X12a Measurement of the Hubble Constant from the Lensed Quasar WGD 2038-4008

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Time-delay cosmography is a powerful technique to constrain cosmological parameters, particularly the Hubble constant (H_0). The TDCOSMO collaboration is performing an ongoing analysis of lensed quasars to constrain cosmology using this method. In this work, we obtain constraints from the lensed quasar WGD 2038−4008 using new time-delay measurements and previous mass models by TDCOSMO. This is the first TDCOSMO lens to incorporate multiple lens modeling codes and the full time delay covariance matrix into the cosmological inference. The models are fixed before the time delay is measured, and the analysis is performed blinded with respect to the cosmological parameters to prevent unconscious experimenter bias. We obtain $D_{\Delta t} = 1.68^{+0.40}_{-0.38}$ Gpc using two families of mass models, a power-law describing the total mass distribution, and a composite model of baryons and dark matter, although the composite model is disfavored due to kinematics constraints. In a flat ΛCDM cosmology, we constrain the Hubble constant to be $H_0 = 65^{+23}_{-14}$km s^{-1} Mpc^{-1}. The dominant source of uncertainty comes from the time delays, due to the low variability of the quasar. Future long-term monitoring, especially in the era of the Vera C. Rubin Observatory's Legacy Survey of Space and Time, could catch stronger quasar variability and further reduce the uncertainties. This system will be incorporated into an upcoming hierarchichal analysis of the entire TDCOSMO sample, and improved time delays and spatially-resolved stellar kinematics could improve the constraints from this system in the future.