

# Maximum and minimum of local times for two-dimensional random walk

Yoshihiro Abe (Kyoto University)

In this talk, I will consider local times of the simple random walk on the two-dimensional torus at time proportional to the cover time. I will describe the leading orders of the maximum and the minimum of the local times. I will also exhibit the number of points with large (or small) values of the local times. These are closely related to estimates on the two-dimensional Gaussian free field (GFF) due to Bolthausen, Deuschel, and Giacomin (2001) and Daviaud (2006). In the proof, I apply an argument developed by Dembo, Peres, Rosen and Zeitouni and a coupling between the occupation time field and the GFF constructed by Zhai.