

Response to reviewers:

SN Ia time delays are a major step forward from AGN time delays as cosmology probes. Extracting precise and accurate time delays from strongly lensed SNe Ia, even in the face of systematics (dust, microlensing), requires far less than extracting time delays from AGNs: Goldstein, Nugent, & Kasen (2017) showed that SN Ia time delays are more precise (8 hours versus several weeks with AGNs), require less complicated models as the SED is known (3 fit parameters versus dozens of fit parameters with AGNs), and significantly less observational monitoring (a few weeks of monitoring versus years of monitoring with AGNs) than AGNs.

If we could measure time delays at 2% fractional uncertainty from 10 strongly lensed SN Ia systems, then we could place sub-percent constraints on the Hubble constant independently of the CMB and the local distance ladder, which would make a large cosmological impact, as there is currently ~ 3.5 sigma tension on the value of this parameter from local and CMB measurements.

The candidate identification technique is very simple and would require nothing more than minor tweaks of the marshal that are already in place (e.g., SALT2 fitting has already recently been added to iPTF pipeline). The stacking can take place in the marshal using photometric measurements rather than stacking individual images in the photometric pipeline. This would greatly simplify the implementation of this feature of the candidate identification strategy.

A note on the different yields for the different scenarios:

fast_g = 6.40

fast_gr = 10.90

fast_r = 11.61

wide = 12.55

The combo will likely be best.