

WFIRST-Subaru Synergy: Supernova Science

Takashi Moriya (NAOJ, WFIRST working group)

on behalf of the SN breakout session participants

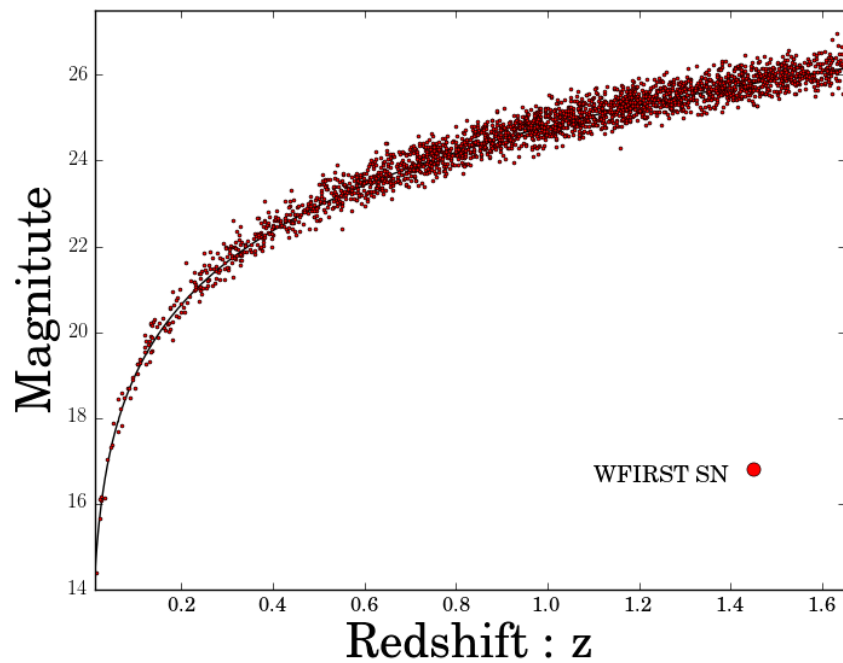
N. Suzuki, R. Foley, N. Yasuda, M. Sako, M. Tanaka, I. Takahashi, M. Yamaguchi
+ J. Newman, S. Perlmutter (on zoom)

Ideas for potential programs

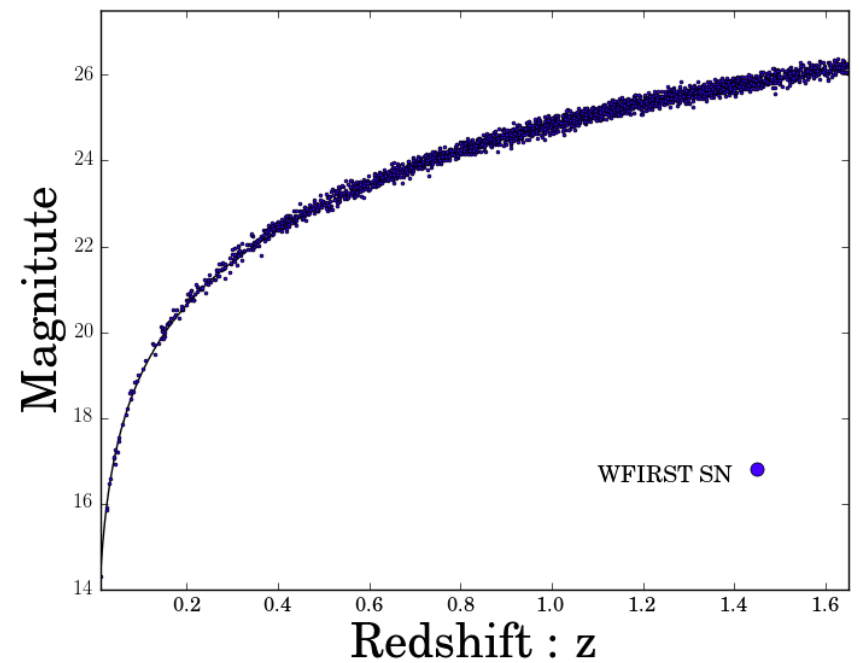
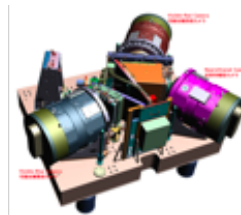
- Host galaxy spectroscopic follow-up of high- z SNe Ia
 - PFS
- NIR spectroscopy of low-redshift SNe Ia
 - characterizing NIR properties of SNe Ia
 - can be started before the WFIRST launch
- simultaneous optical imaging of the SN fields
 - HSC
- live SN spectroscopy
 - PFS
- GW (200 Mpc) follow-up for the northern field
 - HSC

