sensitive to high oscillation. In this talk we sketch an alternative strategy, based on high-order symmetric Zassenhaus splittings, combined with spectral collocation, which preserve unitarity and whose accuracy is immune to high oscillation. These splittings can be implemented with large time steps and allow for an exceedingly affordable computation of underlying exponentials. The talk will be accompanied by copious numerical examples and we will spend some time discussing generalisations, in particular to the magnetic Schrödinger equation.

欢迎大家参加!