

BU Open House 2022

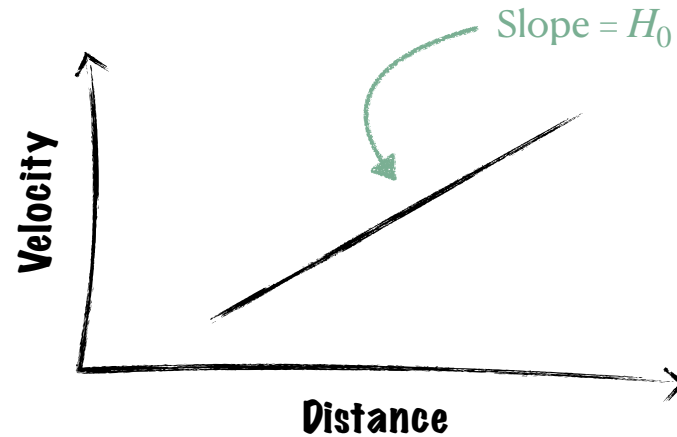
High Energy Theory

Melissa Joseph

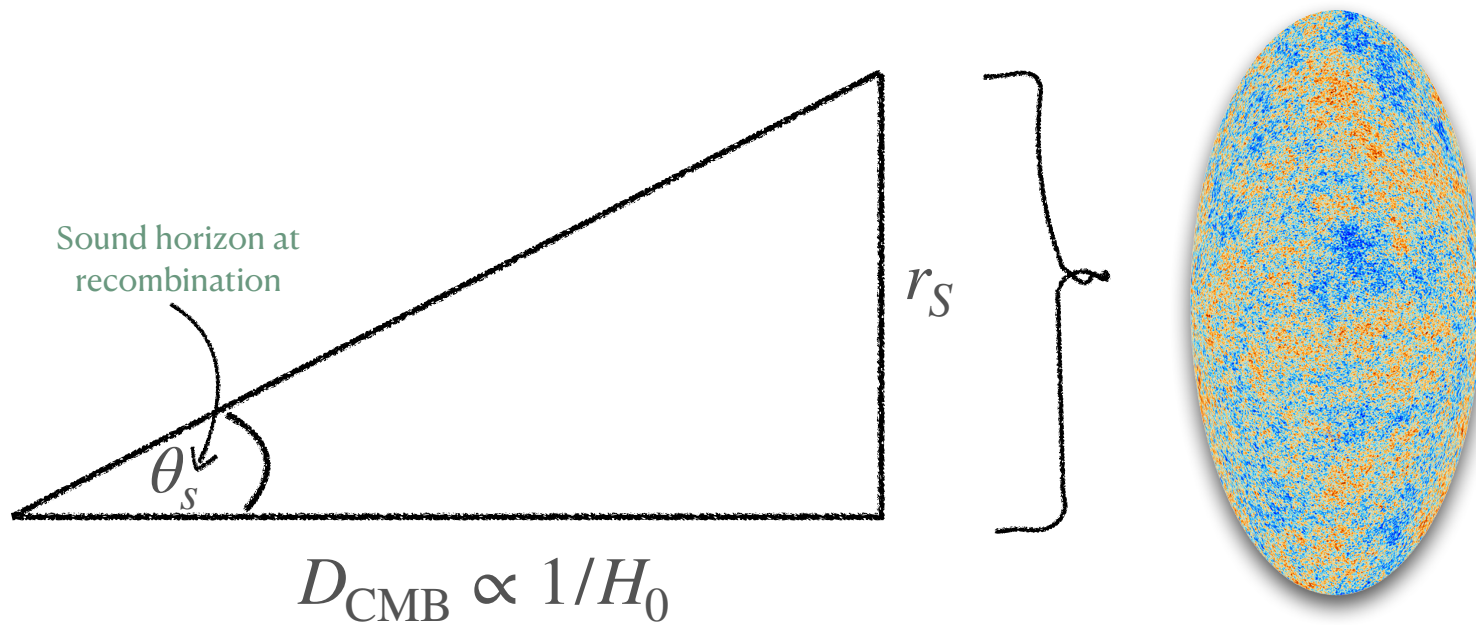
What is the Hubble Parameter?

A measure of the **expansion rate** of the universe

H_0 = expansion rate **today**



Another way to measure it !



Indirect measurement

The Hubble Tension

Local measurement: 73.2 ± 1.3 km/s/Mpc (Riess et al 2021)

Value from Λ CDM (fit to CMB): 67.4 ± 0.5 km/s/Mpc (Planck 2018)

$\sim 5\sigma$ tension

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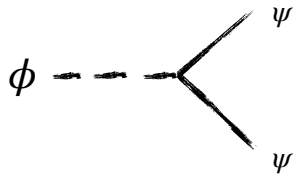


Is it the **theory**?

$\sim 5\sigma$ tension

Can we reconcile the tension with **new physics**?

Particle physics theory



Cosmological description

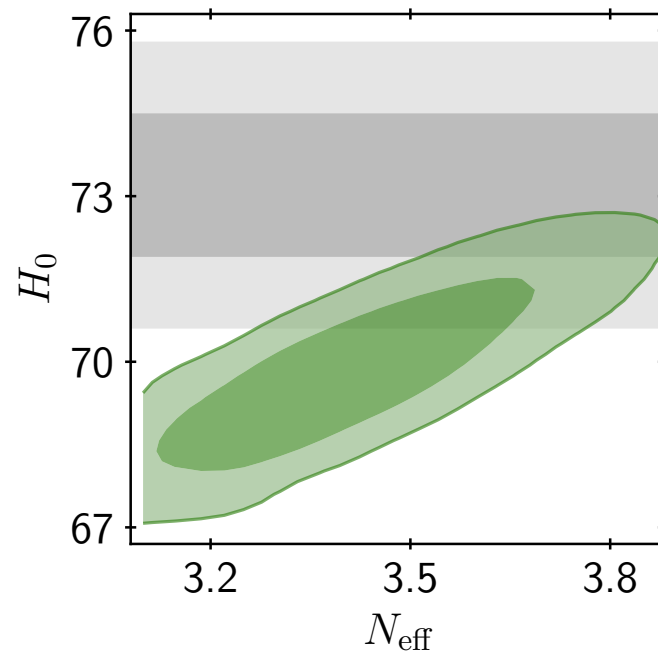


Fit to Experimental
Data

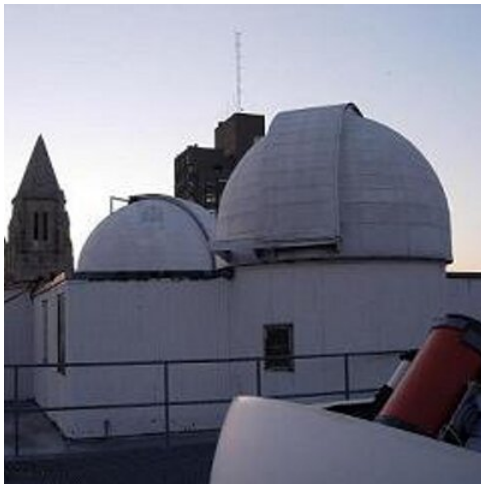


Simulations of Observables (CMB)

Some Results



BU/Boston



Interesting research

Great mentorship / supportive environment

Opportunities for outreach

Tons to do in Boston! And its walkable