SPRAT Spectrograph

Classification of Transients with SPRAT on the LT

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OPTICON supports SPRAT

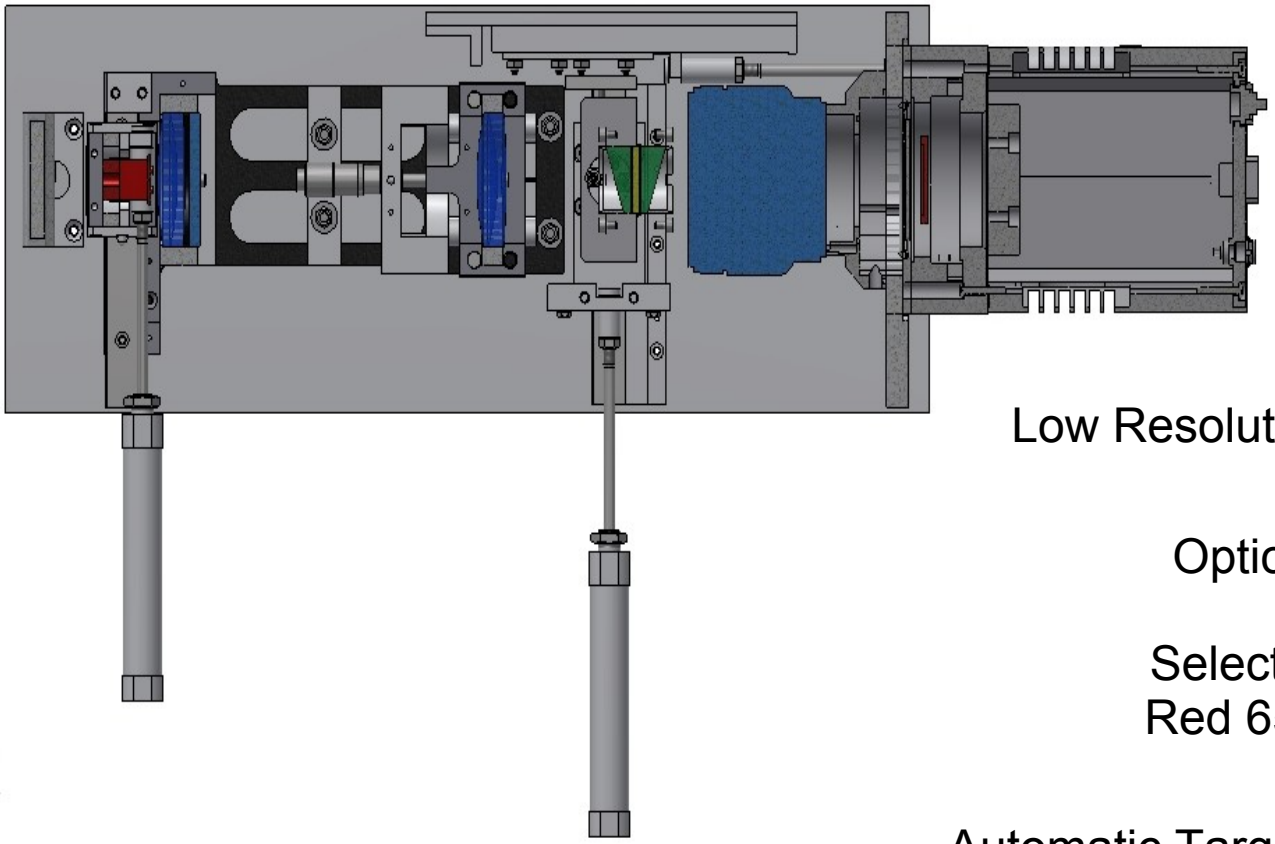
Early Phase SNe

Less than 5 days before maximum brightness

“Interesting” types Ib/c, II or SLSNe

Provides information on progenitor/CSM

SPRAT Spectrograph



Low Resolution, R=350. High Sensitivity

Optical, λ = 4000-8000 Å

Selectable Peak Sensitivity
Red 6500 Å or Blue 5500 Å

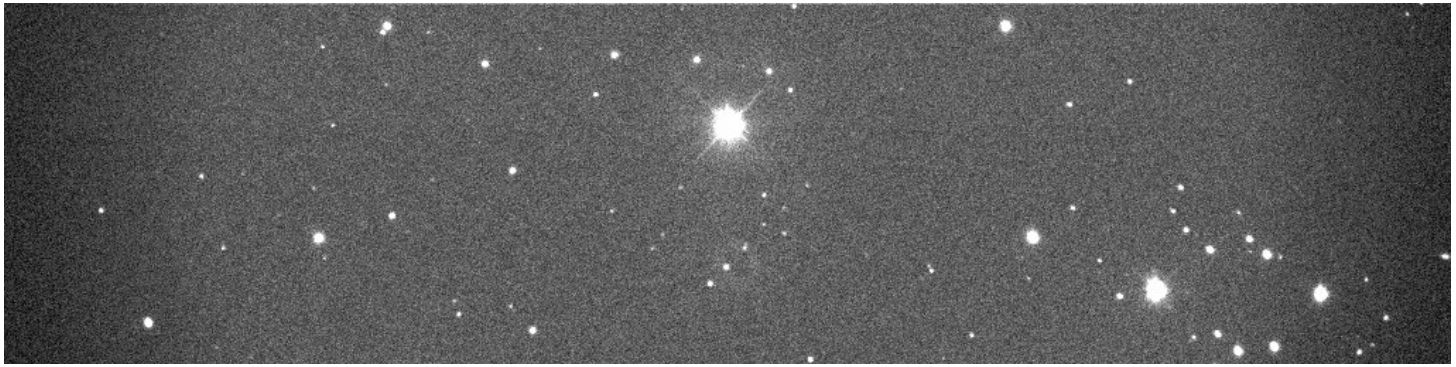
Automatic Target Acquisition in Imaging Mode

Single Object Spectra

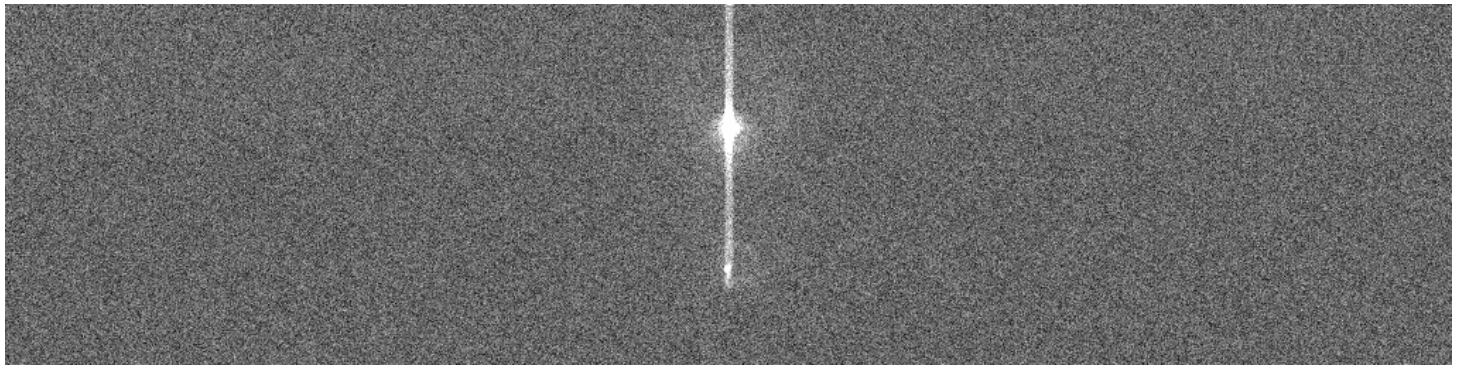
Acquisition – BD+28 4211

Exposure = 10s

Initial frame.
7.5 x 1.9 arcmin
Object off magic pixel.

