

SCALING LIMITS OF THE ABELIAN SANDPILE

CHARLES SMART, MIT

The Abelian sandpile is a simple deterministic diffusion process for configurations of chips on lattices that generates striking fractal configurations. This model has a continuum scaling limit that is captured by a nonlinear elliptic partial differential equation. When the underlying lattice is sufficiently regular, the partial differential equation has an unexpected algebraic structure. This algebraic structure can be used to explain the appearance of the fractal configurations. This is joint work with Lionel Levine and Wesley Pegden.