

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

1002-35-93 **Fausto Ferrari*** (ferrari@dm.unibo.it), Dipartimento di Matematica dell'Universit, Piazza di Porta S. Donato, 5, 40126 Bologna, Italy. *The horizontal Hessian matrix of the distance function in the Heisenberg group.*

In a joint work with Nicola Arcozzi of the University of Bologna, we studied, in the Heisenberg group, a notion of *metric normal*, that is the geodesic γ leaving a non characteristic point P on a smooth surface S such that locally every point $Q \in \gamma$ satisfies $d(Q, P) = d(Q, S)$.

In particular we gave sufficient conditions about the existence of such metric normal for smooth surfaces far from characteristic points. We proved that there exist smooth surfaces S such that the horizontal Hessian matrix of the distance function from S are not bounded. Moreover starting from the horizontal Hessian matrix of the distance function from S , evaluated in the non characteristic points of the surface, we prove that the trace of such matrix coincide with the natural notion of curvare of the surface S given in the Heisenberg group. (Received September 07, 2004)