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Zeros of Random Power Series with Stationary Gaussian Coefficients

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The zeros of random power series with i.i.d. complex Gaussian coefficients form the determinantal point process associated with the Bergman kernel. As a natural generalization of this model, we are concerned with zeros of Gaussian power series with coefficients being stationary, centered, complex Gaussian process. The zeros of such analytic Gaussian process have special properties. Our main concern is the expected number of zeros in a disk and we compare it with the i.i.d. coefficients case. When the spectral density of the Gaussian process of coefficients is nice, we discuss the precise asymptotic of the expected number of zeros inside the disk of radius r centered at the origin as r tends to the radius of convergence. Also, we discuss the relationships between the intensity of zeros and spectral density.

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