

Approximation of functions of structured matrices

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Rational approximation is a widespread approach to the computation of matrix functions. In this talk we discuss a family of rational approximations to the reciprocal of a ϕ -function that plays a role in the solution of linear differential problems. Such approximations, introduced in [1], are especially well-suited to the computation of functions of rank-structured matrices. They can also be used to formulate bounds describing the off-diagonal decay properties of these matrix functions. Computational tests include comparisons to polynomial and Padé approximations, both in the scalar and matrix case.

Keywords

Matrix functions, Rational approximation, structured matrices

References

[1] P. BOITO, Y. EIDELMAN, L. GEMIGNANI, Computing the reciprocal of a ϕ -function by rational approximation, arXiv:1801.04573 [math.NA] (2021).