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(sevak.mkrtchyan@rochester.edu). *The limit shape of the Leaky Abelian Sandpile Model.*

The leaky abelian sandpile model (Leaky-ASM) is a growth model in which n grains of sand start at the origin in \mathbb{Z}^2 and diffuse along the vertices according to a toppling rule. A site can topple if its amount of sand is above a threshold. In each topple a site sends some sand to each neighbor and leaks a portion $1 - 1/d$ of its sand.

We compute the limit shape as a function of d in the symmetric case where each topple sends an equal amount of sand to each neighbor. The limit shape converges to a circle as $d \rightarrow 1$ and a diamond as $d \rightarrow \infty$. We compute the limit shape by comparing the odometer function at a site to the probability that a killed random walk dies at that site.

When $d \rightarrow 1$ the Leaky-ASM converges to the abelian sandpile model (ASM) with a modified initial configuration. We also prove the limit shape is a circle when simultaneously with $n \rightarrow \infty$ we have that $d = d_n$ converges to 1 slower than any power of n . To gain information about the ASM faster convergence is necessary. (Received January 05, 2021)