

Palomar Transient Factory

Peter Nugent (LBNL)

PTF (2009-2013)

- CFH12k camera on the Palomar Oschin Schmidt telescope
 - 7.8 sq deg field of view, 1" pixels
 - 60s exposures with 15-20s readout in r, g and H-alpha
 - Improvements to telescope (seeing, tracking, scheduling)
 - First light Nov. 24, 2008.
 - First useful science images on Jan 13th.
- 2 Cadences (Mar. - Nov.)
 - Nightly (35% of time) on nearby galaxies and clusters (g/r)
 - Every 5 nights (65% of time) on SDSS fields with minimum coverage of 2500 sq deg. (r) to 20th mag 10-sigma
 - H-alpha during bright time (full +/-2 days)

Nov-Feb, minute cadences on select fields.

PTF Science

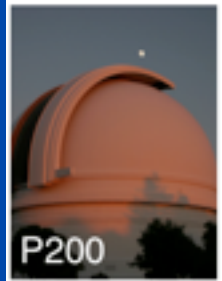
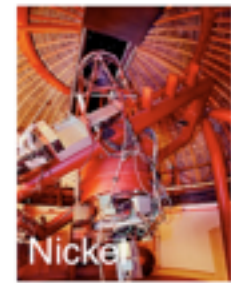
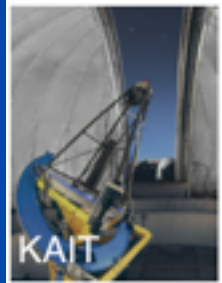
PTF Key Projects	
Various SNe	Dwarf novae
Transients in nearby galaxies	Core collapse SNe
RR Lyrae	Solar system objs
CVs	AGN
AM CVn	Blazars
Galactic dynamics	LIGO & Neutrino transients
Flare stars	Hostless transients
Nearby star kinematics	Orphan GRB afterglows
Rotation in clusters	Eclipsing stars and planets
Tidal events	H-alpha 1/2 sky survey

The power of PTF resides in its diverse science goals
and follow-up.

Paris-Berkeley

PTF Science

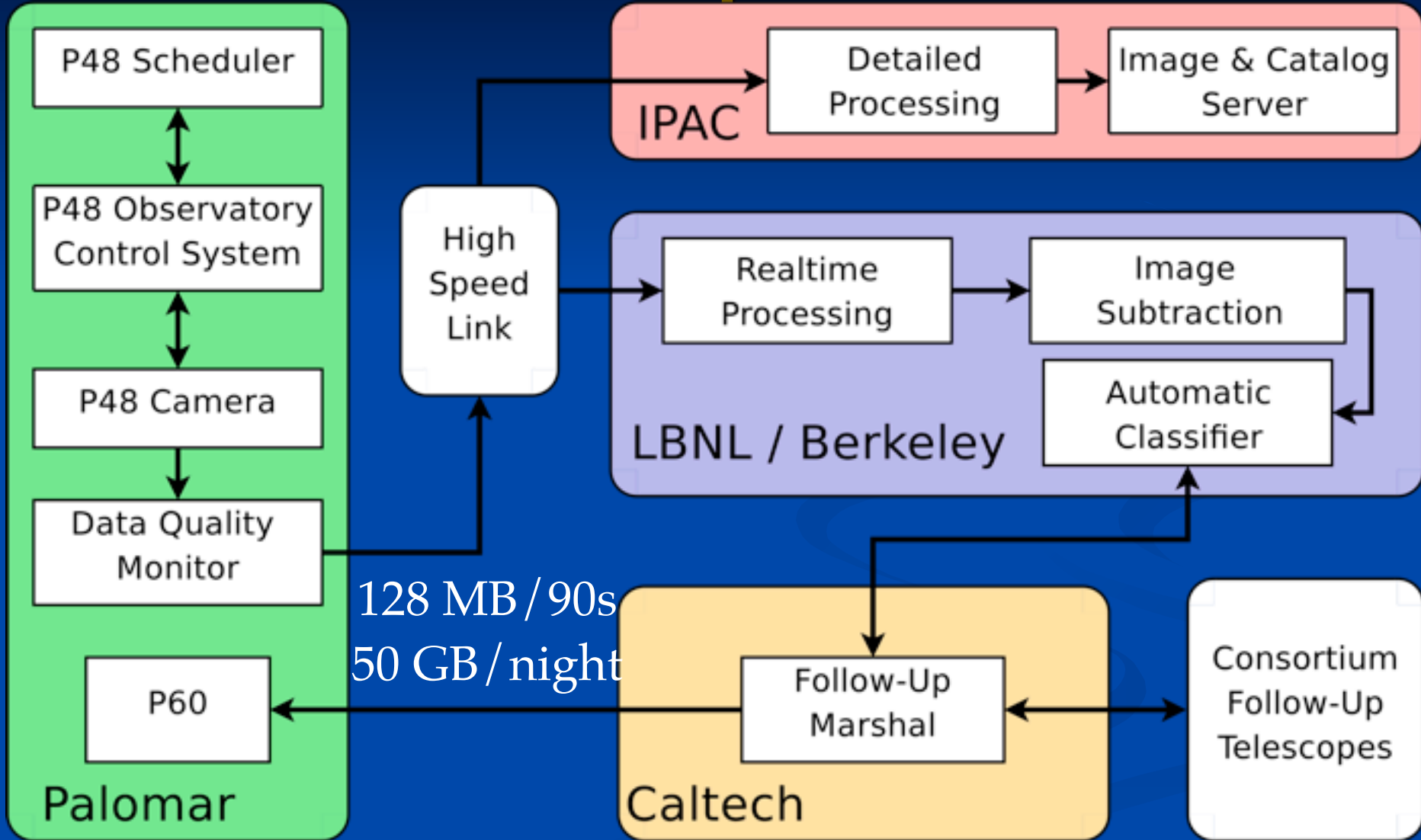
▼► Detected transients will be followed up using a wide variety of optical and IR, photometric and spectroscopic followup facilities.



