

A Minimal model for Cosmological Selection of the Electroweak scale

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In this talk, I will present a minimal model for cosmological selection of the electroweak scale that can resolve the hierarchy problem. Our model consists of a Pseudo Nambu Goldstone Boson (PNGB) and an extra Higgs doublet along with the Standard Model, with a cutoff that can be taken almost as high as the Planck scale. We consider a landscape of vacua with varying Higgs sector parameters. In our model, we show that the vacuum energy peaks when the Higgs has a non-zero vacuum expectation value (vev) that is much smaller than the cutoff. These regions of the landscape, with a small Higgs vev, thus expand at an exponentially higher rate than the other regions during inflation, eventually dominating in volume. This minimal model has robust predictions in the 2HDM parameter space which can be tested in present and future colliders. Moreover, the PNGB may contribute to the observed dark matter relic density.

Track type

Collider and BSM Physics

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