

Petermichl, S.

The sharp bound for the Hilbert transform on weighted Lebesgue spaces in terms of the classical A_p characteristic. (English) [Zbl 1139.44002](#)
Am. J. Math. 129, No. 5, 1355-1375 (2007).

The paper is concerned with the sharp bound for the operator norm of the Hilbert transform in $L^p(\omega)$. The author shows that the norm of the Hilbert transform as an operator in the weighted space $L^p_{\mathbb{R}}(\omega)$ for $2 < p < \infty$ is bounded by a constant multiple of the first power of the classical A_p characteristic of ω . This result is sharp.

He also proves a bilinear impeding theorem with simple conditions. One of the theorem is Theorem 1. There exists a constant c so that for all weights is $E \in A_2$ the Hilbert transform as an operator in weighted space $H : L^2_{\mathbb{R}}(\omega) \rightarrow L^2_{\mathbb{R}}(\omega)$ has operator norm $\|H\| \leq cQ_2(\omega)$ and this result is sharp.

Reviewer: [R. S. Dahiya \(Ames\)](#)

MSC:

[44A15](#) Special integral transforms (Legendre, Hilbert, etc.)

[47B38](#) Linear operators on function spaces (general)

[47A30](#) Norms (inequalities, more than one norm, etc.) of linear operators

Cited in **3** Reviews
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Keywords:

operator norm; sharp bound; Hilbert transform

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