Host galaxy spectroscopic follow-up

10,000 spec-z for SN Ia hosts are required



Subaru/
PSF



Host galaxy spectroscopic follow-up

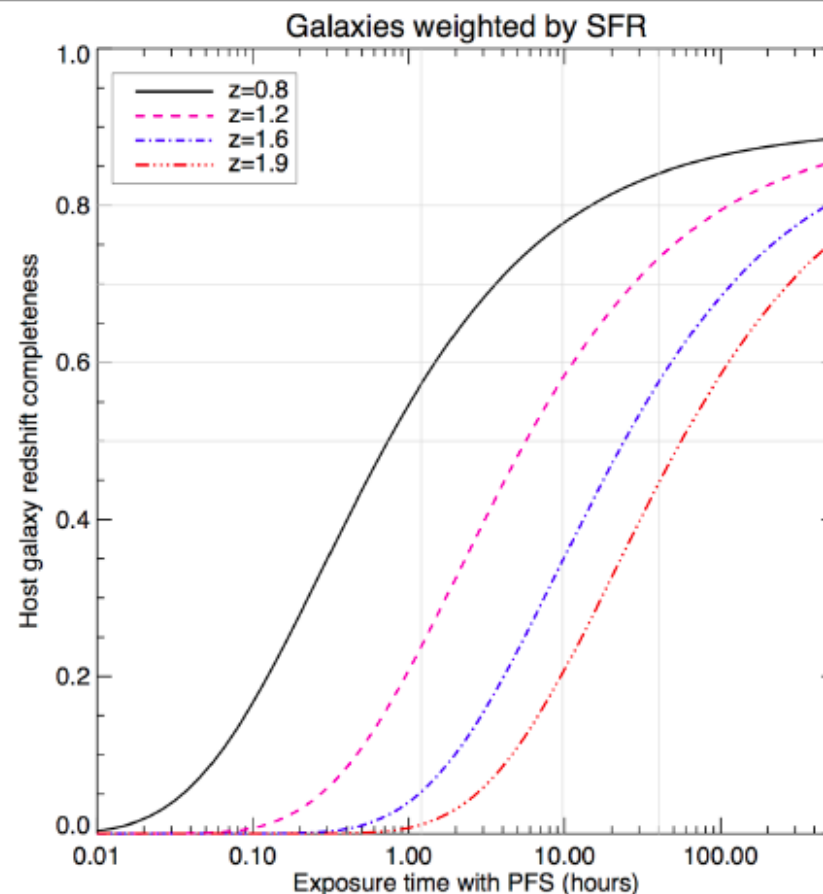
feasibility study by J. Newman

$z=1.2$ 10 nights (50% completeness)

25 nights (70%)

$z=1.9$ 32 nights (50%)

120 nights (70%)



- 10,000 hosts / WFIRST Deep Field ($\sim 10 \text{ deg}^2$) = ~ 1000 hosts / PFS pointing x 10 pointings
- remaining fibers can be used to calibrate photo- z
- incompleteness can be accessed if we have a good controlled sample

Northern issue

- SN fields need to be in a continuous viewing zone
 - We need to be in extreme north or south. South comes with LSST
 - We decided to ask engineers if the southern field can be moved by ~ 5 degrees, so that northern telescopes can reach
 - If this does not work, a patch of WFIRST the deep SN field may be moved to north.

