

Generalized Eigenvalue Problems with Specified Eigenvalues

Talk

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(joint work with Emre Mengi, Daniel Kressner and Ninoslav Truhar)

We consider the distance from a pencil (square or rectangular) to the nearest pencil in 2-norm that has a subset of specified eigenvalues. A singular value optimization characterization is derived for this problem. This yields a singular value formula to determine the nearest pencil whose eigenvalues lie in a region in the complex plane, which for instance makes the numerical computation of the nearest stable descriptor system possible. The derived singular value optimization problems are solved by means of BFGS and Lipschitz-based global optimization algorithms.

MSC2010: 49R05, 47A75, 15A22, 15A42.

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