

# Sensitivity Problems for Fiedler Matrices

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Fiedler matrices are receiving at present considerable attention since it is expected that may play an important role in future methods for computing all the roots of a scalar polynomial and in the study of matrix polynomials. A matrix polynomial is a polynomial whose coefficients are matrices. If we denote  $\mathcal{C}^{m \times n}$  to the set of  $m \times n$  matrices with complex entries, we can define a matrix polynomial of degree  $k$  as  $P(\lambda) = \sum_{i=0}^k A_i \lambda^i$ . Matrix polynomials appears in many applications such as Mechanics, Control Theory, Computer Aided Graphic Design and Differential Algebraic Equations. We will present Fiedler matrices and talk about their importance both in theory and in applications and we will present what is known about their perturbative properties such traditional condition numbers, eigenvalue condition numbers, backward errors of approxiamate eigenvalues, pseudospectra...