

1116-00-2116 **Yuval Peres***, University of California, Berkeley, Berkeley, CA. *Laplacian growth, sandpiles and scaling limits.*

How can repeating simple local operations lead to an intricate large scale structure? This phenomenon arises in several growth models originating in Physics: Internal diffusion limited aggregation (IDLA) and the Abelian sandpile. The first of these is closely related to free boundary problems for the Laplacian and an algebraic operation introduced by Diaconis and Fulton known as smash sum. These connections allow a precise description of large scale geometry. The abelian sandpile, discovered independently by Statistical Physicists and Combinatorialists is harder to analyze yet has recently yielded many of its secrets. In classical DLA, particles arriving from the outside attach to an existing shape; Characterizing the limit in this case remains open. (Received September 21, 2015)