Game Theory and PDEs

Yuval Peres is currently the manager of the Theory Group at Microsoft Research. He is known for his research in probability theory, ergodic theory, mathematical analysis, theoretical computer science, and in particular for topics such as fractals and Hausdorff measure, random walks, Brownian motion, percolation and Markov chain mixing times. Professor Peres was awarded the Rollo Davidson Prize in 1995 and the Loeve Prize in 2001. In 2011, he was a co-recipient of the David P. Robbins Prize. He was also an invited speaker for the International Congress of Mathematicians in 2002. He is known as a prolific coauthor of research books and papers, and he advised more than 15 Ph.D students.

Monday,
January 14, 2013
3:00 P.M
Ballroom A,
University Club
at the University of Pittsburgh

Free and Open to the Public

UNIVERSITY OF PITTSBURGH
The DIETRICH School of
Arts & Sciences

Department of Mathematics

Presents

Professor Yuval Peres

Microsoft

Laplacian Growth and the Mystery of the Abelian Sandpile: A Visual Tour

Abstract: We compare several growth models on the two dimensional lattice. In some models, like internal DLA and rotor-router aggregation, the scaling limits are universal; in particular, starting from a point source yields a disk. In the abelian sandpile, particles are added at the origin and whenever a site has four particles or more, the top four particles topple, with one going to each neighbor. Despite similarities to other models, for the sandpile, the intriguing pattern that arises is not circular and depends on the particular lattice. Recently, Pegden and Smart have proved the existence of a scaling limit exists for the sandpile. This research has been greatly influenced by pictures of the relevant sets, which I will show in the talk. They suggest a connection to conformal mapping which has not been established yet. -- Talk based on joint works with Lionel Levine.

Reception Immediately Following the Lecture

For further information, email: **math@pitt.edu**
Phone: **412-624-8375**
or visit
www.mathematics.pitt.edu

This lecture is part of the 2013 Theme Semester on Game Theory and PDEs. For further information on the semester, please refer to the program webpage, available from: **www.mathematics.pitt.edu**