Existence result for critical Klein-Gordon-Maxwell system involving steep potential well

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Abstract

This paper deals with the following system
$$\begin{cases} -\Delta u + (\lambda A(x) + 1)u - (2\omega + \phi) \phi u = \mu f(u) + u^5, & \text{in } \mathbb{R}^3, \\ \Delta \phi = (\omega + \phi) u^2, & \text{in } \mathbb{R}^3, \end{cases}$$
 where $\lambda, \mu > 0$ are positive parameters. Under some suitable conditions on A and f , we show the boundedness of Cerami sequence for the above system by adopting Poho $\check{z}$ identity and then prove the existence of ground state solution for the above system on Nehari manifold by using Br $\check{u}$ zis-Nirenberg technique, which improve the existing result in the literature.

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