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A Criterion for Purely Absolutely Continuous Measures on Homogeneous Sets

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Abstract. Let E be a homogeneous subset of \mathbb{R} in the sense of Carleson. Let μ be a finite positive measure on \mathbb{R} and $H_\mu(x)$ its Hilbert transform. We prove that $\lim_{t \rightarrow \infty} t|E \cap \{x : |H_\mu(x)| > t\}| = 0$ if and only if $\mu_s(E) = 0$, where μ_s is the singular part of μ .