U22a H0LiCOW: An independent constraint on H_0 from time-delay lenses

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Strong gravitational lens systems with time delays between the multiple images are a powerful probe of cosmology and astrophysics. In particular, the time-delay distance from such a system is primarily sensitive to 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 measures H_0 from several lensed quasars using deep high-resolution *HST* and/or 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 combination of six time-delay lenses constrains H_0 to $< 2.5\%$ precision for a flat ΛCDM cosmology. These results, combined with independent local determinations of H_0 using type Ia supernovae calibrated by the distance ladder method, are in $\sim 5\sigma$ tension with the early-universe determination from *Planck* CMB observations, hinting at possible new physics beyond the standard ΛCDM model and highlighting the importance of this independent probe.