Poisson hulls and nonparametric boundary models

Günter Last

(Karlsruhe Institute of Technology)

Abstract

We consider a Poisson point process on a general state space. Using an axiomatic approach, we introduce a hull as a random subset of the state space determined by this process. A key example is the convex hull of a finite Poisson process in Euclidean space. In the first part of the talk we shall provide some first properties along with other examples. Forming conditional expectations, Poisson hulls can be used as natural estimators of linear functions of the underlying intensity measure. Using a spatial Markov property, we will derive some fundamental properties of these estimators. In particular we shall discuss moment formulas and the connection to the (anticipating) stochastic Kabanov–Skorohod integral. In the second part of the talk we shall discuss central limit theorems for growing intensities. Our method is based on the Stein-Malliavin approach and yields presumably optimal rates of convergence. Finally we present an application to nonparametric boundary models.

The talk is based on joint work with Ilya Molchanov (Bern).

TU Berlin
Institut für Mathematik
Straße des 17. Juni 136
10623 Berlin
MA 041