

The measurement of the expansion rate of the Universe from gamma-ray attenuation

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The first statistically significant detection of the cosmic gamma-ray horizon (CGRH) that is independent of any extragalactic background light (EBL) model is presented in this talk. The CGRH is a fundamental quantity in cosmology. It gives an estimate of the opacity of the Universe to very-high energy (VHE) gamma-ray photons due to photon-photon pair production with the EBL. Our CGRH detection is possible thanks to a multiwavelength catalog of blazars that includes the latest data analysis from the Fermi satellite and Cherenkov telescopes. Interestingly, the observed CGRH is compatible with the current knowledge of the EBL. We show how the detection of the CGRH allow us to measure the expansion rate of the Universe from gamma-ray attenuation. The value of the Hubble constant that we derive is compatible with present-day measurements using well established methods such as local distance ladders and cosmological probes. We also discuss an observational strategy aimed to reduce the uncertainties in the Hubble constant estimate from our novel and independent technique.

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