

Stochastic Sandpiles with Uniform Topplings on the Line

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We discuss the stochastic sandpile model with uniform topplings on the line: vertices are declared unstable if 2 or more particles are placed on them, and unstable vertices are allowed to legally topple. During a toppling, with probability $1/3$ a particle is sent to right, with probability $1/3$ a particle is sent to the left and with probability $1/3$ two particles are sent out, one to the left and one to the right. Using these dynamics, we can define the stochastic sandpile Markov chain on finite line segments, where in each time step we add a particle at a vertex chosen uniformly at random, and then we stabilize the configuration by performing all possible legal topplings. Particles sent outside the finite line segment are lost. During my talk, I will discuss results on the stationary distribution of this Markov chain, including an exact expression of the stationary distribution and its infinite volume limit.