

Random Tilings, Random Partitions and Stochastic Growth Processes
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Anisotropic growth of random surfaces in $2 + 1$ dimensions

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Abstract

We consider a stochastic growth model in $2 + 1$ dimensions, which belongs to the anisotropic KPZ class. We show the following results:

1. The growing surface has a limit shape that consists of facets interpolated by a curved piece.
2. The one-point fluctuations of the height function in the curved part are asymptotically normal with variance of order $\ell n(t)$ for time $t \gg 1$.
3. There is a map of the $(2 + 1)$ -dimensional space-time to the upper half-plane H such that on space-like submanifolds the multi-point fluctuations of the height function are asymptotically equal to those of the pullback of the Gaussian free (massless) field on H .