Oberseminar Mathematische Stochastik

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On critical points of random polynomials

Abstract:
We choose two deterministic sequences of complex numbers, whose empirical measures converge to the same probability measure in complex plane. We make a sequence of polynomials whose zeros are chosen from either of sequences at random. We show that the limiting empirical measure of zeros and critical points agree for these polynomials. As a consequence we show that when we randomly perturb the zeros of a deterministic sequence of polynomials, the limiting empirical measures of zeros and critical points agree. This result can be interpreted as an extension of earlier results where randomness is reduced. Pemantle and Rivin initiated the study of critical points of random polynomials. Kabluchko proved the result considering the zeros to be i.i.d. random variables.