COMBINATORICS SEMINAR

THE EMERGENCE OF THE ELECTROSTATIC FIELD AS A FEYNMAN SUM IN RANDOM TILINGS WITH HOLES.

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ABSTRACT:

We consider random lozenge tilings on the triangular lattice with holes $Q_1, ..., Q_n$ in some fixed position. For each unit triangle not in a hole, consider the average orientation of the lozenge covering it. We show that the scaling limit of this discrete field is the electrostatic field obtained when regarding each hole Q_i as an electrical charge of magnitude equal to the difference between the number of unit triangles of the two different orientations inside Q_i. This is then restated in terms of random surfaces, yielding the result that the average over surfaces with prescribed heights at the union of the boundaries of the holes is, in the scaling limit, a sum of helicoids.

Wednesday, December 6, 2006
4:15 p.m.

M.I.T. Room 2-136

Refreshments will be served at 3:30 PM in Room 2-349.

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