



## Mathematics and CS Seminar

# Uniform Lipschitz functions on the triangular lattice have logarithmic variations

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**Host: M. Beiglböck, N. Berestycki, L. Erdős, J. Maas**

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**

IST Austria Campus Uni Wien, HS 11, 2. OG, OMP 1



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