Contribution ID: **113** Type: **Talk in the parallel session**

Testing Late Time Cosmic Acceleration with uncorrelated Baryon Acoustic Oscillations dataset

Thursday, 8 July 2021 18:10 (20 minutes)

Baryon Acoustic Oscillations (BAO) involve measuring the spatial distribution of galaxies to determine the growth rate of cosmic structure. We derive constraints on cosmological parameters from 17 uncorrelated BAO measurements that were collected from 333 published data points in the effective redshift range $0.106 \leq z \leq 2.36$. We test the correlation of the subset using random covariance matrix. The ΛCDM model fit yields the cosmological parameters: $\Omega m = 0.261 \pm 0.028$ and $\Omega\Lambda = 0.733 \pm 0.021$. Combining the BAO data with the Cosmic Chronometers data, the Pantheon Type Ia supernova and the Hubble Diagram of Gamma Ray Bursts and Quasars, the Hubble constant yields 69.85 ± 1.27km/sec/Mpc and the sound horizon distance gives: 146.1 ± 2.15Mpc. Beyond the ΛCDM model we test ΩKCDM and wCDM. The spatial curvature is $\Omega k = -0.076 \pm 0.012$ and the dark energy equation of states: $w = -0.989 \pm 0.049$. {We perform AIC test to compare the 3 models and see that ΛCDM scores best.

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Session Classification: Dark Energy and the Accelerating Universe

Track Classification: Dark Energy and Large Scale Structure: Dark Energy and the accelerating universe