

Phenomenology 2021 Symposium



Contribution ID: 1338

Type: **Cosmology**

Hidden Naturalness in the Light of Cosmological Data

Monday 24 May 2021 15:15 (15 minutes)

Hidden naturalness offers an exciting framework for alleviating the Higgs hierarchy problem. But because the models within this framework face few constraints from collider searches, there is strong motivation to study their cosmological signatures, an area that has remained mostly unexplored. One of the simplest models that can be studied in this framework is the mirror twin Higgs (MTH) model, a model that contains a near-mirror copy of the SM. Cosmologically, the MTH model is quite complex, containing new sources of free-streaming radiation, interacting radiation, and interacting dark matter. In this talk I will discuss how cosmological datasets, including the CMB temperature and polarization power spectra as measured by the Planck collaboration, constrain the parameter space of the MTH model. In addition, I will also show how this model may help in ameliorating the tensions in the cosmological datasets, specifically those related to the σ_8 and H_0 measurements.

Summary

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Session Classification: Cosmology I