

Inside the Eigenvalues of Certain Hermitian Toeplitz Band Matrices

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While extreme eigenvalues of large Hermitian Toeplitz matrices have been studied in detail for a long time, much less is known about individual inner eigenvalues. This paper explores the behavior of the j -th eigenvalue of an n -by- n banded Hermitian Toeplitz matrix as n goes to infinity and provides asymptotic formulas that are uniform in j . The real-valued generating function of the matrices is assumed to increase strictly from its minimum to its maximum and then to decrease strictly back from the maximum to the minimum, having nonzero second derivatives at the minimum and the maximum.