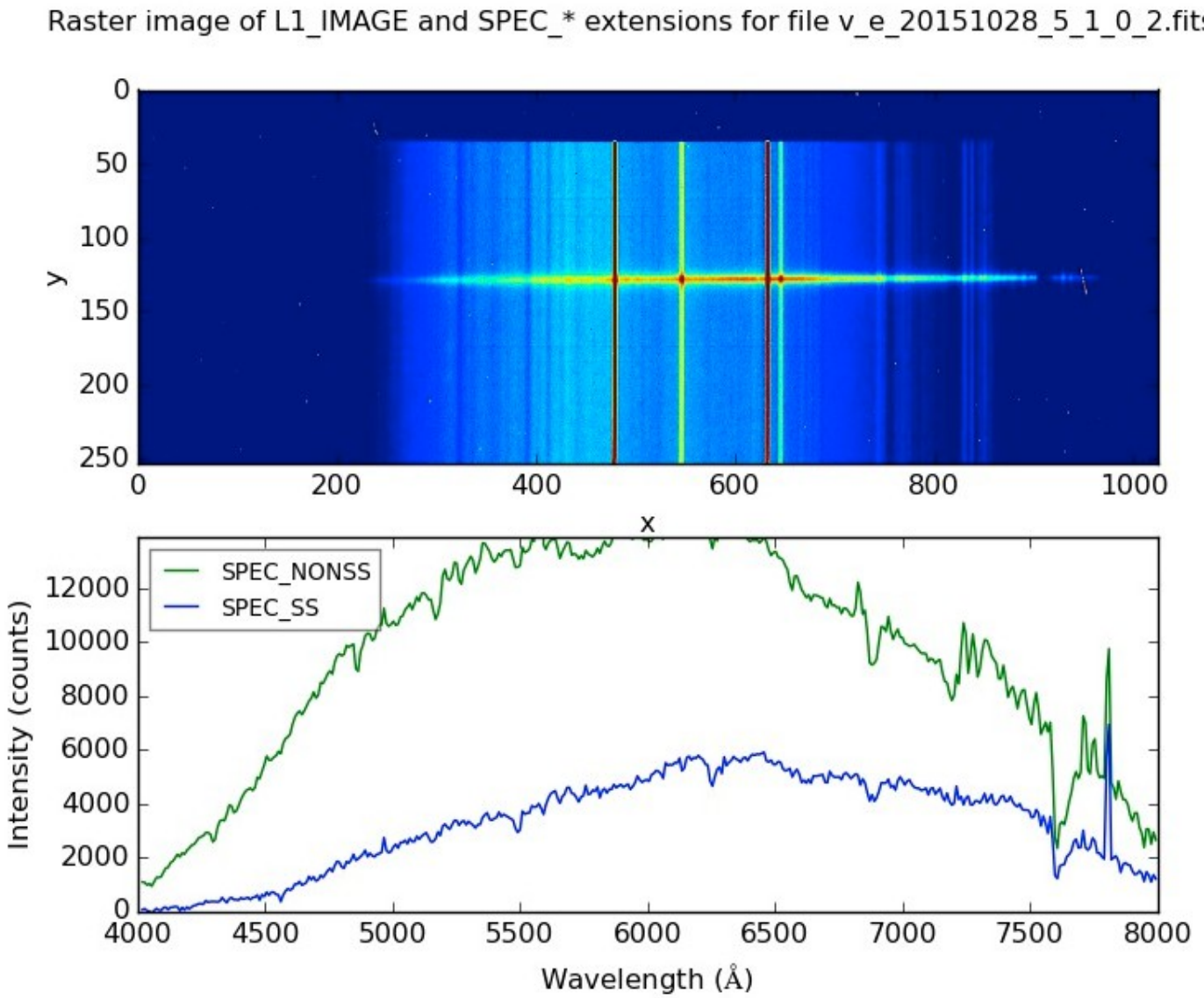


Acquisition by WCS or brightest object.
Object on magic pixel.



Slit deployed.
Object centred on slit.
Autoguider tracking.

Quicklook


Raster image of L1_IMAGE and SPEC_* extensions for file v_e_20151028_5_1_0_2.fits
y
x
SPEC_NONSS
SPEC_SS
Intensity (counts)
Wavelength (Å)

Sources of Transient Alerts

MASTER Robotic Network

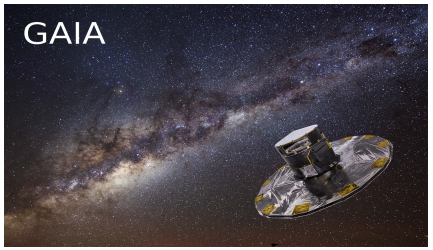
14

33

2

The Astronomer's Telegram

49



7

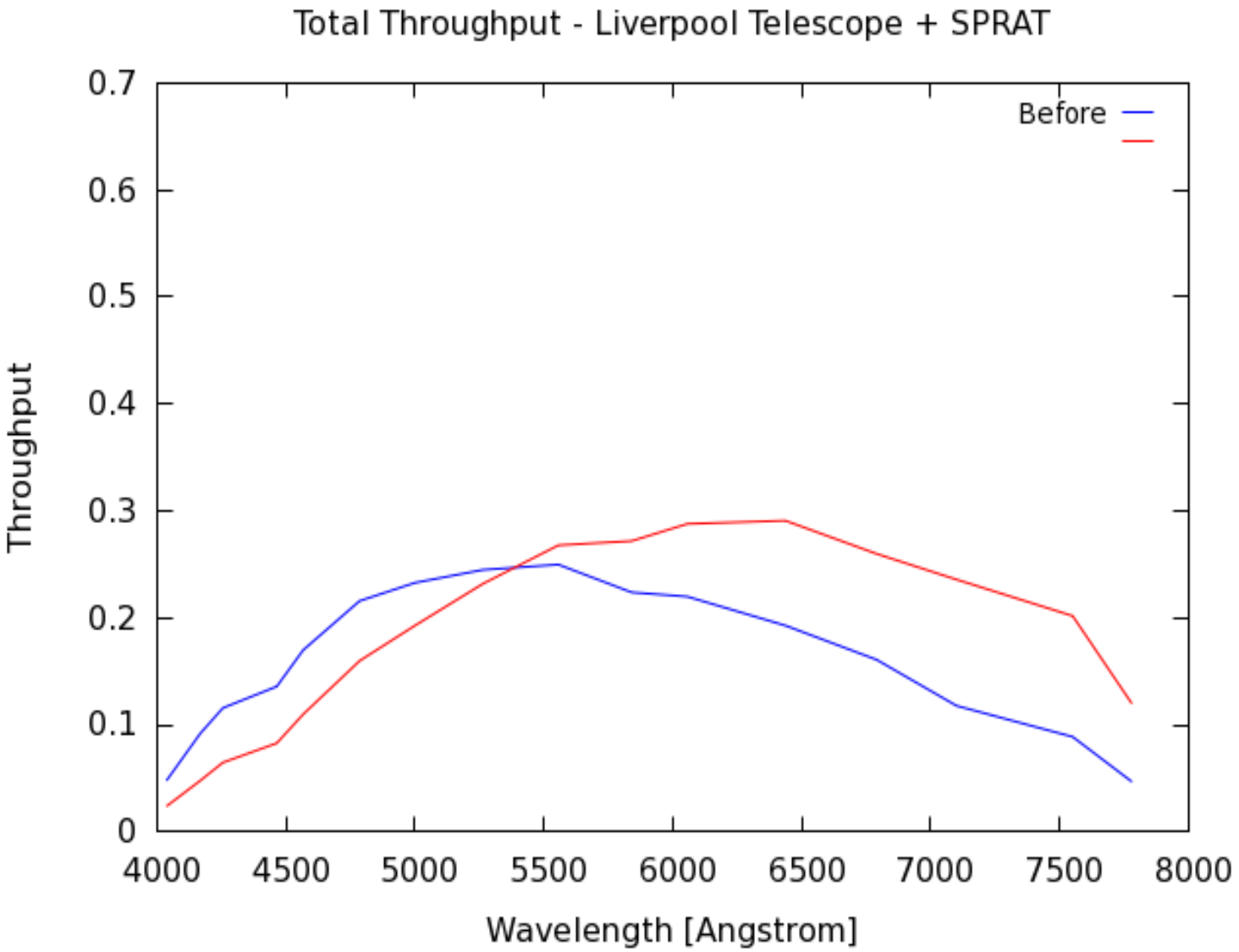
SPRAT

68

12

Other:
CBAT
KISS
Črni Vrh
iPTF
Etc.

