Meeting: 1002, Pittsburgh, Pennsylvania, SS 12A, Special Session on Geometric Analysis and Partial Differential Equations in Subelliptic Structures

1002-35-87 **Petri Juutinen**, **Guozhen Lu**, **Juan Manfredi** and **Bianca Stroffolini*** (bstroffo@unina.it), Dipartimento di Matematica e Applicazioni, Università di Napoli Federico II, Via Cintia, 80126 Napoli, Italy. *Convex functions on Carnot groups.* Preliminary report.

We consider the definition and regularity properties of convex functions in Carnot groups. We show that various notions of convexity in the subelliptic setting that have appeared in the literature are equivalent.

This article is a natural continuation of a paper by Lu, Manfredi and Stroffolini where the Heisenberg group case was treated.

A key observation is the realization that convexity depends only on the horizontal distribution and not on the particular base chosen to represent it . This allows us to use potential theoretic representation formulas developed by Bonfiglioli and Lanconelli to approximate convex functions by smooth convex functions. Another new ingredient is Wang's extension to Carnot groups of Bieske's uniqueness result for ∞-harmonic functions in the Heisenberg group. (Received September 07, 2004)