

UNIVERSITY OF REGINA
Department of Mathematics and Statistics
Graduate Student Seminar

SPEAKER: Luis Diego Leon Chi

DATE: 05 December 2006

TIME: 2.30 o'clock

LOCATION: College West 307.20 (Math & Stats Lounge)

TITLE: *The scaling limit of loop-erased random walk in five dimensions and above*

ABSTRACT: The understanding of the connections between grid-based models and continuous processes is a project of fundamental importance in modern probability research. One way to define a continuous process is by taking a scaling limit of a discrete process. Brownian motion and loop-erased random walk are two processes closely related. Brownian motion is among the simplest continuous time stochastic processes, and as a continuous process, it can be defined by taking the scaling limit of a loop-erased random walk. A loop-erased random walk is defined as a process obtained by taking a simple random walk and, whenever the random walk hits its path, removing the resulting loop and continuing. The scaling limit of loop-erased random walk in five dimensions and above is the easiest case to analyze. In this case it turns out that there the intersections are only local. A calculation shows that if one takes a random walk of length n , its loop-eraser has length of the same order of magnitude *i.e.*, n . Scaling accordingly it turns out that as n goes to infinity, the loop-erased random walk converges (in an appropriate sense) to Brownian motion.

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