

Seminar: 04/24/2023

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Title: Extremes in random point configurations

Abstract: Some challenging problems of stochastic geometry belong to the extreme value theory. Two classical problems of this kind concern extremal behavior of vacancies (uncovered areas) in the Poisson random grain model (see Hall, 1985) and cell circumradius in the Poisson Voronoi tessellation (see Chenavier and Robert, 2018). We discuss how one can rephrase such problems using stationary configurations of points in a Euclidean space which are marked by real-valued random variables we call scores. Such scores are in general allowed to depend on the relative positions of other points and outside sources of randomness. It turns out that in a neighbourhood of a point with an extreme score one can often rescale positions and scores of nearby points to obtain a limiting point process we refer to as the tail configuration. Under some restrictions on dependence between scores, based on this local limit one can derive global asymptotics for extreme scores in increasing sections of the space.

The talk is based on the joint work with Ilya Molchanov and Hrvoje Planinić.