

Generic rank one perturbation of complex Hamiltonian matrices

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We study the perturbation theory of complex Hamiltonian matrices under generic rank one perturbations. If an unstructured perturbation is applied, then generically only (one of) the largest Jordan blocks for a given eigenvalue is destroyed, but all other Jordan block for that eigenvalue remain the same. The situation is different if one considers structured perturbations. There exist Hamiltonian matrices for which Hamiltonian rank one perturbations will generically increase the size of the largest Jordan block associated with the eigenvalue zero. In the talk, we explain the reasons for this surprising behaviour.

This talk is based on joint work with V. Mehrmann, A.C.M. Ran, and L. Rodman.