Matthew Badger (University of Connecticut)

Structure theorems for Radon measures

Abstract: One goal of geometric measure theory is to understand a measure on a space through its interaction with canonical subsets in the space. A basic illustration of this is the dichotomy between atomic measures and atomless measures: the former “live on” countably many points, while the later give measure zero to any singleton. In joint work with Raanan Schul, we have solved an analogous problem of identifying the 1-rectifiable part of a Radon measure in Euclidean space, which “lives on” countably many rectifiable curves, and the purely 1-unrectifiable part of the measure, which gives measure zero to any rectifiable curve. A new tool that we introduce is an “anisotropic” square function, which allows us to analyze non-doubling Radon measures. I will also talk about forthcoming joint work with Vyron Vellis, in which we examine the structure of Radon measures with respect to Hölder continuous curves.