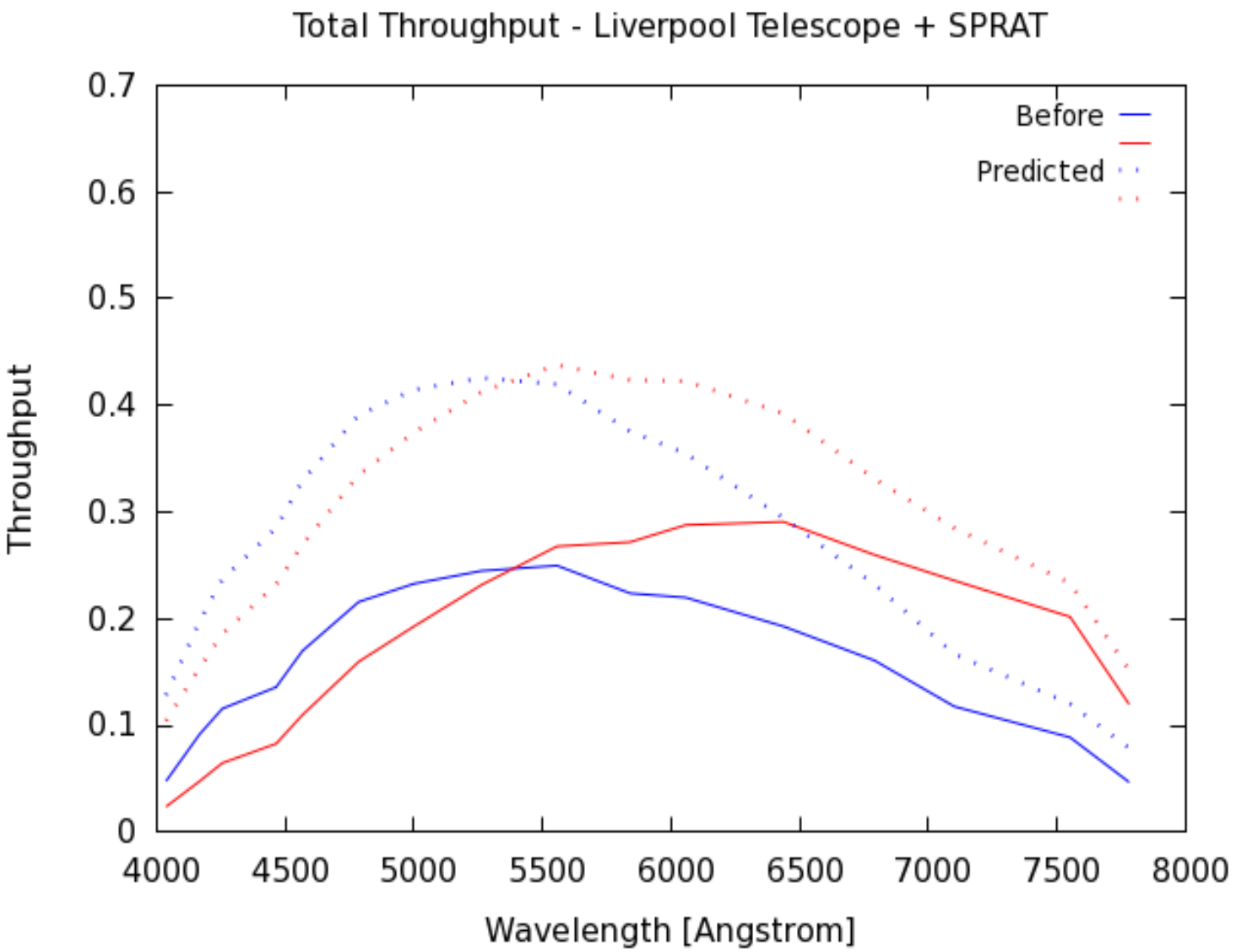
Throughput



As measured 2015-04-01

Re-coating of LT primary and secondary completed 2015-06-31

Throughput

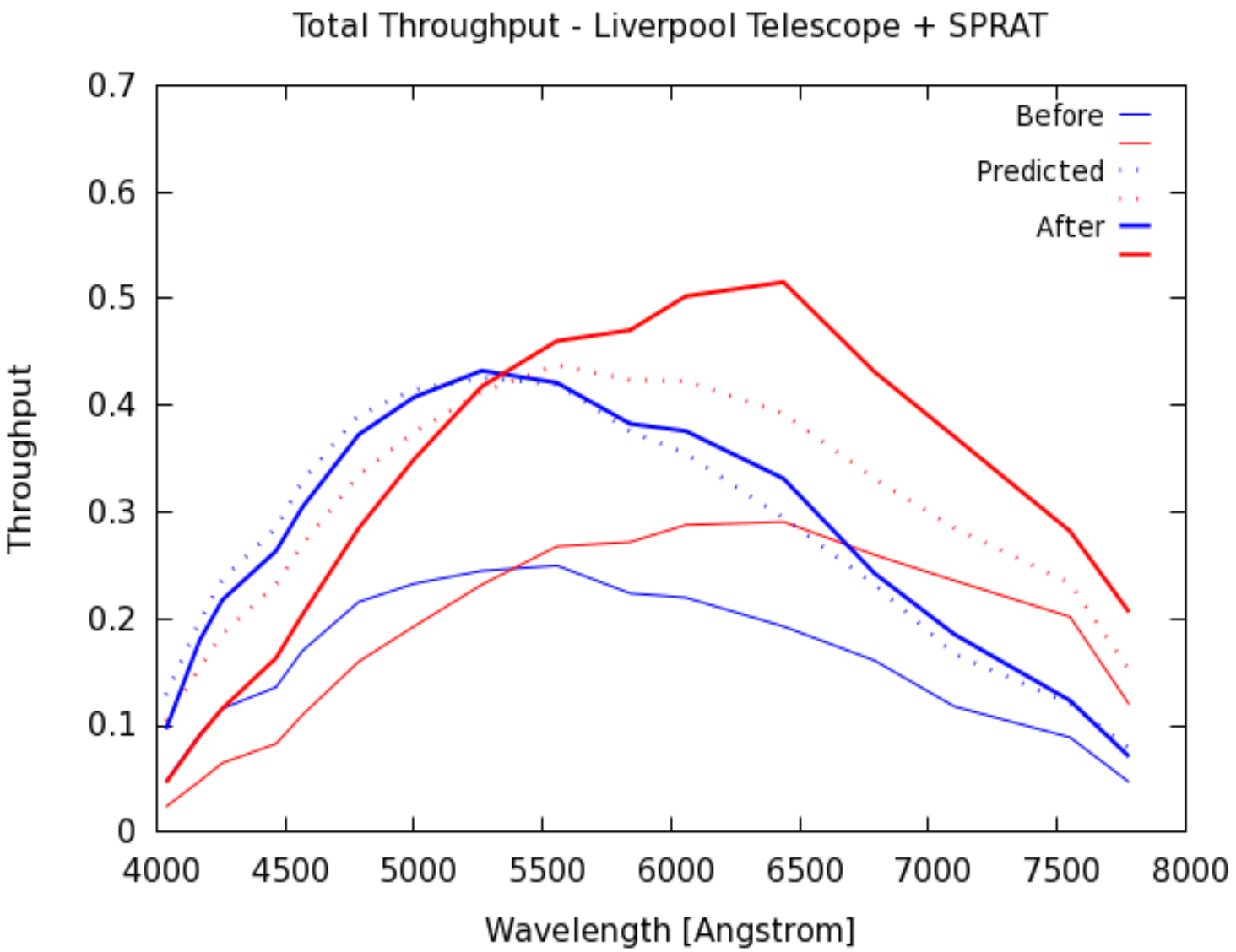


As measured 2015-04-01

Re-coating of LT primary and secondary completed 2015-06-31

Predicted increase based on throughput in 2006

Throughput



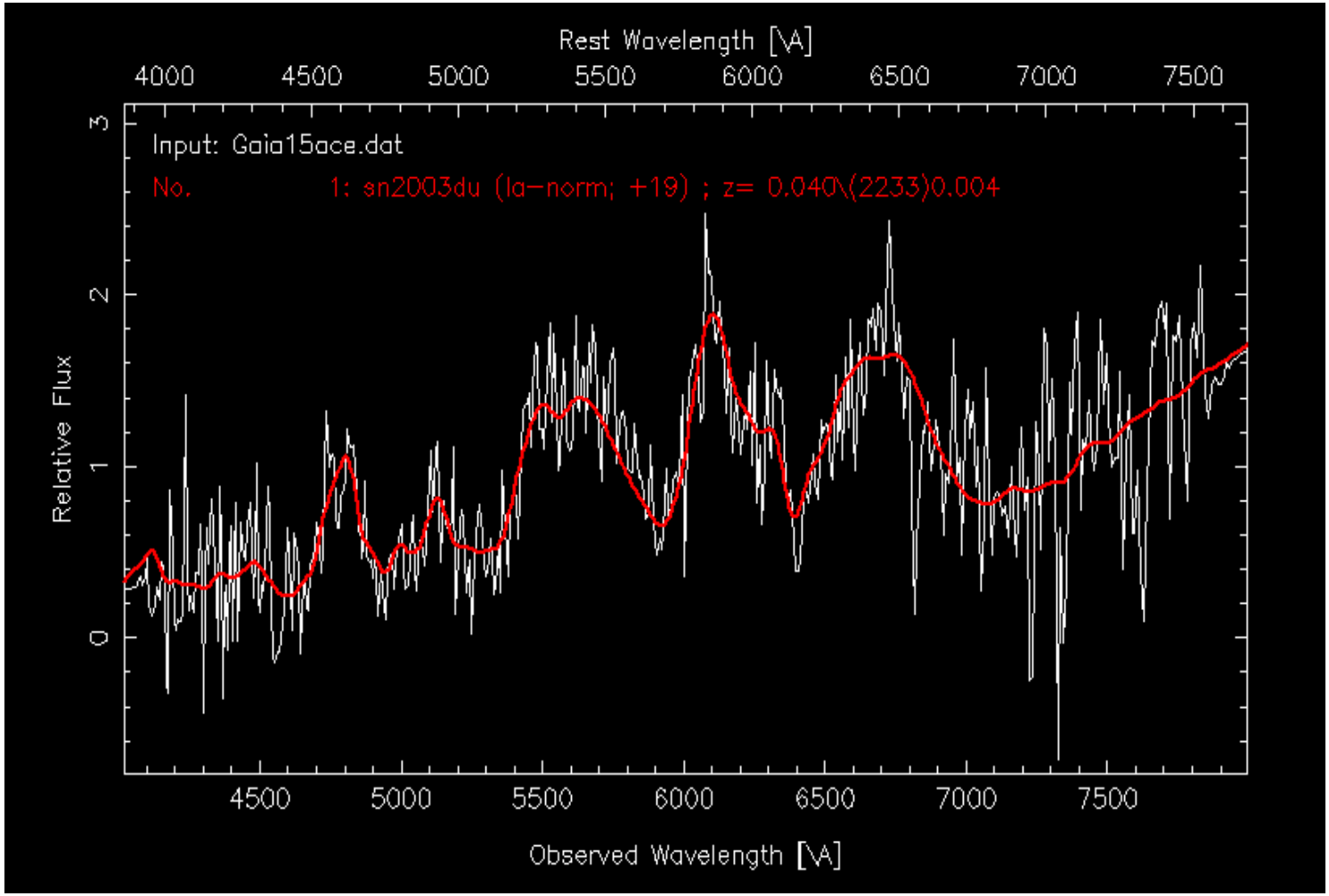
