SEMINARI D'ANÀLISI UAB-UB **Curs 2013–2014**

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Aula T2 (UB).

Removability on Carnot groups

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ABSTRACT:

Let $\mathcal{L}$ be a homogeneous left invariant differential operator on a Carnot group. Assume that both $\mathcal{L}$ and its transpose are hypoelliptic. We study the removable sets for $\mathcal{L}$-solutions. We give precise conditions in terms of the Carnot–Carathéodory Hausdorff dimension for the removability for $\mathcal{L}$-solutions under several auxiliary integrability or regularity hypotheses. In some cases, our criteria are sharp on the level of the relevant Hausdorff measure. One of the main ingredients in our proof is the use of novel local self similar tilings in Carnot groups. Furthermore in the case when $\mathcal{L}$ is the sub-Laplacian we derive the critical dimension for removable sets for Lipschitz $\mathcal{L}$-harmonic functions. Finally we will discuss how the study of homogeneous singular integrals on lower dimensional subsets of a Carnot group is related to removable sets with critical dimension.