

At the crossroads of physics and mathematics : the joy of integrable combinatorics (Philippe60)



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## On the higher rank dimer and Ising models

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Given a planar bipartite graph with a  $GL(n, \mathbb{R})$  local system, we define an associated Kasteleyn operator and show that its determinant enumerates certain objects ("n-multiwebs") generalizing the dimer model. Likewise on a nonbipartite graph with an  $Sp(2n)$  local system we show that the Pfaffian of an associated Kasteleyn-type matrix enumerates certain multiwebs generalizing Ising model configurations. This is based on joint work with D. Douglas, N. Ovenhouse, H. Shi, and H. Wu.

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