

Tensor spaces and numerical tensor calculus

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Abstrak

Special numerical techniques are already needed to deal with $n \times n$ matrices for large n . Tensor data are of size $n \times n \times \dots \times n = n^d$, where n^d exceeds the computer memory by far. They appear for problems of high spatial dimensions. Since standard methods fail, a particular tensor calculus is needed to treat such problems. The monograph describes the methods how tensors can be practically treated and how numerical operations can be performed. Applications are problems from quantum chemistry, approximation of multivariate functions, solution of pde, e.g., with stochastic coefficients, etc.