

Giulio Tiozzo

University of Toronto

Harmonic measures for random walks on groups

The distribution of sums of real-valued random variables is determined by the classical theorems of probability (law of large numbers, central limit theorem). Since the 1960's Furstenberg, Oseledets and others have generalized such results for noncommutative groups, e.g. groups of matrices.

In this course, I will consider random walks on groups of isometries of hyperbolic spaces, and establish their asymptotic properties: for instance, sample paths almost surely converge to the boundary and have positive drift.

Thus, one can define a harmonic measure as the hitting measure of the random walk on the boundary. A recurring question is: can this measure be absolutely continuous with respect to Lebesgue? What is its dimension?

I will discuss recent progress on this problem, and its relation to other dynamical quantities such as the entropy and drift for the random walk.