

1165-51-103

Assaf Naor and **Robert Young*** (ryoung@cims.nyu.edu). *Metric differentiation and embeddings of the Heisenberg group.*

Pansu and Semmes used a version of Rademacher’s differentiation theorem to show that there is no bilipschitz embedding from the Heisenberg group into Euclidean space. More generally, the non-commutativity of the Heisenberg group makes it impossible to embed into any L_p space for $p \in (1, \infty)$. Recently, with Assaf Naor, we proved sharp quantitative bounds on embeddings of the Heisenberg groups into L_1 and constructed a metric space based on the Heisenberg group which embeds into L_1 and L_4 but not in L_2 ; our construction is based on constructing a surface in \mathbb{H} which is as bumpy as possible. In this talk, we will explain why good embeddings of the Heisenberg group must be “bumpy” at many scales and how to study embeddings into L_1 by studying surfaces in \mathbb{H} . (Received January 14, 2021)