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Random Nodal Portraits

Résumé/Abstract: We describe the progress and challenges of understanding the zero sets of smooth Gaussian random functions of several real variables. The primary examples are various ensembles of Gaussian real-valued polynomials (algebraic or trigonometric) of large degree, and smooth Gaussian functions on the Euclidean space with translation-invariant distribution. This might be thought as a statistical version of Hilbert's 16th problem. The lectures will be based on joint works with Fedor Nazarov.