数学与系统科学研究院

计算数学所学术报告

报告人：Prof. Dr. Christian Lubich

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报告题目：

Numerical integrators for dynamical low-rank approximation

邀请人： 唐贻发 研究员

报告时间：2017 年 5 月 26 日（周五）

上午 10:00-11:00

报告地点： 数学院南楼七层

714 教室

Abstract：

This talk reviews differential equations on manifolds of matrices or tensors of low rank. They serve to approximate, in a low-rank format, large time-dependent matrices and tensors that are either given explicitly via their increments or are unknown solutions of high-dimensional differential equations, such as multi-particle time-dependent Schr\"odinger equations. Recently developed numerical time integrators are based on splitting the projector onto the tangent space of the low-rank manifold at the current approximation. In contrast to all standard integrators, these projector-splitting methods are robust with respect to the presence of small singular values in the low-rank approximation. This robustness relies on geometric properties of the low-rank manifolds.

The talk is based on work done intermittently over the last decade with Othmar Koch, Achim Nonnenmacher, Thorsten Rohwedder, Reinhold Schneider, Bart Vandereycken, Ivan Oseledets, Emil Kieri and Hanna Walach.

欢迎大家参加！