

# Asymptotics of Toeplitz matrices: recent results

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## **Abstract**

We discuss some recent results on asymptotics of Toeplitz matrices. We consider variations of the classical Szeg-Widom limit theorem for several classes of generating matrix functions. If the smoothness of a generating matrix function of a Toeplitz matrix is less than optimal, then new correcting terms in asymptotic formulas appear. On the other hand, if the smoothness of a generating matrix function is greater than optimal, then the speed of convergence in asymptotic formulas can be specified. For very smooth generating matrix functions remainders in asymptotic formulas go to zero very rapidly. Bounded Wiener-Hopf factorization in decomposing algebras of possibly discontinuous functions plays an essential role in our proofs.