

## ON RESTRICTED WEAK-TYPE CONSTANTS OF FOURIER MULTIPLIERS

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**Abstract:** We exhibit a large class of symbols  $m: \mathbb{R}^d \rightarrow \mathbb{C}$  for which the corresponding Fourier multipliers  $T_m$  satisfy the following restricted weak-type estimates: if  $A \subset \mathbb{R}^d$  has finite Lebesgue measure, then

$$\|T_m \chi_A\|_{p,\infty} \leq \frac{p}{2} e^{(2-p)/p} \|\chi_A\|_p, \quad p \geq 2.$$

In particular, this leads to novel sharp estimates for the real and imaginary part of the Beurling–Ahlfors operator on  $\mathbb{C}$ . The proof rests on probabilistic methods: we exploit a stochastic representation of the multipliers in terms of Lévy processes and appropriate sharp inequalities for differentially subordinated martingales.

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**Key words:** Fourier multiplier, singular integral, Beurling–Ahlfors transform, martingale, differential subordination.