

Extremal Eigenvalues of Large Non-Hermitian Random Matrices

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We will report recent progress on the extremal eigenvalues of a large random matrix with i.i.d. entries. Beyond the radius of the celebrated circular law, we will show that the properly normalized largest eigenvalue converges to a Gumbel distribution, irrespective of the distribution of the matrix entries. Moreover, we also prove that the argument of the largest eigenvalue is uniform on the unit circle and that the extremal eigenvalues form an inhomogeneous Poisson point process on the complex plane. Finally, we will present several deviation estimates on the extremal eigenvalues of non-Hermitian random matrices.