

JOINT TUFTS/MIT COSMOLOGY SEMINAR

Paths towards the Hubble tension solutions

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Although the Λ CDM model has been remarkably successful in explaining a wide range of observational data, the model does not reconcile distance-redshift measurements when anchored at low redshift through the distance ladder and high redshift by cosmic microwave background (CMB) anisotropies. Specifically, if we assume the Λ CDM model, the Hubble parameter H_0 has a 5σ tension between the measurements from the low redshift SH0ES project and the high redshift Planck CMB data. This "Hubble tension" has become an increasingly significant mystery to solve in recent years. In this seminar, I will talk about the currently proposed solutions for the Hubble tension. Acoustic Dark Energy (an Early Dark Energy-like) model could provide the high H_0 solution with simple scalar field realization, at the cost of a higher S_8 value. Introducing Dark Energy and Dark Matter interaction can provide a limited ability to lower the S_8 value since a dark matter-philic fifth force is induced. On the other hand, early modified gravity could provide a different mechanism to relieve Hubble tension with a lower S_8 value. The possible paths to better solutions in the future will also be talked about.

Tuesday, April 5, 2022, 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.

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