As measured 2015-04-01

Re-coating of LT primary and secondary completed 2015-06-31

Predicted increase based on throughput in 2006

Throughput as measured in 2015-07-03

Classification using SNID



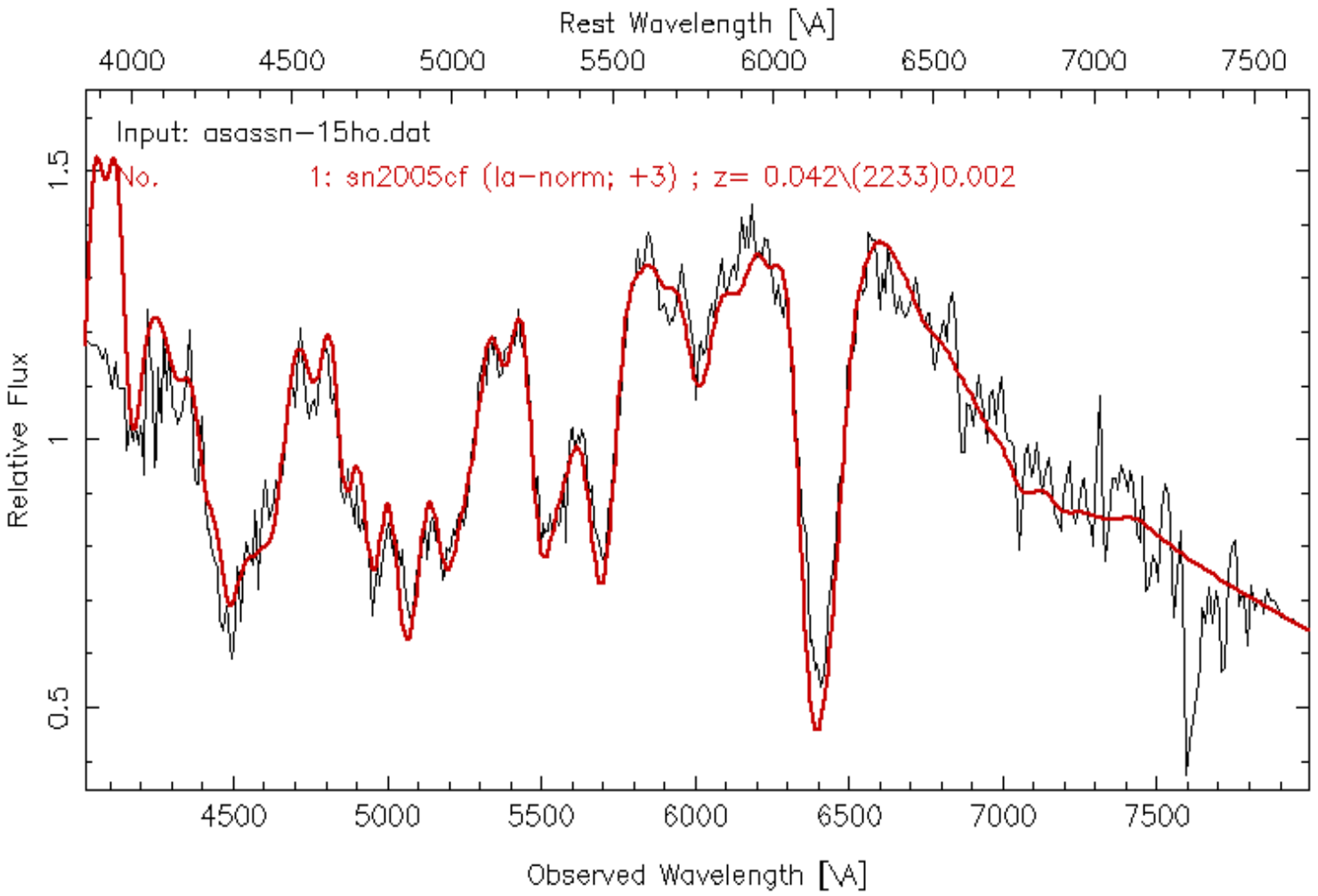
Gaia15ace
Obs. Lag = 14 days

Classification done with SNID (Blondin & Tonry)

Type SN Ia +19 days
(98% Probability)

