מכון ויצמן למדע

THE WEIZMANN INSTITUTE OF SCIENCE

FACULTY OF MATHEMATICS AND COMPUTER SCIENCE

Geometric Functional Analysis and Probability Seminar

Room 290C ,Ziskind Building
on Thursday, Dec 29, 2016
at 11:00

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Gaussian complex zeros on the hole event: the emergence of a forbidden region

Abstract:

Consider the Gaussian Entire Function (GEF) whose Taylor coefficients are independent complex-valued Gaussian variables, and the variance of the k-th coefficient is 1/k!. This random Taylor series is distinguished by the invariance of its zero set with respect to the isometries of the complex plane.
I will show that the law of the zero set, conditioned on the GEF having no zeros in a disk of radius r, and properly normalized, converges to an explicit limiting Radon measure in the plane, as r goes to infinity. A remarkable feature of this limiting measure is the existence of a large 'forbidden region' between a singular part supported on the boundary of the (scaled) hole and the equilibrium measure far from the hole. This answers a question posed by Nazarov and Sodin, and is in stark contrast to the corresponding result known to hold in the random matrix setting, where such a gap does not appear.
The talk is based on a joint work with S. Ghosh.

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