

On nonlinear fractional Schrodinger equation with indefinite potential and Hardy potential

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Abstract

This paper is concerned with a class of fractional Schrödinger equation with Hardy potential
$$(-\Delta)^s u + V(x)u - \frac{\kappa}{|x|^{2s}} u = f(x, u), \quad x \in \mathbb{R}^N, \quad (1)$$
 where $s \in (0, 1)$ and $\kappa \geq 0$ is a parameter. Under some suitable conditions on the potential V and the nonlinearity f , we prove the existence of ground state solutions when the parameter κ lies in a given range by using the non-Nehari manifold method. Moreover, we investigate the continuous dependence of ground state energy about κ . Finally, we are able to explore the asymptotic behaviors of ground state solutions as κ tends to 0.

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