Normal approximation of stabilizing functionals in stochastic geometry

Matthias Schulte (University of Bern)

Time **Thursday, July 7, 2016 at 15:00**
Place **Campus Kirchberg, room B02**

In this talk functionals of Poisson or binomial point processes are considered which are sums of scores of the points of the underlying point process. Moreover, it is assumed that these scores stabilize in the sense that they are determined by the point itself and the points in a random neighbourhood given by a so-called radius of stabilization. If the radius of stabilization decays exponentially fast and some moment assumptions are satisfied, Berry-Esseen bounds for the normal approximation of stabilizing functionals can be shown. These new bounds lead to presumably optimal rates of convergence and improve the existing results for the normal approximation of stabilizing functionals. As applications quantitative central limit theorems for several problems from stochastic geometry such as the nearest neighbour graph and the Poisson-Voronoi approximation are derived. The general bounds are proven by using the Malliavin-Stein method.