

## Department Colloquium

Speaker: Adrian Nachman, Department of Mathematics, University of Toronto

Date: Friday, March 4

Time: 2:30 p.m.

Place: Jeffery 234

Title: Imaging Conductivity from one Internal Current Measurement and Minimal Surfaces

**Abstract:** We will give an overview of electric conductivity imaging from interior data obtainable using Magnetic Resonance Imagers, and of the beautiful underlying Riemannian structure. We show that an anisotropic conductivity in a known conformal class can be determined from measurement of one current by solving a weighted least gradient problem using geometric measure theory methods. Further, we show that the associated equipotential surfaces are area minimizing with respect to a Riemannian metric obtained entirely from the physical data. This is joint work with Nicholas Hoell, Robert Jerrard and Amir Moradifam, building on earlier joint work with Alex Tamasan and Alex Timonov. The experimental results are joint work with Weijing Ma, Nahla Elsaid, Michael Joy and Tim DeMonte.