The University of Chicago
Department of Statistics

Seminar Series

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Conformal Invariance and Two-Dimensional Statistical Physics

MONDAY, February 26, 2007 at 4:00 PM
133 Eckhart Hall, 5734 S. University Avenue
Refreshments following the seminar in Eckhart 110.

ABSTRACT

A number of lattice models in two-dimensional statistical physics are conjectured to exhibit conformal invariance in the scaling limit at criticality. In this talk, I will try to explain what the previous sentence means, discussing the following examples: simple random walk, self-avoiding walk, loop-erased random walk, percolation, Ising model. I will describe the limit objects, Schramm-Loewner Evolution (SLE), the Brownian loop soup, and the normalized partition functions, and describe how conformal invariance can be used to calculate quantities ("critical exponents") for the model. I will also describe why (in some sense) there is only a one-parameter family of conformally invariant limits.

I will assume no previous knowledge of models from statistical mechanics.