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Astrophysical solutions in the generalized SU(2) Proca theory

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The scalar-tensor theory introduced by Horndeski has a sound and firm basis since it avoids the Ostrograski' s instability. The generalized SU(2) Proca Theory, which is a vector-tensor theory where the vector content enjoys a SU(2) global symmetry, has been built following Horndeski's spirit. Such a theory exhibits interesting properties that make it a candidate to describe the primordial inflationary period while satisfying the restriction on the gravitational waves speed. At astrophysical scales, the theory needs to be validated. Here we study the spherically-symmetric case using the 't Hooft-Polyakov magnetic monopole ansatz. We found equilibrium configurations constructed from only the metric tensor and the vector field mentioned above. These configurations constitute particle-like solutions which are regular at the origin and asymptotically flat. The objects we have found are boson stars which could eventually contribute to the dark matter content of the universe.

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