Title: The geometry of spaces with L^∞ Riemannian metrics.

Speaker: Ralph Howard

Abstract: A ***Riemannian metric*** on $\mathbf{R}^n$ is a sum $g = \sum_{i,j} g_{ij}\, dx^i\, dx^j$ where each g_{ij} is a real valued function on $\mathbf{R}^n$ and for each $x \in \mathbf{R}^n$ the matrix $[g_{ij}(x)]$ is positive definite. When the functions g_{ij} are continuous, then for any C^1 curve $c(t) = (x^1(t), x^2(t), \ldots, x^n(t))$ with $a \le t \le b$ we define the length of c with respect to this metric by

$$L(c) = \int_a^b \sqrt{\sum_{i,j} g_{ij}(c(t))\dot{x}_i(t)\, \dot{x}_j(t)}\; dt.$$

We will investigate the geometry of this metric in the case where the functions $g_{i,j}$ are only L^∞. This involves modifying the definition of length given, as the functions g_{ij} may not be defined along the curve c. We are particularly interested in getting an explicit formula for the Hausdorff measures defined by the metric. This is joint work with Reid Harris.