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Abstract

Matthias Schulte

Limit theorems for heavy-tailed Boolean models

The Boolean model Z is obtained as union of all grains of a stationary Poisson process of compact convex sets in $\mathbb{R}^d$. For a geometric functional ψ such as volume or surface area and a compact convex set W one is interested in the behaviour of $\psi(Z \cap W)$. For increasing inradius of the observation window W it is known that $\psi(Z \cap W)$ converges, after rescaling, in distribution to a standard Gaussian random variable if the second moments of the intrinsic volumes of the typical grain are finite. The focus of this talk is on a class of heavy-tailed Boolean models where the latter condition is violated. For this situation distributional limit theorems with alpha-stable limiting distributions are derived.