

1127-60-36

Pavel Bleher, Yushi Homma and Roland Roeder* (rroeder@math.iupui.edu). *Two-Point Correlation Functions and Universality for the Zeros of Systems of $SO(n+1)$ -invariant Gaussian Random Polynomials.*

We study the two-point correlation functions for the zeroes of systems of $SO(n+1)$ -invariant Gaussian random polynomials on \mathbb{RP}^n and systems of $\text{isom}(\mathbb{R}^n)$ -invariant Gaussian analytic functions. Our result reflects the same “repelling,” “neutral,” and “attracting” short-distance asymptotic behavior, depending on the dimension, as was discovered in the complex case by Bleher, Shiffman, and Zelditch. For systems of the $\text{isom}(\mathbb{R}^n)$ -invariant Gaussian analytic functions we also obtain a fast decay of correlations at long distances.

We then prove that the correlation function for the $\text{isom}(\mathbb{R}^n)$ -invariant Gaussian analytic functions is “universal,” describing the scaling limit of the correlation function for the restriction of systems of the $SO(k+1)$ -invariant Gaussian random polynomials to any n -dimensional C^2 sub manifold $M \subset \mathbb{RP}^n$. This provides a real counterpart to the universality results that were proved in the complex case by Bleher, Shiffman, and Zelditch. (Our techniques also apply to the complex case, proving a special case of the universality results of Bleher, Shiffman, and Zelditch.) (Received January 06, 2017)