Abstract Submitted
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Lattice dimers and the tilting transition[1] ERCAN KAMBER, JANÉ KONDEV, Martin A. Fisher School of Physics Brandeis University — We study the statistics of dimer coverings of the honeycomb lattice by Monte Carlo simulations. Dimer configurations are given by placing dimers on adjacent sites with the constraint that every site is covered by one and only one dimer. We implement the pocket algorithm [1], which is believed to be ergodic on the space of dimer coverings. The pocket algorithm enables global updates of dimer configurations without violating the packing constraint. Dimer configurations can be mapped to a height model [2], which associates a discrete interface with every dimer covering. If the dimers are aligned along one direction of the honeycomb lattice, the height interface will be tilted. We investigate the fluctuations of the associated height model, when the system undergoes a transition from an untilted rough interface to a tilted smooth interface. We impose a fixed tilt of the interface and measure fluctuations of the height. For a tilted surface the height fluctuations are anisotropic with a variance that increases logarithmically with system size. We compute the effective stiffness of the interface and find that it increases with increasing tilt. [1] W. Krauth , R. Moessner, Phys. Rev. B 67, 2003. [2] H.W.J. Blote , H.J. Hilhorst , J. Phys. A 15, 1982.

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