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NON-LOCAL TO LOCAL TRANSITION FOR GROUND STATES OF FRACTIONAL SCHRÖDINGER EQUATIONS ON BOUNDED DOMAINS

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Abstract. We show that ground state solutions to the nonlinear, fractional problem

$$\begin{cases} (-\Delta)^s u + V(x)u = f(x,u) & \text{in } \Omega, \\ u = 0 & \text{in } \mathbb{R}^N \setminus \Omega, \end{cases}$$

on a bounded domain $\Omega \subset \mathbb{R}^N$, converge (along a subsequence) in $L^2(\Omega)$, under suitable conditions on f and V, to a solution of the local problem as $s \to 1^-$.

1. Introduction

The aim of this paper is to analyze the asymptotic behavior of least-energy solutions to the fractional Schrödinger problem

$$\begin{cases} (-\Delta)^s u + V(x)u = f(x,u) & \text{in } \Omega, \\ u = 0 & \text{in } \mathbb{R}^N \setminus \Omega, \end{cases} \tag{1.1}$$

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