

Groundstates of the Ising Model on antiferromagnetic triangulations

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Abstract: We discuss a dual version of a problem about perfect matchings in cubic graphs posed by Lovász and Plummer. The dual version is formulated as follows: *Every triangulation of an orientable surface has exponentially many groundstates*; we consider groundstates of the antiferromagnetic Ising Model.

According to physicists, the dual formulation holds. In this talk, I plan to show a counterexample to the dual formulation (*), a method to count groundstates which gives a better bound (for the original problem) on the class of Klee-graphs, the complexity of the related problems and if time allows, some open problems.

(*): After that physicists came up with an explanation to such an unexpected behaviour!! We are able to construct triangulations where their explanation fails again. I plan to show you this too.

(This is joint work with Marcos Kiwi and Martin Loeb)l)