



Donnerstag, den 13. November 2025, um 14:30 Uhr, im Hörsaal 6

Prof. Dr. Markus Bachmayr*

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***Low-rank approximations
for time-dependent partial differential equations***

Zusammenfassung/Abstract:

Low-rank tensor approximations by now have a long history in the numerical approximation of high-dimensional partial differential equations. In the case of evolution problems, such as forward or backward Kolmogorov equations of parabolic type or many-particle time-dependent Schrödinger equations, a range of different techniques for computing low-rank approximations have been proposed in the literature, such as dynamical low-rank approximations based on the classical Dirac-Frenkel principle, step-truncation methods that combine standard time stepping with rank truncations, and space-time approximations. One issue that is crucial for achieving the desired accuracy is the choice of ranks, which are also a main determining factor in the computational costs of such methods. This talk gives an overview of the different methods and of some first results on computational schemes that are shown to ensure an appropriate balance between approximation quality and tensor ranks.

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