

Big Piece approximations of Uniformly rectifiable sets

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Abstract

This talk will give a short introduction of how one may put a “dyadic cube” structure on spaces of homogeneous type (see Coifman-Weiss '77) and how when this dyadic cube structure is coupled with the Whitney decomposition it allows one to construct approximating NTA domains for uniformly rectifiable (UR) sets. (The term uniformly rectifiable is quantitative, scale invariant version of rectifiability, one that is appropriate for studying a broad class of singular integrals.) We will then see how using an inductive scheme (known by some as “extrapolation of Carleson measures”) we may obtain certain big piece approximations of uniformly rectifiable sets, in particular we obtain that UR sets of co-dimension 1 have big pieces of 2-sided corkscrew points which implies the known result of Azzam-Schul that UR sets of co-dimension 1 are big pieces of big pieces of Lipschitz graphs. Through the same construction we also obtain that a UR set of co-dimension 1 has big pieces of boundaries of open sets whose harmonic measures are weak A_∞ with uniform control on the various constants.