Preconditioning By Tensor Multilevel Matrices

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In this talk we present a new method for approximation of matrices by multilevel tensor structured matrices. It is based on a special low-parametric and stable representation for tensors [1] and fast computation of matrix products [2]. The new method keeps the complexity linear in the number of levels [1,2].

References

[1] I.V.Oseledets and E.E.Tyrtyshnikov, Breaking the curse od dimensionality, or how to use SVD in many dimensions, Research Report 09-03, Kowloon Tong, Hong Kong: ICM HKBU, (www.math.hkbu.edu.hk/ICM/pdf/09-03.pdf).

[2] I.V.Oseledets, D.V.Savostyanov, and E.E.Tyrtyshnikov, Linear algebra for tensor problems, Research Report 08-02, Kowloon Tong, Hong Kong: ICM HKBU, 2008 (www.math.hkbu.edu.hk/ICM/pdf/08-02.pdf).