Dimers with layered disorder

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We study the dimer model on the square grid in a layered random environment: the edge weights are constant along each row but are i.i.d. sampled between rows. This disorder structure is inspired by the celebrated two-dimensional McCoyWu disordered Ising model. The disorder produces dramatic effects that I will discuss. First, we find an essential singularity of the free energy (which has no analogue for the pure dimer model), where dimer-dimer correlations decay as exp(-\sqrt{distance}). Besides, the critical exponent 3/2 (PokrovskyTalapov law) at the liquid-solid transition remains unchanged, while at the liquid-gaseous transition it now ranges continuously between 3/2 and infinity.This is based on a joint work with Fabio Toninelli (arXiv:2507.11964).

Monday, December 1, 2025 05:00pm - 06:00pm

Central Bldg / O1 / Mondi 2a (I01.O1.008)

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