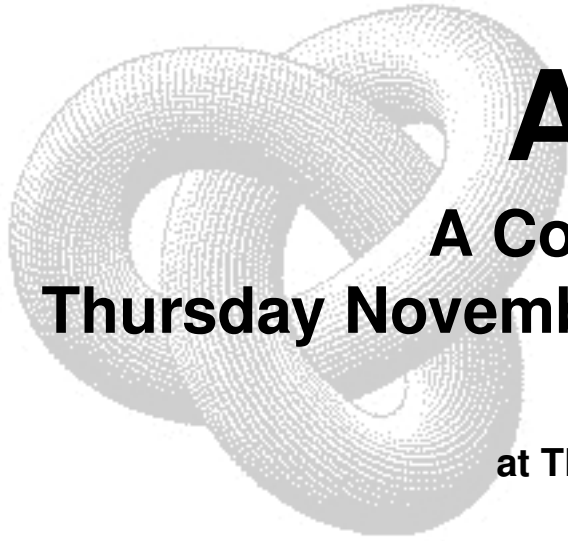


Lectures on Pure and Applied Math



Announcing

A Colloquium Presentation

Thursday November 16, 2006 at 2:30 pm

Southern Hall 303

at The University of Southern Mississippi

Speaker: Roger Bidaux

Groupe Theorie, SPEC, CEN Saclay, France

Title: Random walks on discrete lattices

Abstract:

Lattice based random walks present an extensive range of mathematical problems involving probability and stochastic analysis with direct applications to mathematical modeling in physics and engineering. We introduce fundamental concepts, and illustrate the linkage between mathematics, modeling and physics.

In the first of these modeling problems, the exact number of common vertices and common bonds in the intersection of two arbitrary 2-dimensional directed random walks is obtained by direct counting (in the cases of small lengths of the walks). Then using induction the exact general form is obtained, making it possible to deduce the main characteristics of common bonds and common sites as a function of the length of the walks. In the second problem, as a consequence of binary mineral selection due to blast induced granular collapse, an analysis of the amount of valuable material per blast vs the blast index exhibits a beautiful power law behavior. This, after some theoretical analysis, is shown not to be true, i.e. the “exponent” of the “power law” is not really constant and depends on the region selected for the log/log linear fit.

Further Information

Refreshments are served from 2:20 pm until 2:30 pm in Southern Hall 303. Further details and information about this and other departmental activities is available online at http://www.math.usm.edu/bulletin_board/.