Enrico Le Donne (University of Fribourg, Switzerland)

Nilpotent groups, embeddings into L^1 , and sets of finite perimeter in Carnot groups

Abstract: We shall present which are the nilpotent groups that admit a quasiisometric embedding in the Banach space L^1 of integrable functions. We may consider finitely generated nilpotent groups equipped with word distances or nilpotent Lie groups equipped with left-invariant Riemannian metrics. From an asymptoticcone argument we shall reduce to the case of bi-Lipschitz embeddings of Carnot groups. We shall prove that the only Carnot groups that embed are the abelian ones. From the work of Cheeger and Kleiner we shall see that for every Lipschitz map into L^1 one has a pullback distance obtained as a superposition of elementary distances with respect to cuts. Moreover, one only needs to consider cuts that have finite sub-Riemannian perimeter. The final goal is reached via a study of finiteperimeter sets and their blowups. From a collaboration with S. Eriksson-Bique, C. Gartland, L. Naples, and S. Nicolussi-Golo.