

Toeplitz structured perturbations

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Abstract

We will investigate the condition number, eigenvalue perturbations and pseudospectrum of Toeplitz matrices under structured perturbations. Sometimes we will see few changes, sometimes, although provably rare, dramatic differences in the structured and unstructured view. Connections to minimization problems concerning polynomials are shown. One result is that the structured distance to the nearest singular matrix equals the reciprocal of the structured condition number, a nice generalization of the well known result by Eckart and Young.