

New Vacuum Solutions and Black Strings in the 4D Standard Model

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A previous study suggested that by considering the Casimir energy of massless particles and neutrinos in the 4D Standard Model, a stable vacuum solution with one spatial dimension compactly rounded can appear. This compact spacetime is reproduced in the vicinity of the blackstring horizon in 4D spacetime, and we show that such a blackstring solution can actually be constructed by using numerical calculations in this study. Future prospects are also discussed.

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