Some Fractal Properties of Gaussian Random Fields

by

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Abstract

Gaussian random fields have been applied extensively for modeling phenomena in geostatistics, hydrology, image processing, cosmology and random media. Understanding the analytic, geometric and statistical properties of Gaussian fields is not only important in probability theory, but also for various applications.

In this talk we present some recent results on sample path smoothness and fractal-geometric properties of (anisotropic) Gaussian random fields. These results are applicable to various space-time stationary Gaussian fields constructed by Cressie and Huang (1999), Gneiting (2002) and Stein (2005).

Part of this talk is based on joint work with Yun Xue.