Expected Number of Zeros of a Random Harmonic Polynomial

by

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Abstract

A harmonic polynomial is a complex-valued harmonic function in the complex plane of the form $h_{n,m}(z) := p_n(z) + q_m(\overline{z})$, where $p_n(z)$ and $q_m(z)$ are analytic polynomials of degree n and m, respectively, with $0 \le m \le n$. The total number of zeros in the complex plane is bounded between n and n^2 in the non-degenerate case. The expected numbers of zeros with Gaussian (real or complex) random coefficients are found explicitly in various setting.

This is a joint work with Ang Wei.