

## **The full extremal process of the discrete Gaussian free field in 2D.**

Oren Louidor, Technion-Israel Institute of Technology

We show the existence of the limit of the full extremal process of the discrete Gaussian free field in 2D with zero boundary conditions. The limit is a clustered Poisson point process with a random intensity measure, which is conjecturally related to the critical Liouville quantum gravity measure w.r.t. the continuous Gaussian free field. Several corollaries follow directly, e.g. a natural construction for the super-critical Gaussian multiplicative chaos and Poisson-Dirichlet statistics for the limiting Gibbs measure - both w.r.t. the CGFF. The proof is based on a novel concentric decomposition of the DGFF which effectively reduces the problem to that of finding asymptotics for the probability of a decorated non-homogenous random-walk required to stay positive. Entropic repulsion plays a key in the analysis. Joint work with M. Biskup (UCLA).