

I will present the following result, which is a joint work with Xavier Tolsa: "Let M be an n -dimensional AD regular measure. Then, M is uniformly n -rectifiable if and only if the variation for the Riesz transform is a bounded operator in $L^2(M)$ ". This result is related to an important open problem, posed by David and Semmes, about the equivalence between uniform rectifiability and L^2 boundedness of the Riesz transform. I will give the basic definitions, the motivation, and some ideas of the proof.