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Luca Capogna* (lcapogna@wpi.edu), Department of Mathematical Sciences, Stratton Hall, Worcester Polytechnic Institute, 100 Institute Road, Worcester, MA 01609. *Regularity and structure of sub-Riemannian isometries.*

In a recent joint paper with Enrico LeDonne (University of Jyvaskyla, Finland) we study the regularity and the structure of the group of isometries (i.e. distance preserving homeomorphisms) between two sub-Riemannian manifolds.

Our main results are the following: (1) Every isometry is smooth in the region where the sub-Riemannian structure is equiregular; (2) The group of isometries of a equiregular sub-Riemannian manifold is a finite dimensional Lie group. We also give sufficient conditions for sub-Riemannian isometries to be Riemannian isometries for some Riemannian extension of the sub-Riemannian metric.

Our work extends to the sub-Riemannian context a famous theorem of Myers-Steenrod (1939). Our proof is based on an argument inspired to the harmonic coordinates approach to the Riemannian problem due to M. Taylor (2006) and is reminiscent of the morphism property for quasiconformal mappings. The proof uses ideas and techniques from analysis in metric spaces, geometric function theory, differential geometry and PDE. (Received August 04, 2013)