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Distribution of distances in quasi-regular sets

In 1990, Strichartz introduced the notion of quasi regular sets. An $s-$dimensional set $E \subset [0,1]^d$ is said to be quasi-regular if there exists $\kappa > 0$ such that

$$\liminf_{r \to 0} \frac{1}{(2r)^s} \mathbb{H}^s(E \cap B(x;r)) \geq \kappa$$

for $\mathbb{H}^s-$almost every $x \in E$. Strichartz further studied the Fourier asymptotics of measures supported on these sets. In this talk we discuss the role of their Fourier asymptotics in determining the nature of the distances in quasi-regular sets. This is based on joint work with Prof. Malabika Pramanik.