Mathematics and CS Seminar

Uniform Lipschitz functions on the triangular lattice have logarithmic variations

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Uniform integer-valued Lipschitz functions on a finite domain of the triangular lattice are shown to have variations of logarithmic order in the radius of the domain.The level lines of such functions form a loop O(2) model on the edges of the hexagonal lattice with edge-weight one. An infinite-volume Gibbs measure for the loop O(2) model is constructed as a thermodynamic limit and is shown to be unique. It contains only finite loops and has properties indicative of scale-invariance: macroscopic loops appearing at every scale. The existence of the infinite-volume measure carries over to height functions pinned at 0; the uniqueness of the Gibbs measure does not.The proof is based on a representation of the loop O(2) model via a pair of spin configurations that are shown to satisfy the FKG inequality. We prove RSW-type estimates for a certain connectivity notion in the aforementioned spin model.Based on joint work with Alexander Glazman.

Tuesday, March 12, 2019 04:30pm - 05:30pm
Uni Wien, HS 11, 2. OG, OMP 1

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