

Abstract Submitted
for the APR17 Meeting of
The American Physical Society

Quantum Tunneling and the Energy of the Vacuum. ZACHARY STEELMAN, JAMES OVERDUIN, Towson University — We describe a dynamical mechanism by which a cosmological scalar field in a Higgs-type potential naturally acquires an exponentially small energy density in Planck units. It is assumed that the energy density of the scalar field vanishes in its lowest (symmetric) state, but that the field is presently hung up in the first antisymmetric state. A net energy density of 10^{-122} times the Planck density is easily obtained in the simplest two-parameter model with both free parameters of order unity. We discuss the obstacles that lie in the way of exploiting such a mechanism as an explanation for the observed density of dark energy in the universe.

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Date submitted: 05 Oct 2016

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