



Contribution ID: 188

Type: not specified

## Searching for Cosmological Concordance with New Physics in the Dark Sector: Hints and Challenges

*Tuesday, June 6, 2023 4:00 PM (1 hour)*

I will discuss recent and ongoing work focused on attempts to restore concordance amongst cosmological data sets, motivated by discrepancies between some measurements of the cosmic expansion rate ( $H_0$ ) and the matter clustering amplitude ( $S_8$ ). Particular attention will be paid to scenarios invoking new physics in the high-redshift universe, including models featuring interactions between the dark matter and an early dark energy (EDE) scalar field, as well as decaying particle scenarios that could lead to non-trivial evolution of the radiation density. I will discuss constraints on these models derived using CMB measurements from the Planck satellite and the Atacama Cosmology Telescope (ACT), amongst other data sets. I will also present new constraints on canonical axion-like EDE models derived from the Lyman-alpha forest, which pose a major challenge for this scenario to resolve the Hubble tension. Finally, I will conclude with a look ahead to the unprecedented constraining power of upcoming CMB analyses with ACT Data Release 6.

**Presenter:** COLIN HILL, James (Columbia University & Flatiron Institute)