Revisiting rapid elliptic solvers with matrix functions

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Rapid elliptic solvers were some of the earliest examples of very useful structured linear algebra, both for direct use as well as for preconditioning. Moreover, they inspired effective schemes for parallel computation and ideas for balancing stability with parallelism. In this presentation we consider some old workhorses, including variants of cyclic reduction and FFT-based matrix decomposition ([1]) and revisit techniques from ([2, 3]) based on matrix functions in order to reveal interesting connections between parallel schemes.

References

