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Absolute Continuity of Measures on Homogeneous Sets.

We give a criterion for pure absolute continuity of a measure in terms of its Hilbert transform. Explicitly, 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 is a finite positive measure on \mathbb{R} , μ_s its singular part, H_μ its Hilbert transform, and $E \subset \mathbb{R}$ is a homogeneous set in the sense of Carleson. The result has applications in the spectral theory of Schrödinger, Jacobi, and CMV operators. (Received January 25, 2010)