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L^2-BOUNDEDNESS OF A SINGULAR INTEGRAL OPERATOR

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Abstract

In this paper we study a singular integral operator T with rough kernel. This operator has singularity along sets of the form $\{x = Q(|y|)y'\}$, where $Q(t)$ is a polynomial satisfying $Q(0) = 0$. We prove that T is a bounded operator in the space $L^2(R^n)$, $n \geq 2$, and this bound is independent of the coefficients of $Q(t)$.

We also obtain certain Hardy type inequalities related to this operator.

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