Exposure = 500s
Mag = ~16.0
Overall SNR = ~5

Classification using SNID



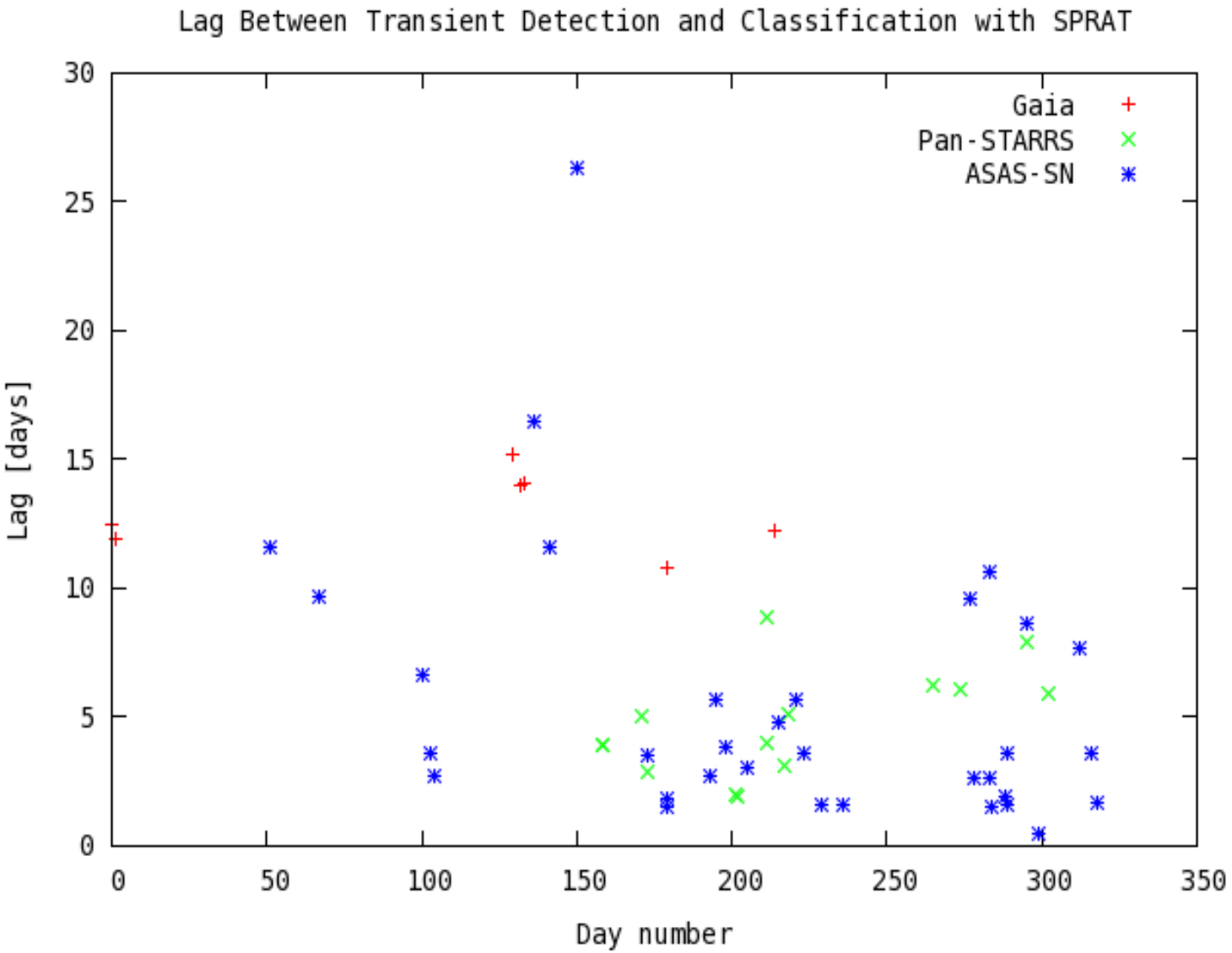
ASASSN-15ho
Obs. Lag = 3.8 days

Classification done with SNID (Blondin & Tonry)

Type SN Ia +3 days
(100% Probability)

Exposure = 600s
Mag = 17.0
Overall SNR = ~20

Classification Lag



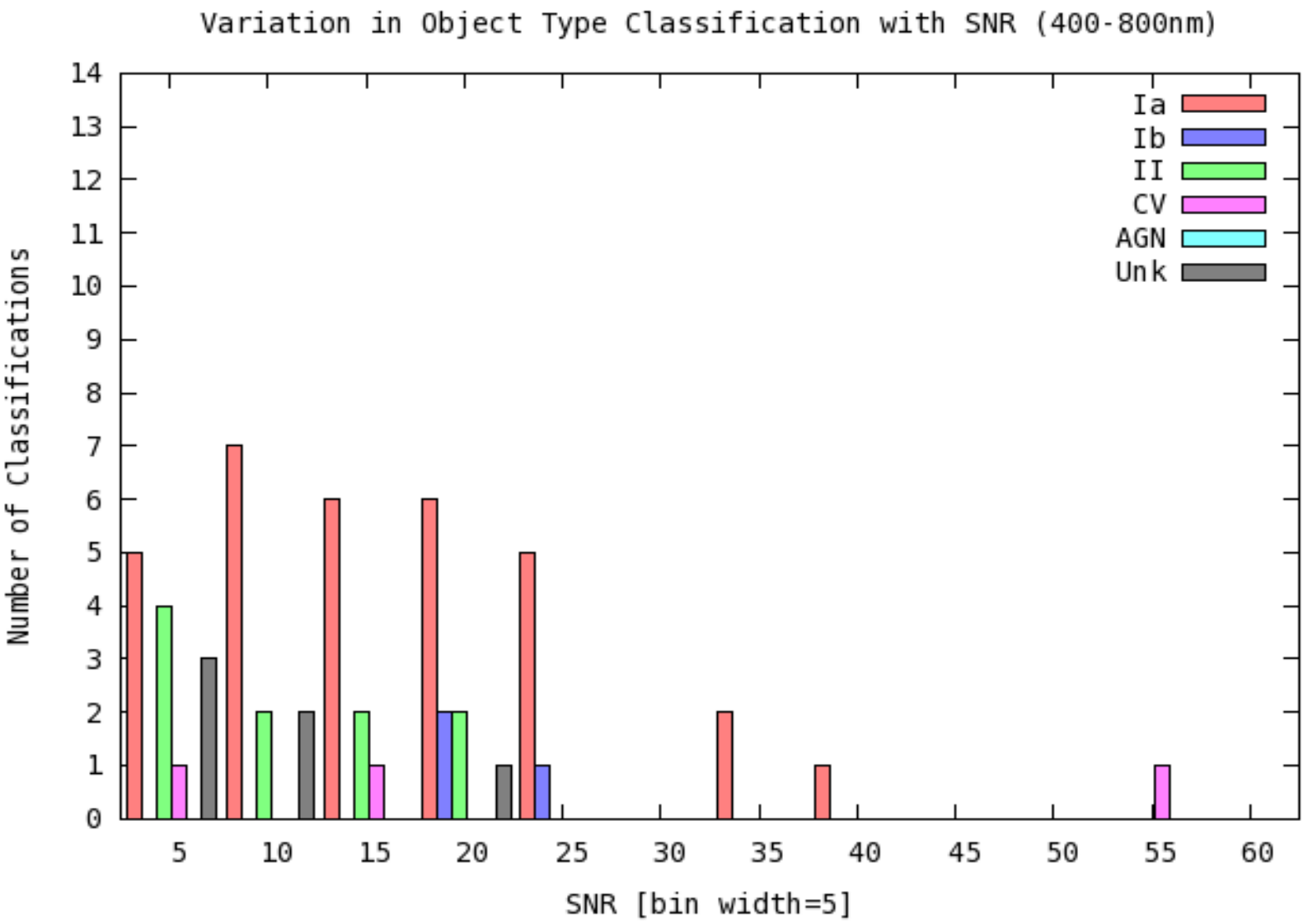
Median Delay Between First Detection and Obs.

