

Ground state and multiple solutions for Schrödinger-Bopp-Podolsky system with critical nonlinearity

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Abstract

In this paper, we study the following nonlinear Schrödinger-Bopp-Podolsky system: $-\Delta u + u + l(x)\varphi u = a(x)|u|^{p-2}u + \mu b(x)|u|^{q-2}u + |u|^5$, in $\mathbb{R}^3$, $-\Delta \varphi + a_2 \varphi = l(x)u^2$, in $\mathbb{R}^3$, where $p, q \in (4, 6)$, $\mu > 0$, $l(x)$, $a(x)$ and $b(x)$ are nonnegative continuous functions. Under some certain assumptions, we prove the above system have ground state and multiple solutions by using variational.

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