

Eigenvalue Condition Numbers: Structured versus Traditional

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Abstract. We discuss questions of eigenvalue conditioning. Relationships between the classical theory of conditioning and the theory of the structured conditioning are studied in some depth, and formulae for the mathematical objects involved are derived from the existing theory. Then an algorithm to compare the structured individual condition numbers of a set of simple eigenvalues with the traditional ones is presented. Numerical tests are reported to highlight how the algorithm can be used to get interesting information about eigenvalue sensitivity when the perturbations in the matrix have an arbitrarily assigned structure.