Gaia
12.5 days

Pan-STARRS
4.5 days

ASAS-SN
3.6 days

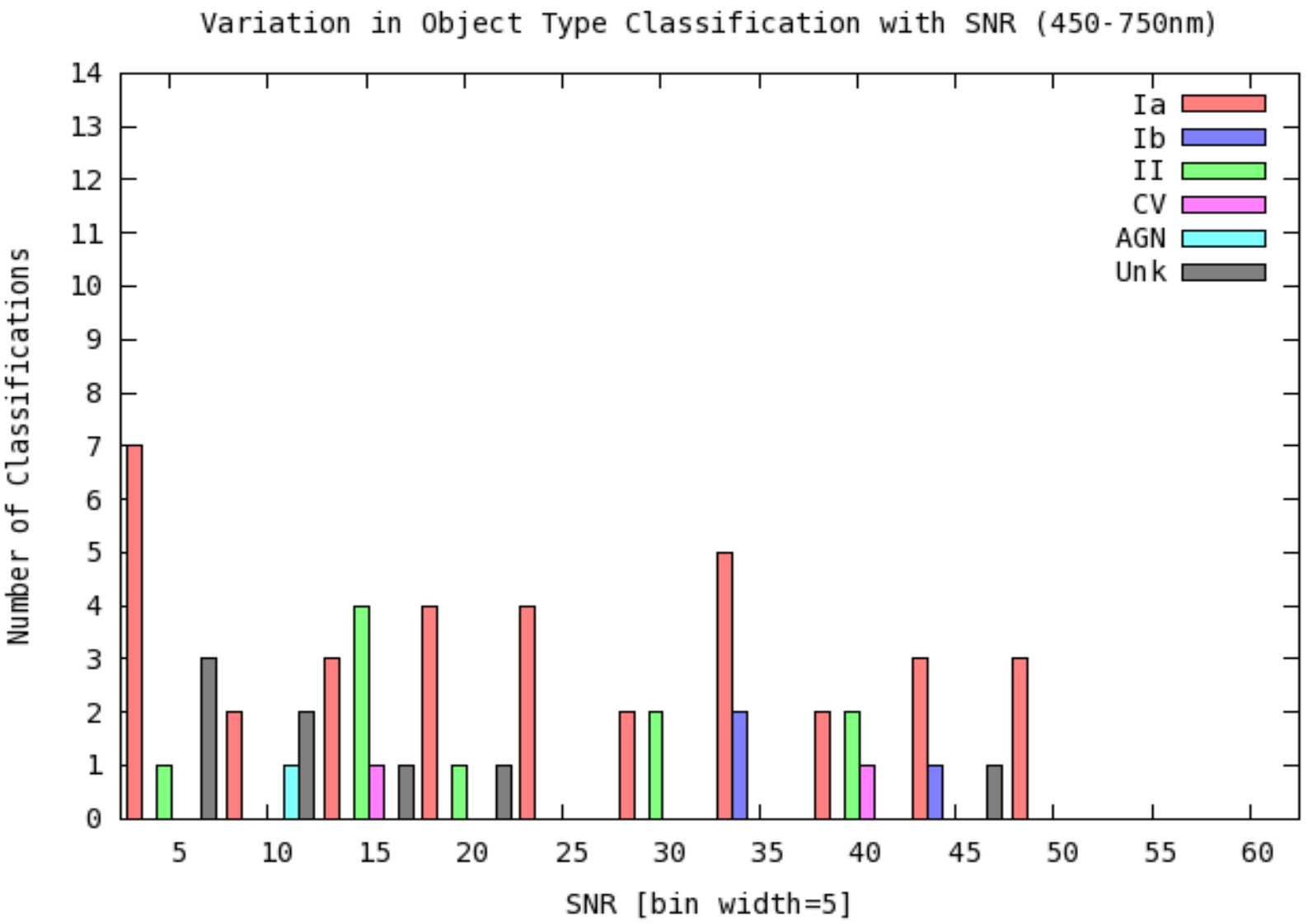
SNR & Object Classification



Full Wavelength Range

400-800 nm

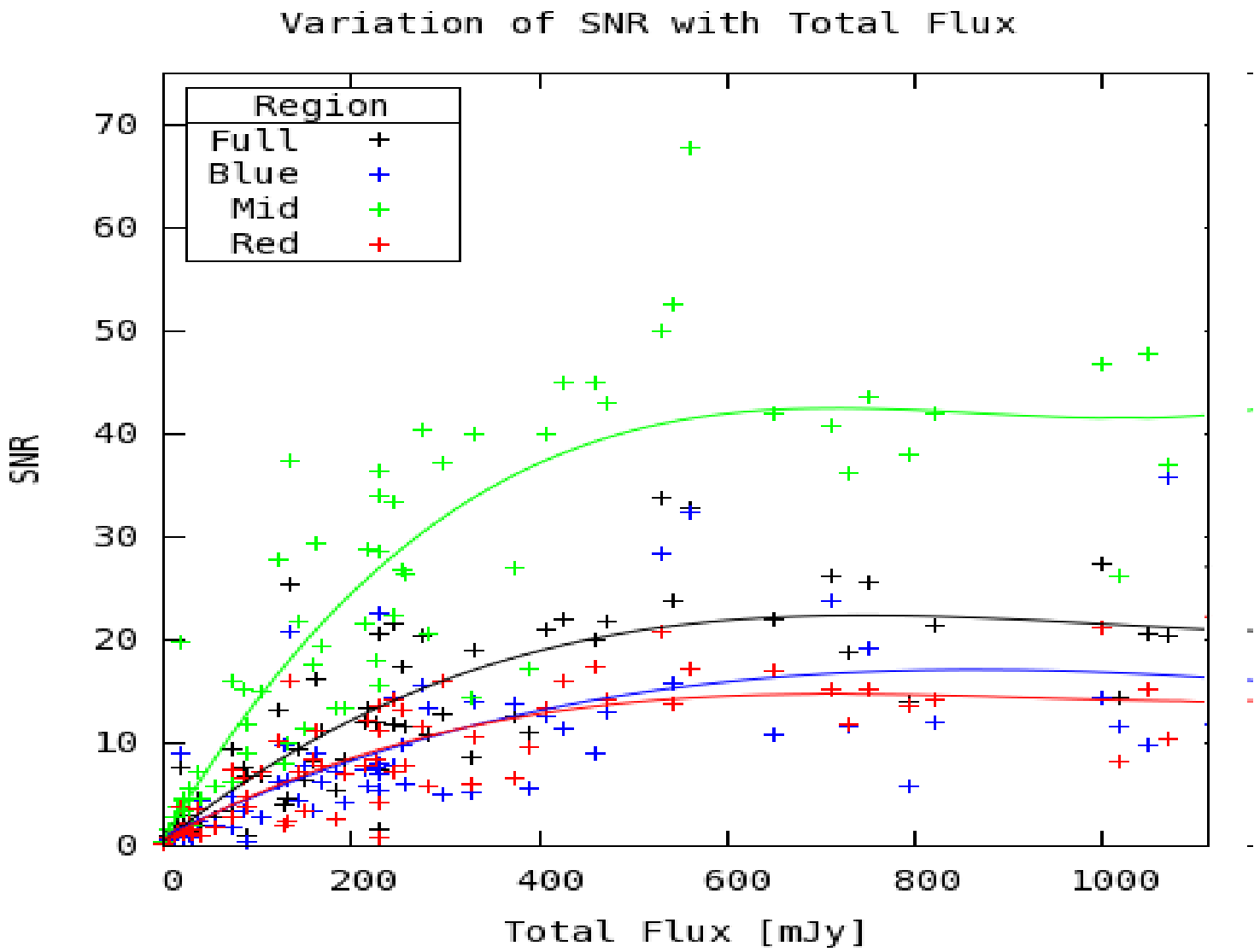
SNR & Object Classification



Reduced Wavelength Range

450-750 nm

SNR and Flux



Wavelength Ranges

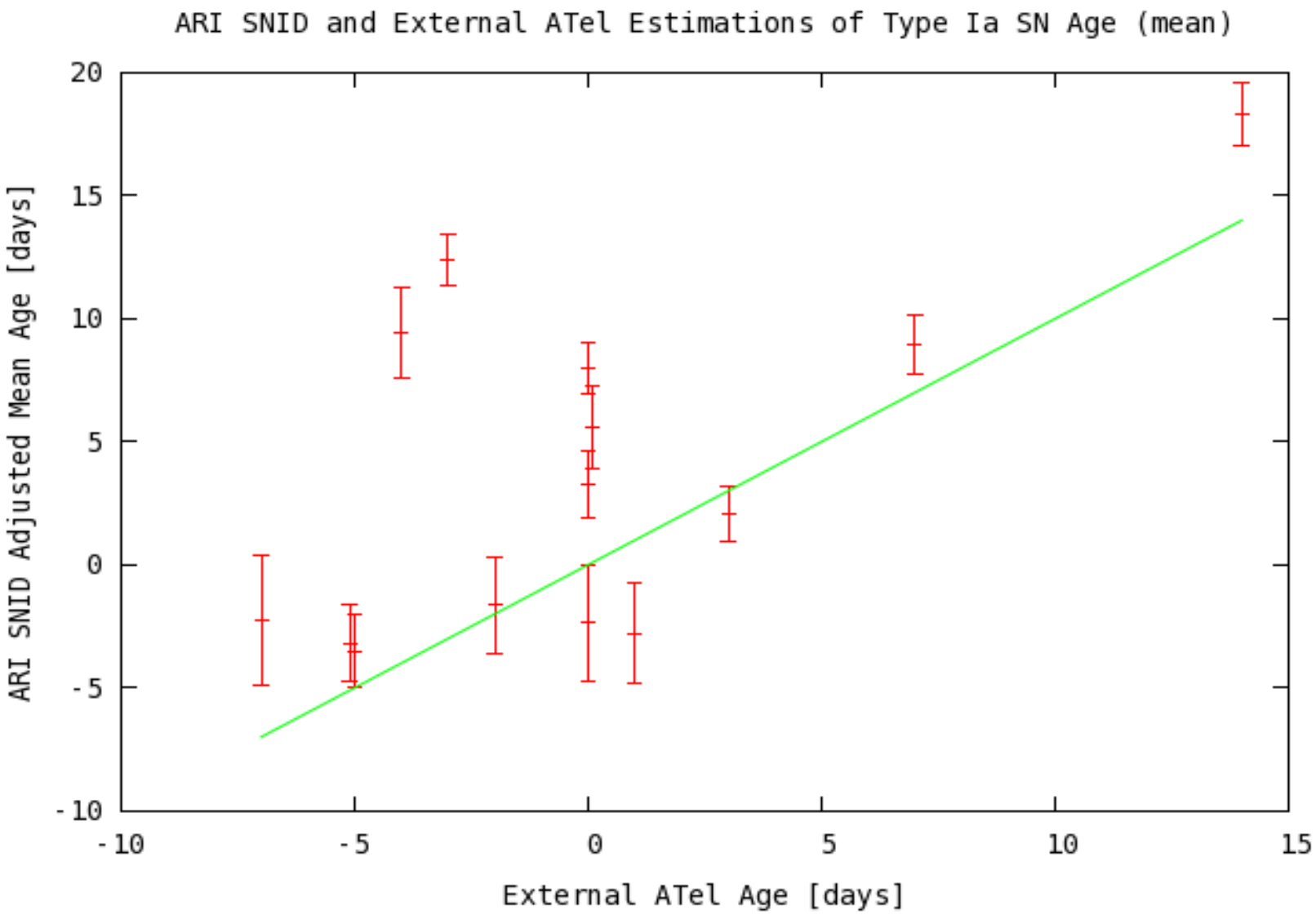
Full 400-800 nm

