Institute for Applied Mathematics, Bonn University

Oberseminar Stochastik

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Lipschitz-Saal (LWK 1.016)

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Universality of planar dimer model

In physical and mathematical literature it is widely believed that the macroscopic properties of the dimer model do not depend on the microscopic structure. The main problem here is to find a certain “nice” embedding of the dimer planar graph. Such an embedding should be strongly connected to the model and it should admit a nice discretization of the Cauchy–Riemann operator. We establish a correspondence between dimer models on a bipartite graph and circle patterns with the combinatorics of that graph. We describe how to construct a circle pattern embedding of a dimer planar graph using its Kasteleyn weights. This embedding is the generalization of the isoradial embedding and it is closely related to the T-graph embedding.