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Sets of zero discrete harmonic density

The set $E \subseteq \mathbb{Z}$ is said to have zero discrete harmonic density (zdhd) if for every open $U \subseteq \mathbb{T}$ and discrete measure μ, there is a discrete measure, ν, supported on U with $\widehat{\mu} = \widehat{\nu}$ on E. I_0 sets are examples of sets which have zdhd. We study properties of these sets. Our motivation is to provide a new approach to two long-standing problems involving Sidon sets.

This is joint work with Colin Graham.