Mid 450-750 nm

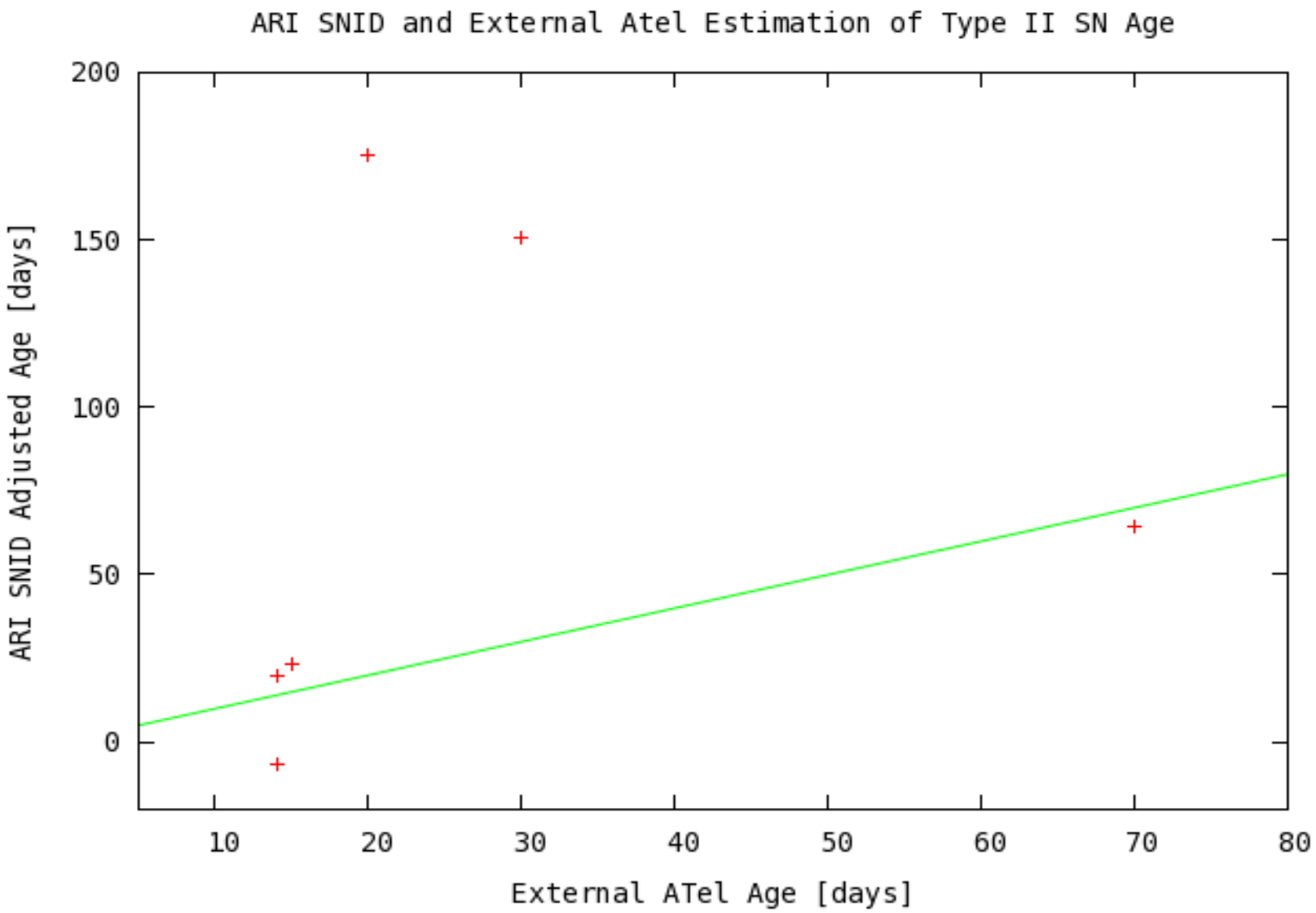
Blue 700-800 nm

Red 400-500 nm

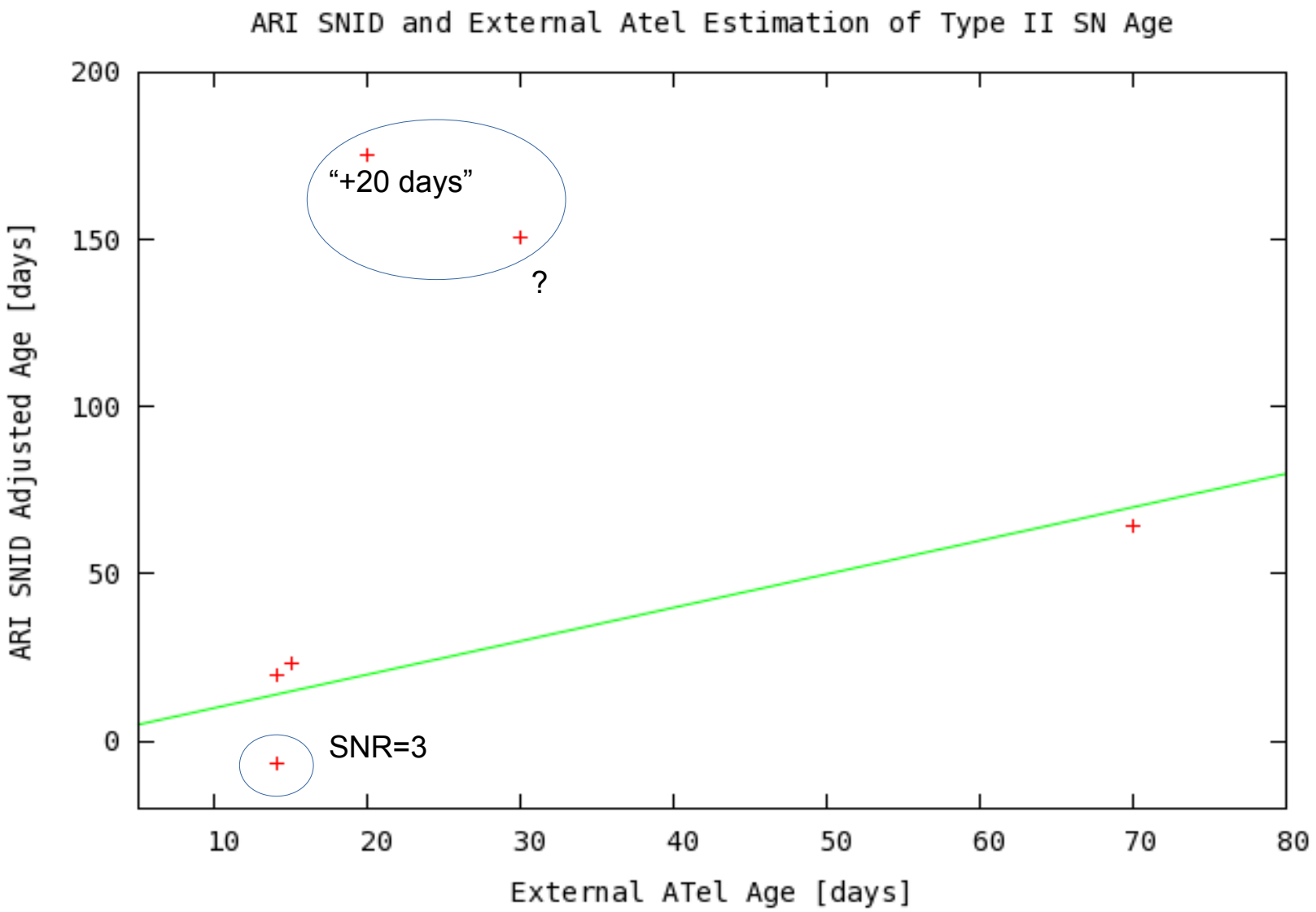
Type Ia Age Estimation



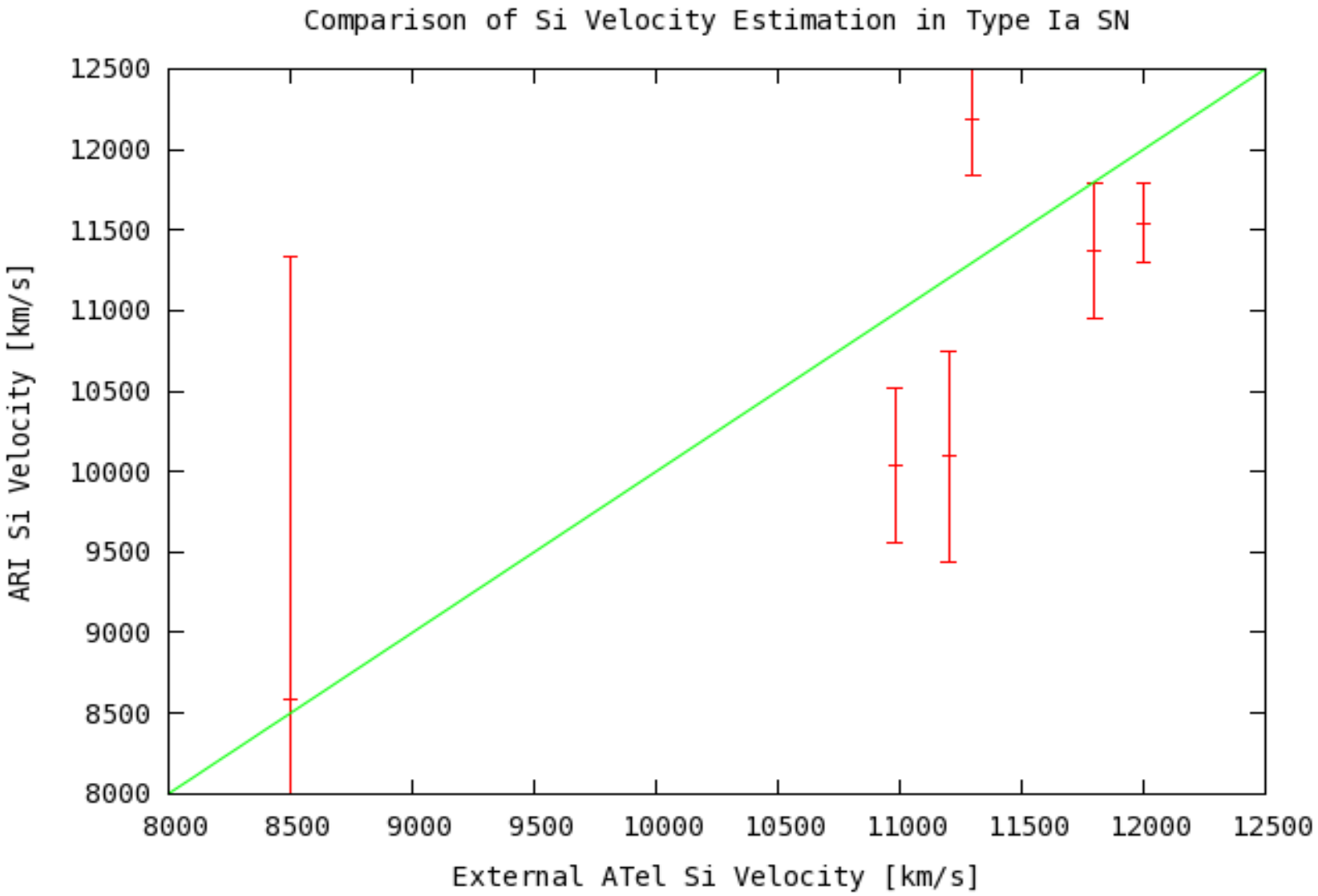
Type II Age Estimation



Type II Age Estimation

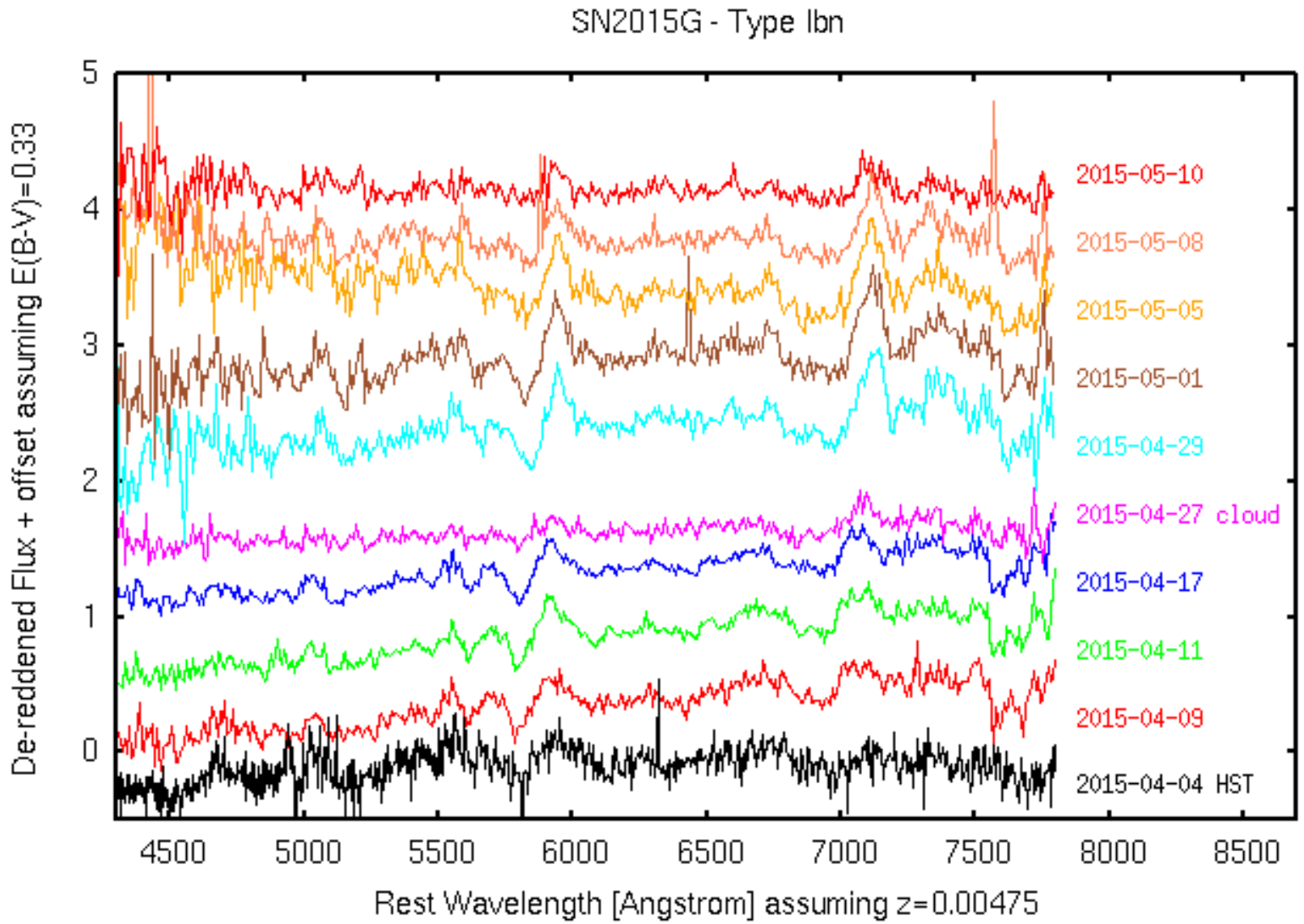


Si Velocity Comparison



Type Ia SN
Si Velocities

Follow Up - SN2015G



Disc. 2015-03-26
Host NGC 6951
[K. Shima]

Red mode

Exposure 1200 s
(3 x 400 s)

04-27 Exposure
Clouded ~400s

HST Exposure
Unknown

Observation Summary

Classification	
SN Ia	23
SN Ia-91T	3
SN Ia-91bg	2
SN Ib	2
SN II	10
CV	5
AGN	1
Unclassified	22
Total	68

14 SN classified at pre-max

Earliest Phase PS15ahs Ia -15 days

Fastest ASASSN-15ni CV ~12 hours