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Talk: Geometrical web models

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We introduce a family of geometrical lattice models generalising the well-known loop model on the hexagonal lattice. These models have a $U_q(\mathfrak{sl}_n)$ quantum group symmetry, the loop model being the $n = 2$ case. The general models give rise to branching webs and describe, at a special point, the interfaces in Z_n symmetric spin models. We mainly discuss the $n = 3$ case of bipartite cubic webs, which is based on the Kuperberg A_2 spider. We exhibit a local vertex-model reformulation, analogous to the well-known correspondence between the loop model and the nineteen-vertex model. The local formulation allows us in particular to study the model by means of transfer matrices and conformal field theory. We find that it has a rich phase diagram, including a dense and a dilute phase that generalise those known for the loop model. We finally discuss the construction of integrable models related to the other rank-two cases, with B_2 and G_2 symmetries.

Based on joint work with Augustin Lafay and Azat Gainutdinov (arXiv:2101.00282, 2107.10106, and in preparation).

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