

Random Tilings, Random Partitions and Stochastic Growth Processes
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Mixing times of Markov chains, the
multi-decomposition technique, and
flip dynamics in random tilings

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Abstract

We address the calculation of mixing times in Markov chains, with a particular stress on single flip dynamics in random rhombus tilings. The first part of the talk will present rhombus tilings, their coding by generalized partitions [1], in two and three dimensions, and their original single-flip dynamics [2]. Then the novel Multi-Decomposition Technique [2,3] will be introduced. It allows the calculation of upper bounds on mixing times in favorable cases, by reconnecting the dynamics on subsets of the configuration set. Two examples will be first discussed: mixing times of urn problems and of the Contingency Table Problem [3]. Then the last part of the presentation will discuss the application of this technique to single flip dynamics in random rhombus tilings, in two [2] and three [4,5] dimensions.

References:

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