

Random Tilings, Random Partitions and Stochastic Growth Processes
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Gibbs Ensembles of Nonintersecting Paths and Determinantal Processes

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Abstract

We consider a family of determinantal random point processes on the two-dimensional lattice. We will show that they can be interpreted as a kind of Gibbs ensembles of nonintersecting paths. Examples include probability measures on lozenge and domino tilings of the plane. Some of these measures are new non-translation-invariant examples.

The correlation kernels of our processes can be viewed as extensions of the discrete sine kernel, and we show that the Gibbs property is a consequence of simple linear relations satisfied by these kernels. Our processes depend on infinitely many parameters.

Based on a joint work with A. Borodin.