

Eigenvalues and singular values of variable Toeplitz matrices and matrix-sequences, with application to variable two-step BDF approximations to parabolic equations

Monday, 20 January 2025 12:30 (20 minutes)

In the present talk we consider a general class of varying Toeplitz matrix sequences and we prove that they belong to the maximal $*$ -algebra of GLT matrix sequences. We then examine specific structures within the class stemming from variable two-step backward difference formulae (BDF) approximations of parabolic equations as treated in previous works for studying the stability.

For both the general and the specific case we provide the GLT symbol and based on this, a study on the singular values and the eigenvalues of the related matrix sequences. In addition we provide a decomposition in at most rank-2 nonnegative definite matrices for the symmetrized case.

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