

The efficient treatment of high dimensional problems by use of elementary tensor sums

Mike Espig

Max-Planck-Institut für Mathematik, Leipzig, Germany

When an algorithm in dimension one is extended to dimension d , in almost every case its computational cost grows to the power of d . Tensor-sums are promising objects for multi-dimensional operators. Linear algebra operations can be performed in this representation using only d times one-dimensional operations. In iterative methods with tensor-sums it is important to approximate tensor-sums with low rank tensors.

We will introduce a numerical approaches that solves this kind of approximation problems and present numerical results in high dimensions.