JOINT TUFTS/MIT COSMOLOGY SEMINAR

Dark Radiation with Baryon Acoustic Oscillations from DESI 2024 and the H0 tension

Itamar Allali

Brown

We investigate the presence of extra relativistic degrees of freedom in the early Universe, contributing to the effective number of neutrinos N_{eff}, as $\Delta N_{eff} = N_{eff} - 3.044 \geq 0$, in light of the recent measurements of Baryon Acoustic Oscillations (BAO) by the DESI collaboration. We analyze one-parameter extensions of the ΛCDM model where dark radiation (DR) is free streaming or behaves as a perfect fluid, due to self-interactions. In this talk, I will report on the significant relaxation of upper bounds on ΔN_{eff} with respect to previous BAO data from SDSS+6dFGS. I will comment on the effects of constraints from primordial element abundances. Considering also dark radiation produced after the epoch of Big Bang Nucleosynthesis (BBN), I will discuss the impacts of these new data on the Hubble tension, and potential evidence for dark radiation beyond ΛCDM.

Tuesday, April 30, 2024, 2:30 pm

Zoom link will be distributed to joint cosmology seminar mailing list. See https://cosmos.phy.tufts.edu/mailman/listinfo/cosmology-seminar to join.

Or watch with us in Room 402, 574 Boston Ave.,Tufts University

Refreshments at 2:00 outside the building, at the corner of Harvard St. and Boston Ave.