Structured pseudospectra in systems theory

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The so-called structured pseudospectrum of a matrix A determines and visualizes the set of all complex numbers to which at least one eigenvalue of the matrix can be shifted by structured perturbations of the form $A \rightsquigarrow A + D\Delta E$, where D and E are fixed matrices and Δ is an unknown disturbance matrix of bounded norm $\|\Delta\| < \varepsilon$. In this presentation, we look at structured pseudospectra as a tool for stability analysis of linear systems with uncertain parameters. We deal with the generalization of structured pseudospectra to infinite-dimensional systems and consider its connection to the stability of strongly continuous semigroups.