From Wigner-Dyson to Ginibre eigenvalue statistics : Gaussian case

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Abstract

By using the method of orthogonal polynomials we analyze the statistical properties of complex eigenvalues of Gaussian random matrices describing a crossover from Hermitian matrices characterized by the Wigner-Dyson statistics of real eigenvalues to strongly non-Hermitian ones whose complex eigenvalues were studied by Ginibre. Two-point statistical measures (as e.g. spectral form factor, number variance and small distance behavior of the nearest neighbor distance distribution $p(s)$) are studied in more detail.

References: Y.V. Fyodorov, B.Khoruzhenko and H.-J. Sommers Phys.Rev. Lett. v 79 (1997), 557 Ann. Inst. Henri Poincare (Phys. Theor.) v.66 (1998), 449