THE UNIVERSITY OF CHICAGO

Computational and Applied Mathematics
Student Seminar

MARK OLSON

COMMITTEE ON COMPUTATIONAL AND APPLIED MATHEMATICS
University of Chicago

The Gaussian Free Field: Properties and Applications

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Jones Laboratory, Room 303

ABSTRACT

A Brownian motion can be thought of as a Gaussian random function of one variable, time. The Gaussian free field (GFF) generalizes the notion of a Gaussian random (generalized) function on domains $D \subset R^d$ for $d \geq 2$ with a covariance structure given by the Green's function of the Laplacian. In this seminar, I will show the construction of the GFF, give some of its properties, describe how it can be used to construct Liouville quantum gravity (LQG), and share some of the ways that these two objects are foundational to my research.