Karlsruher PDE-Seminar

Low rank approximation in recent tensor formats

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Novel hierarchical tensor formats offer stable approximation by a low order cost. We consider the solution of quadratic optimization problems constraint by the restriction to tensors of prescribed ranks r and extend this to dynamical low rank approximation. We analyse the open manifold of such tensors and its projection onto the tangent space. We further derive differential equations for the gradient flow and stationary equations based on Dirac-Frenkel variational principle. We discuss its application to the electronic Schrödinger equation. For sake of simplicity, we often confine ourselves to TT format and its matrix product representation. Nevertheless the material generalizes to hierarchical tensor formats resp. tree tensor networks. The talk contains material from collaborative research with the group at MPI Leipzig and C. Lubich.

Termin: Donnerstag, 31. Januar 2013, 17:30 Uhr
Ort: 1C-03, Allianz-Gebäude 05.20
Gastgeber: Die Dozenten des Schwerpunkts Partielle Differentialgleichungen