THE STRUCTURED DISTANCE TO NORMALITY OF AN IRREDUCIBLE REAL TRIDIAGONAL MATRIX[*]

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Dedicated to Gene Golub on the occasion of his 75th birthday

Abstract. The problem of computing the distance in the Frobenius norm of a given real irreducible tridiagonal matrix T to the algebraic variety of real normal irreducible tridiagonal matrices is solved. Simple formulas for computing the distance and a normal tridiagonal matrix at this distance are presented. The special case of tridiagonal Toeplitz matrices also is considered.

Key words. matrix nearness problem, distance to normality, real tridiagonal matrix, eigenvalue conditioning, Toeplitz matrix

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