

Strategies for precise and accurate measurements of the Hubble constant with strong lensing

Strong lensing time delays can measure the Hubble constant H_0 independent of any other probe. Assuming commonly used forms for the radial mass density profile of the lenses, a 2% precision has been achieved with 7 Time-Delay Cosmography (TDCOSMO) lenses, in tension with the H_0 from the cosmic microwave background. However, without assumptions on the radial mass density profile – and relying exclusively on stellar kinematics to break the mass-sheet degeneracy – the precision drops to 8% with the current data of the 7 TDCOSMO lenses, insufficient to resolve the H_0 tension. With the addition of external information from 33 Sloan Lens ACS (SLACS) lenses, the precision improves to 5%.

I highlight the assumptions that went into the recent measurements and present strategies to improve the precision of time-delay cosmography without relying on mass profile assumptions to break the mass sheet degeneracy.

Presenter: SIMON BIRRER