

Poisson hulls

Ilya Molchanov

(University of Bern)

We introduce a hull operator on Poisson point processes, the easiest example being the convex hull of the support. Assuming that the intensity measure of the process is known on the set generated by the hull operator, we discuss estimation of the expected symmetric statistics built on the Poisson process. The results are based on a spatial Markov property of the underlying Poisson process with respect to the hull. In special cases, our general scheme yields the estimator of the volume of the convex support or the estimator of an integral of a Hölder function. The setting is extended to higher order symmetric statistics, and it is shown that the estimation error is given by the Kabanov–Skorohod integral with respect to the underlying Poisson process. We derive the rate of normal convergence for the estimation error, and illustrate it on an application to estimators of integrals of a Hölder function.

Joint work with Günter Last (Karlsruhe Institute of Technology).