1086-28-930 **Jonas Azzam*** (`jazzam@math.washington.edu`), University of Washington, Department of Mathematics, C-138 Padelford, Seattle, WA 98195-4350. *Wasserstein Distance and Rectifiability of Doubling Measures.*

In a recent paper, Tolsa has characterized d-regular uniformly rectifiable measures in Euclidean space using Wasserstein distances. For a d-regular measure μ, he defines a quantity $\alpha(x,r)$ which, roughly speaking, measures the Wasserstein distance between μ inside the ball $B(x,r)$ and planar d-dimensional measure and proves that uniform rectifiability of μ is equivalent to $\alpha(x,r)^2 \frac{d\mu(x)dr}{r}$ being a Carleson measure. In this talk, we explore what conditions on $\alpha(x,r)$ are necessary to guarantee different grades of rectifiability for μ if we only assume μ is a doubling measure. We also establish rectifiability using more intrinsic quantities similar to $\alpha(x,r)$ involving the Wasserstein distance which estimate the doubling behavior of μ. (Received September 16, 2012)