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Steven Patrick Flynn*, spflynn@ucsc.edu. *Integral Geometry on Contact Manifolds.*

The classical X Ray Transform (the Radon Transform in two dimensions), maps a function on Euclidean space to a function on the space of lines on this Euclidean space by integrating the function over the given line. Inverting the X ray transform has wide-ranging applications, including to medical imaging and seismology. Much work has been done to understand the problem of inverting the X-ray transform for Euclidean space, Euclidean domains, and more generally for compact Riemannian manifolds with boundary where the lines become geodesics. I formulate a subRiemannian version of the X-ray transform, on the simplest subRiemannian manifold, the Heisenberg group. I report initial progress in showing that this subRiemannian X-ray transform is injective, and so potentially invertible, and discuss progress towards its generalization to 2 step Nilpotent groups and general contact manifolds. (Received September 16, 2019)