Convolution Operators with Homogeneous Singular Measures on R^{3} of Polynomial Type. The Remainder Case.

Abstract:

Let $\varphi(y_1, y_2) = y_2^l P(y_1, y_2)$ where P is a polynomial function of degree l such that $P(1,0) \neq 0$. Let μ_δ be the Borel measure on $\mathbb{R}^3$ defined by

$\mu_\delta(E) = \int_{V_\delta} \chi_E(x, \varphi(x)) \, dx$ where

$$V_\delta = \left\{ x = (x_1, x_2) \in \mathbb{R}^2 : |x_1| \leq 1, \text{and } |x_1| \leq \delta |x_2| \right\}$$

and let T_{μ_δ} be the convolution operator with the measure μ_δ. In this paper we explicitly describe the type set

$$E_{\mu_\delta} := \left\{ \left(\frac{1}{p}, \frac{1}{q} \right) \in [0,1] \times [0,1] : \|T_{\mu_\delta}\|_{p,q} < \infty \right\},$$

for δ small enough.

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