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*Toppling critical exponents in the Abelian Sandpile on  $Z^d$ .*

The Abelian sandpile is a so-called "self-organized critical" model on graphs. Grains of sand are randomly added at sites, which topple when they have sufficiently many grains; these topplings cause large avalanches on scales up to the system size and induce long-range correlations in the sand heights.

Letting  $N(x, y)$  denote the number of topplings occurring at site  $y$  after adding to site  $x$ , it is known that  $E[N(0, x)] \sim \|x\|^{2-d}$  on  $Z^d$ ; many other such power laws are conjectured. We show new bounds for several exponents characterizing the size of the avalanche, including the exponent  $\eta$  defined by  $P(N(0, x) > 0) \sim \|x\|^{2-d-\eta}$ . Joint work with S. Bhupatiraju and A. Jarai. (Received January 20, 2015)