Multilevel low-rank approximation preconditioners

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Abstract

A new class of methods based on low-rank approximations which has some appealing features will be introduced. The methods handle indefiniteness quite well and are more amenable to SIMD compuations, which makes them attractive for GPUs. The method is easily defined for Symmetric Positive Definite model problems arising from Finite Difference discretizations of PDEs. We will show how to extend to general situations using domain decomposition concepts.