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THE CONCENTRATION BEHAVIOR OF GROUND STATE SOLUTION FOR A SCHRÖDINGER SYSTEM OF HAMILTONIAN TYPE

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Abstract. In this paper, we consider the following nonlinear Schrödinger system of Hamiltonian type

$$\begin{cases} -\varepsilon^2\Delta u + u + V(x)v = H_v(u,v), & x \in \mathbb{R}^N, \\ -\varepsilon^2\Delta v + v + V(x)u = H_u(u,v), & x \in \mathbb{R}^N, \\ u(x) \to 0 \text{ and } v(x) \to 0 & \text{as } |x| \to \infty, \end{cases}$$

where $\varepsilon > 0$ is a small parameter, $V \in C^1(\mathbb{R}^N,\ \mathbb{R})$, $H \in C^1(\mathbb{R}\times\mathbb{R},\mathbb{R})$ and $(u,v) \in \mathbb{R}^2$. Under only a local condition that V has a local trapping potential well, a ground state $z_\varepsilon = (u_\varepsilon, v_\varepsilon)$ of the above Schrödinger system is obtained via a combination of linking-type arguments with the generalized Nehari manifold. Moreover, we also show that ground state solution z_ε concentrating around the local minimum points of the potential V as $\varepsilon \to 0^+$.

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