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Random skew plane partitions with a piecewise periodic back wall

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Abstract

We study random skew plane partitions in the case when the boundary of the inner shape consists of a finite number of pieces, each of which is a step function with a given slope. We allow the number of steps in each segment to grow at the same rate, which produces a piecewise linear inner shape of various slopes. Much of the limiting behaviour is very similar to that observed by Okounkov and Reshetikhin in [OR1], with the main difference being that the frozen boundary only has one component. We also relate this system to the bead process introduced by Boutillier, and observe a new point process appearing near a certain “asymptotic turning point”.

Joint work with Cedric Boutillier, Nicolai Reshetikhin, and Peter Tingley.

[OR1] Okounkov, Andrei and Reshetikhin Nikolai. Correlation functions of Schur process with application to local geometry of a random 3-dimensional Young diagram. *J. Amer. Math. Soc.* 16 (2003), 581-603 (electronic)