CODY STOCKDALE, Clemson University

A dimension-free weak-type $(1,1)$ *bound for the vector Riesz transform on* $\mathbb{R}^n$

We show that the best constant in the weak-type $(1,1)$ bound for the vector Riesz transform on $\mathbb{R}^n$ is at most 2, independent of the dimension n. The proof relies on a new decomposition of the input data involving an obstacle problem for the fractional Laplacian and an associated Lewy-Stampacchia type estimate on an unbounded domain. This settles a problem posed by E. M. Stein at the 1986 International Congress of Mathematicians.