THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY

Department of Mathematics

SEMINAR ON PROBABILITY

Complexity of high dimensional Gaussian random fields with isotropic increments

By

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Abstract

Random fields with isotropic increments were introduced by Kolmogorov in the 1940s. Gaussian random fields on N-dimensional Euclidean spaces with isotropic increments were classified as isotropic case and non-isotropic case by Yaglom in the 1950s. Such models were used widely in statistical physics. In particular, they were introduced to model a single particle in a random potential by Engel, Mezard and Parisi in 1990s. A basic question is to count the number of critical points (or local minima, saddles, etc.) of the fields, which is commonly known as complexity. In 2004, Fyodorov computed the large N limit of expected number of critical points for isotropic Gaussian random fields. However, the non-isotropic case creates new difficulty. In this talk, I will present some results on the large N behavior of complexity for this case. Connection to random matrices and large deviations will be explained. This talk is based on joint work with Antonio Auffinger (Northwestern University).

Date：13 August 2021 (Friday)

Time：10:00am

Zoom Meeting： https://hkust.zoom.us/j/9185125686 **(Passcode: 732477)**

All are Welcome!