

## ***GEOMETRIC ANALYSIS SEMINAR***

**Speaker: Max Engelstein**  
**University of Minnesota**

**Date:** Thursday, November 16, 2023

**Time:** 11:00 AM

**Location:** 258 Hurley Bldg

**Zoom URL:** NA



***Lecture Title:***  
**The Robin problem on rough domains**

***Abstract***

Robin boundary conditions for elliptic operators model a diffusion contained by a semipermeable membrane (think oxygen being absorbed into the lung). Despite huge advances in understanding both the Neumann and Dirichlet problems in rough domains, the Robin problem is still mostly not understood. We construct a "Robin harmonic measure" for any elliptic operator in a broad class of domains and prove the surprising fact that this measure is mutually absolutely continuous with respect to surface measure, even when the boundary of the domain is fractal. Along the way we will also address some older conjectures about partially reflecting Brownian motion. This is joint work with Guy David (Paris Saclay), Stefano Decio (IAS), Svitlana Mayboroda (ETH/UMN) and Marco Michetti (Paris Saclay).