Sixteenth Marcel Grossmann Meeting



Contribution ID: 368

Type: Talk in the parallel session

A new measurement of the expansion history of the Universe from cosmic chronometers in the LEGA-C survey

Wednesday, 7 July 2021 11:50 (20 minutes)

Massive and passive galaxies can be used as cosmic chronometers to study the expansion history of the Universe. In particular, by following their differential age evolution over different cosmic epochs it is possible to obtain direct measurements of the Hubble parameter, H(z). However, robust age estimates require deep spectroscopy to break internal degeneracies between stellar population parameters (e.g. age and chemical content). In this work, we take advantage of the high quality of LEGA-C survey Data Release 2 data in terms of spectral resolution and signal-to-noise ratio to constrain the physical properties of a population of 140 massive and passive galaxies at $z\sim 0.7$. From the analysis of the age-redshift relation of this sample, we obtain a new measurement of H(z), assessing in detail its robustness and dependence on systematic effects. We use these data also to extract information on cosmological parameters, in particular on Ω_m and H_0 , that we discuss in the framework of the current H_0 tension.

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Session Classification: Non Standard Cosmological Probes

Track Classification: Fast Transients: Non Standard Cosmological Probes