A DUALITY APPROACH TO THE FRACTIONAL LAPLACIAN WITH MEASURE DATA

Kenneth H. Karlsen, Francesco Petitta,
and Suleyman Ulusoy

Abstract

We describe a duality method to prove both existence and uniqueness of solutions to nonlocal problems like

$$(-\Delta)^s v = \mu \quad \text{in } \mathbb{R}^N,$$

with vanishing conditions at infinity. Here μ is a bounded Radon measure whose support is compactly contained in $\mathbb{R}^N$, $N \geq 2$, and $-(\Delta)^s$ is the fractional Laplace operator of order $s \in (1/2, 1)$.