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Spread of some classes of normal matrices

A spread of a matrix has extensive and practical applications in combinatorial optimization problems and cybernetics problems. The spread of a matrix is simply defined as the maximum absolute value of difference between any two eigenvalues of that matrix. There are many existing papers dealing with bounding the spread of a matrix in general. Of interest to us is the spread of n -by- n normal matrices with entries in closed set. In this paper, we are interested in the classes of real skew-symmetric matrices, complex Hermitian matrices and complex skew-Hermitian matrices, and we determine the structure of these matrices, in each class, when their spread attains the maximum value.