

CUNY, Graduate Center
Harmonic Analysis and PDE's Seminar

Recent developments on Falconer's distance set conjecture

Yumeng Ou (CUNY, Baruch College)

September 7 2018

Abstract: Given a compact set E in \mathbb{R}^d , it determines a distance set $\Delta(E)$ that is defined as the set of all distinct distances generated by points in E . If one wants to make sure that $\Delta(E)$ has positive Lebesgue measure, how large does E itself need to be? Falconer (1985) conjectured that E should have Hausdorff dimension at least $d/2$, and the conjecture remains open today for all dimension $d \geq 2$. I will introduce some classical and modern tools for the study of this problem, especially from the Fourier analytic perspective, and discuss some very recent developments.