The power of PTF resides in its diverse science goals and follow-up.

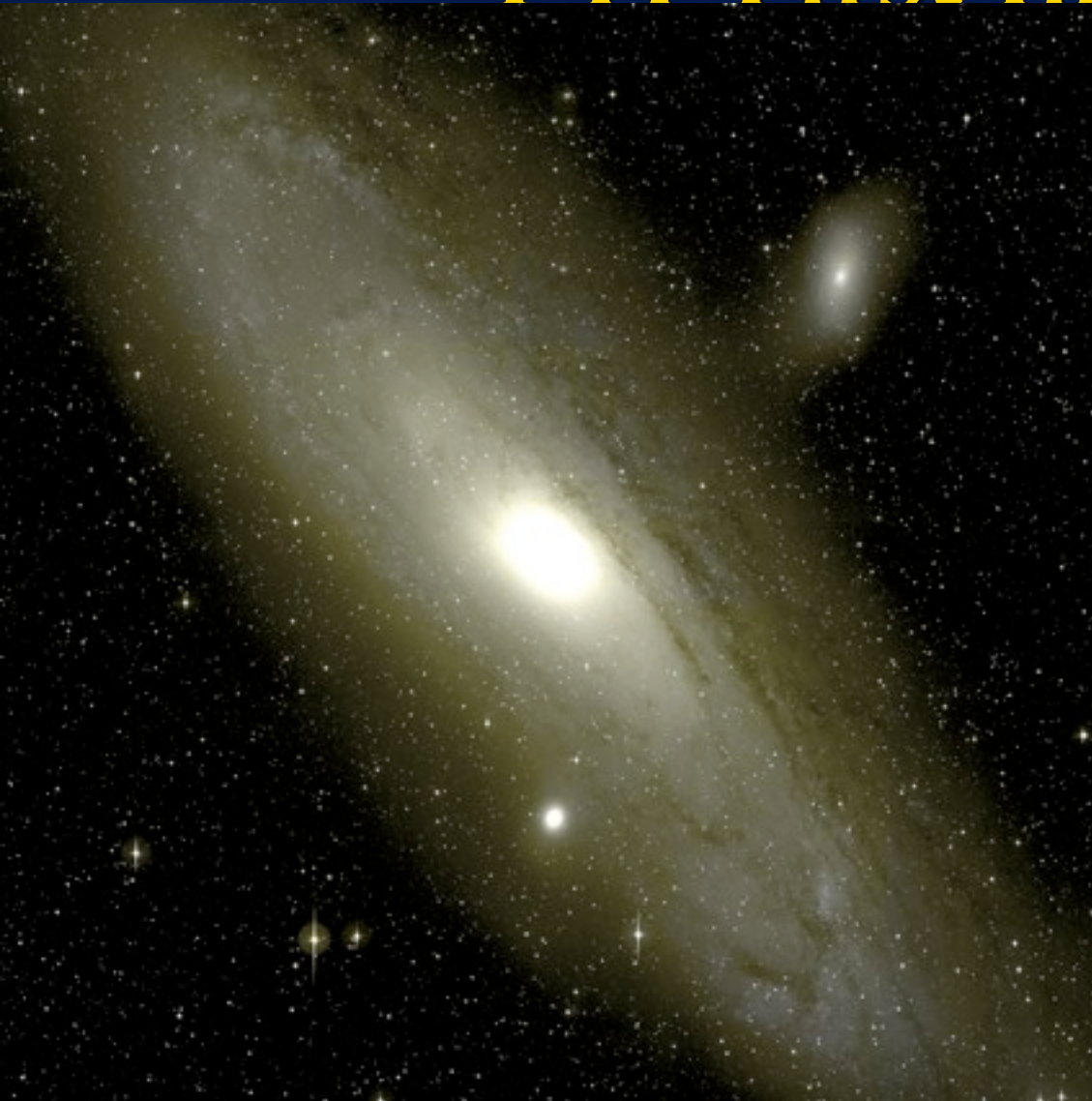
