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Quantitative rectifiability and intrinsic Lipschitz graphs in the Heisenberg group

Abstract: Rectifiable sets extend the class of surfaces considered in classical differential geometry; while admitting a few edges and sharp corners, they are still smooth enough to support a rich theory of local analysis. However for certain questions of more global nature the notion of rectifiability is too qualitative. In a series of influential papers around the year 1990, G. David and S. Semmes developed an extensive theory of quantitative rectifiability in Euclidean spaces. A motivation for their efforts was the significance of a geometric framework for the study of certain singular integrals and their connections to removability. We will discuss recent efforts towards a theory of quantitative rectifiability in the Heisenberg group. As in the Euclidean case motivation stems from questions involving singular integrals and removability. However new phenomena arise, which do not exist in the Euclidean setting. Based on joint work with K. Fassler and T. Orponen.