

Central Limit Theorem for discrete log-gases.

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A log-gas is an ensemble of N particles on the real line, for which the probability of a configuration is the power of the Vandermonde determinant times the product of a weight $w(x)$ over the positions of particles. Such ensembles are widespread in the random matrix theory, while their discrete counterparts appear in numerous statistical mechanics models such as random tilings and last passage percolation.

I will explain a new approach which gives Central Limit Theorems for global fluctuations of discrete log-gases for a wide class of the weights $w(x)$. The approach is based on novel discrete equations, which are analogues of the loop equations known in the continuous settings.