

第41回 RESCEU コロキウム



東京大学大学院理学系研究科 附属ビッグバン宇宙国際研究センター

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講 師: Kenneth C. Wong 氏 (Kavli IPMU)

A 2.4% Measurement of H_0 from Lensed Quasars

Abstract

Strong gravitational lens systems with time delays between the multiple images are a powerful probe of cosmology, particularly of the Hubble constant (H_0) that is key to probing dark energy, neutrino physics, and the spatial curvature of the Universe, as well as discovering new physics. The H_0 Lenses In COSMOGRAIL's Wellspring (H0LiCOW) project has measured H_0 from lensed quasars using deep Hubble Space Telescope and AO imaging, precise time delay measurements from the COSMOGRAIL monitoring project, a measurement of the velocity dispersion of the lens galaxies, and a characterization of the mass distribution along the line of sight. Our latest results from a total of six lenses constrains H_0 to be $73.3(-1.8,+1.7)$ km/s/Mpc for a flat Lambda CDM cosmology, which is a measurement to 2.4% precision. These results are consistent with independent determinations of H_0 using type Ia supernovae calibrated by the distance ladder method, and are in 3.1-sigma tension with the results of Planck CMB measurements. Combined with the latest distance ladder results from the SH0ES project, we find a 5.3-sigma tension between Planck and late-Universe probes, hinting at possible new physics beyond the standard LCDM model and highlighting the importance of this independent probe.

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