

Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Doing the Impossible: Very Rare Events in the Harmonic Measure DAVID ADAMS, LEONARD SANDER, ROBERT ZIFF, University of Michigan — We have developed a method of obtaining accurate data of rare events using biased sampling of random walkers. We have obtained the harmonic measure, analogous to the perpendicular electric field on a charged conductor, for percolation, Ising model, and Diffusion Limited Aggregation (DLA) clusters. We measured probabilities down to 10^{-300} for percolation and Ising model clusters. These small probabilities allowed us to verify the theoretical predictions for the harmonic measure made by Duplantier. For DLA, which has no theory, we obtained probabilities down to 10^{-100} . The previous lowest probability was obtained using iterative conformal maps and was limited to small clusters and comparatively high probabilities. For all systems we have obtained the generalized dimension D_q , the singularity spectrum $f(\alpha)$, and the distribution of probabilities.

David Adams
University of Michigan

Date submitted: 20 Nov 2008

Electronic form version 1.4