1118-28-101 **A. Dali Nimer*** (nimer@uw.edu), Department of Mathematics, University of Washington, Box 354350, Seattle, WA 98195-435. *A sharp bound on the Hausdorff dimension of the singular set of an n-uniform measure.*

An n-uniform measure in $\mathbb{R}^d$ is a measure satisfying the following property. There exists a constant $c > 0$ such that for every point x in the support of μ and every $r > 0$,

$$\mu(B(x,r)) = cr^n.$$

These measures play a crucial role in geometric measure theory. They were introduced by Preiss and played an essential role in his proof of the characterization of rectifiable Radon measures by their density. However, the geometry of their support remains largely misunderstood. Indeed, the only known non-flat n-uniform measure is (up to multiplication by a positive constant) the "surface measure" of $\mathcal{C} \times \mathbb{R}^{n-3}$ where $\mathcal{C}$ is the Kowalski-Preiss cone described by

$$\mathcal{C} = \left\{(x_1, x_2, x_3, x_4); {x_4}^2 = {x_1}^2 + {x_2}^2 + {x_3}^2\right\}.$$

In this talk, we will focus on the singular set of n-uniform measures. In particular we will discuss the following result: if μ is an n-uniform measure in $\mathbb{R}^d$, and $\mathcal{S}_\mu$ is its singular set then

$$dim_H(\mathcal{S}_\mu) \leq n - 3.$$

This essentially says that the Kowalski-Preiss cone is the worst example in terms of the Hausdorff dimension of its singular set. (Received January 26, 2016)