D. Yogeshwaran

CLT for point processes with fast decay of correlations.

Joint with B. Blaszczyszyn, J. E. Yukich, S. Vadlamani and A. Tulasi Ram Reddy.

We shall try to understand some central limit theorems for quasi-local statistics of point processes with fast decay of correlations. In the talk, we shall consider the underlying space for the point process to be either Euclidean or Cayley graphs but shall try to hint at extensions to more general spaces. Fast decay of correlations is weaker than many mixing conditions for point processes and is satisfied by many interesting point processes. Quasi-locality will be quantified by what is known as a 'stabilizing radius'. We will see that under suitable tail assumptions on the 'stabilizing radius', fast decay of correlations of the point process, growth condition on balls in the underlying space and appropriate variance lower bounds, one can prove a CLT for quasi-local statistics of point processes. The proof technique via controlling mixed moments and thereby bounding the cumulants also allows for surface-order variance growth. Some point processes have surface-order variance growth and hence this flexibility with the variance growth is important. Some applications to statistics of spatial unimodular random graph models will be mentioned as well.