

1096-35-541

**Vasilis Chousionis, Valentino Magnani and Jeremy T Tyson\*** (tyson@math.uiuc.edu).

*Removable sets for homogeneous linear PDE in Carnot groups.*

We will discuss the problem of removable sets for solutions of homogeneous linear PDE in nilpotent stratified Lie groups (also known as Carnot groups). We quantify the role of the regularity of solutions and the degree of the equation in connection with the size (measured in terms of Hausdorff dimension) of allowed removable sets. In the Euclidean case such results are classical, considered by various authors including Carleson, David, Mattila, Harvey and Polking.

The connection between this topic and fractal geometry is three-fold. First, the internal metric geometry of each non-abelian Carnot group is partially fractal (in the “inaccessible” or non-horizontal directions). Second, the proofs of several of the removability results use dyadic-type tilings of such spaces; in non-abelian Carnot groups such tilings always have a fractal structure. The first construction of fractal tilings of nilpotent stratified Lie groups is due to Strichartz. Finally, we will present examples demonstrating the sharpness of such removability theorems; these examples consist of various self-similar Cantor-type constructions. (Received September 05, 2013)