Universität Bielefeld Fakultät für Physik

Mathematical Physics Seminar

Jonas Jalowy

Bielefeld University

Rate of Convergence to the Circular Law

¿ It is well known that the (complex) empirical spectral distribution of a ¿ non-Hermitian random matrix with i.i.d. entries will converge to the ¿ uniform distribution on the complex disc as the size of the matrix tends ¿ to infinity. In this talk, we investigate the rate of convergence to the ¿ Circular Law in terms of a uniform, 2-dimensional Kolmogorov-like ¿ distance. The optimal rate of convergence is determined by the Ginibre ¿ ensemble and is given by $n^{-1/2}$. I will present a smoothing ¿ inequality for complex measures that quantitatively relates the ¿ Kolmogorov-like distance to the concentration of logarithmic potentials. ¿ Combining it with results from local circular laws, it is applied to ¿ prove nearly optimal rate of convergence to the circular law with ¿ overwhelming probability. Furthermore I will relate the result to other ¿ distances, present an analogue for the empirical root measure of Weyl ¿ random polynomials with independent coefficients and discuss a possible ¿ generalization for products of independent matrices. The talk is based ¿ on joint work with Friedrich Gtze.

Thursday, 17.01.2019, 17:15 Uhr
D5-153