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Título: Zeros Of Gaussian Analytic Functions And Determinantal Point Processes

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The book examines in some depth two important classes of point processes, determinantal processes and "Gaussian zeros", i.e., zeros of random analytic functions with Gaussian coefficients. These processes share a property of "point-repulsion", where distinct points are less likely to fall close to each other than in processes, such as the Poisson process, that arise from independent sampling. Nevertheless, the treatment in the book emphasizes the use of independence: for random power series, the independence of coefficients is key; for determinantal processes, the number of points in a domain is a sum of independent indicators, and this yields a satisfying explanation of the central limit theorem (CLT) for this point count. Another unifying theme of the book is invariance of considered point processes under natural transformation groups.

The book strives for balance between general theory and concrete examples. On the one hand, it presents a primer on modern techniques on the interface of probability and analysis. On the other hand, a wealth of determinantal processes of intrinsic interest are analyzed; these arise from random spanning trees and eigenvalues of random matrices, as well as from special power series with determinantal zeros.

The material in the book formed the basis of a graduate course given at the IAS-Park City Summer School in 2007; the only background knowledge assumed can be acquired in first-year graduate courses in analysis and probability.