INTEGRABLE COMBINATORICS

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We present recent progress on applications of methods of integrable lattice models to various combinatorial problems, such as the enumeration of alternating sign matrices and plane partitions and the positivity conjecture of cluster algebras. (Based on refs. [1, 2].).

[1] R. Behrend, P. Di Francesco, and P. Zinn-Justin, *On the weighted enumeration of alternating sign matrices and descending plane partitions*, J. Combin. Theory Ser. A 119 (2012), no. 2, 331-363, arXiv:1103.1176.

[2] P. Di Francesco and R. Kedem, *Q-systems, heaps, paths and cluster positivity*, Comm. Math. Phys. **293** (2010) 727-802, and *Non-commutative integrability, paths and quasi-determinants*, Advances in Math. **228** No 1 (2011) 97-152.