

Existence, multiplicity and concentration of positive solutions for a modified Schrödinger equation with critical exponent

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Abstract

In this paper, we concern the modified Schrödinger equations $-\varepsilon^2 \Delta u + V(x)u - \varepsilon^2 u \Delta u^2 = |u|^{2^*-2}u + g(u)$, $x \in \mathbb{R}^N$. First, a existence result of ground state positive solutions is given. Next, we research multiplicity and concentration of positive solutions. Where $N \geq 2$, ε is positive parameters and $2^* = \frac{2N}{N-2}$ is the critical exponent, $V \in C(\mathbb{R}^N, \mathbb{R}^+)$, $g \in C(\mathbb{R}, \mathbb{R})$. Our results improve corresponding results in (missing citation) (X. He, A. Qian, W. Zou, Existence and concentration of positive solutions for quasilinear Schrödinger equations with critical growth, Nonlinearity, 26(2013), 3137-3168).

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References