Low-rank Matrices in the Approximation of Tensors

E. Tyrtyshnikov
Institute of Numerical Maths, Russian Academy of Sciences
Moscow, Russia

eugene.tyrtyshnikov@gmail.com

Most successful numerical algorithms for multi-dimensional problems usually involve multi-index arrays, also called tensors, and capitalize on those tensor decompositions that reduce, one way or another, to low-rank matrices associated with the given tensors. It can be argued that the most of recent progress is due to the TT and HT decompositions [1]. The differences between the two decompositions may look as rather subtle, because the both are based on the same dimensionality reduction tree and exploit seemingly the same idea. In this talk, we analyze the differences between the two decompositions and present them in a clear and simple way. Besides that, we demonstrate some new applications of tensor approximations in numerical analysis [2].

References
