

DESI 2024:

Cosmological results from measurement of Baryon Acoustic Oscillations.

Tuesday, 21 May, 2024

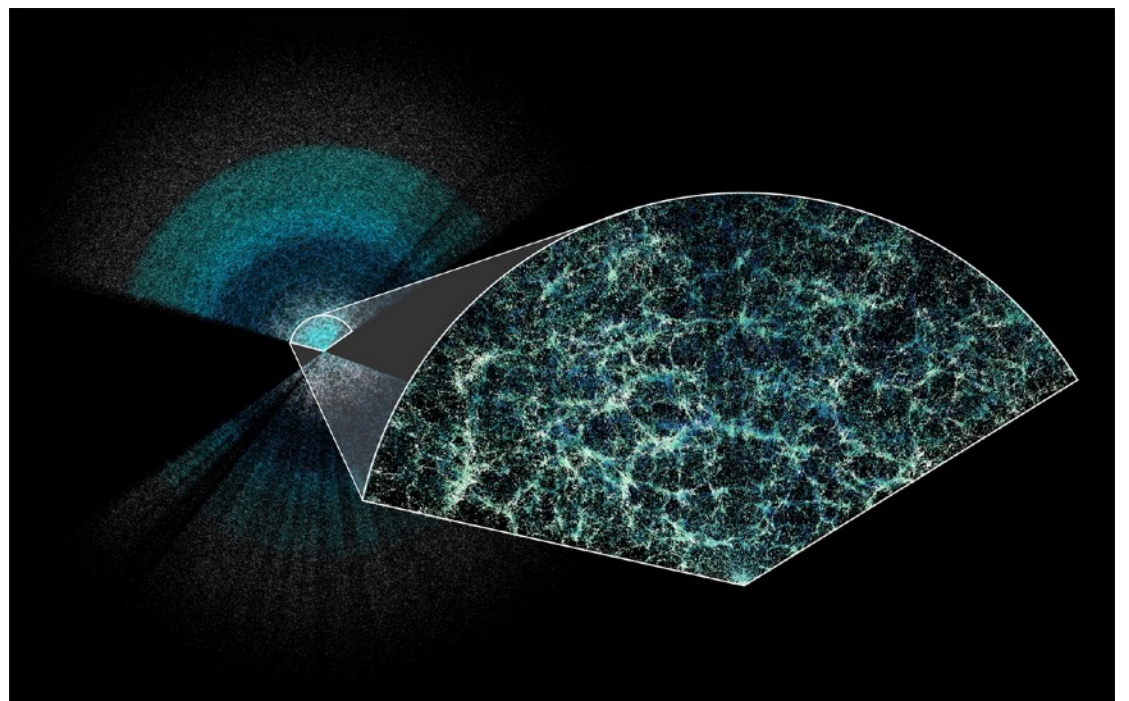
Auditorium & Webcast 16:00 h

ZOOM ID: 996 1652 8733

Meeting Password: 733220

Seshadri Nadathur (University of Portsmouth)

I will present a summary of the measurements of Baryon Acoustic Oscillations in the data release 1 (DR1) of the Dark Energy Spectroscopic Instrument (DESI) and the cosmological constraints that can be derived from these. DESI BAO provide robust measurements of the transverse comoving distance and Hubble rate, relative to the sound horizon, using over 6 million extragalactic objects in seven redshift bins, over the redshift range $0.1 < z < 4.2$, and increasing the previous largest such dataset by a factor of 3. Within a flat Lambda cold



dark matter (LCDM) background model, these results are consistent with those from the CMB. In combination with external priors, we measure the Hubble constant H_0 to 1% precision or better. We derive an upper limit on the sum of the neutrino masses of $M_\nu < 0.072$ eV (95% confidence) – I will explain how this limit depends on priors and assumptions about the background expansion. Most interestingly, we find tentative evidence for the dark energy equation of state varying with time from the combination of DESI BAO, CMB and type Ia supernovae – these joint constraints reject the cosmological constant LCDM model with significances of between 2.5 and 3.9 sigma, depending on the dataset used.