Paris-Berkeley

PTF Pipeline



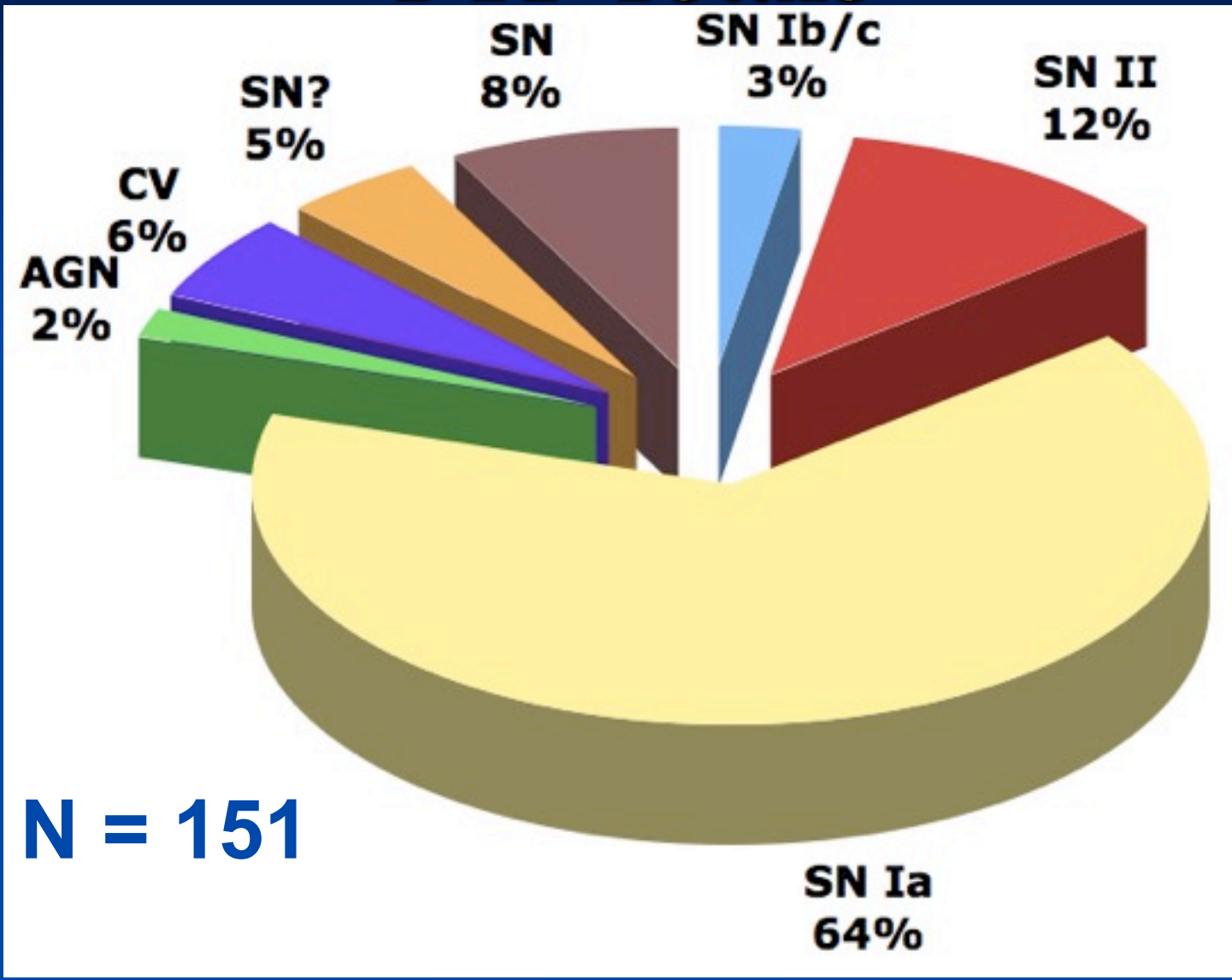
128 MB / 90s
50 GB / night

PTF First Images

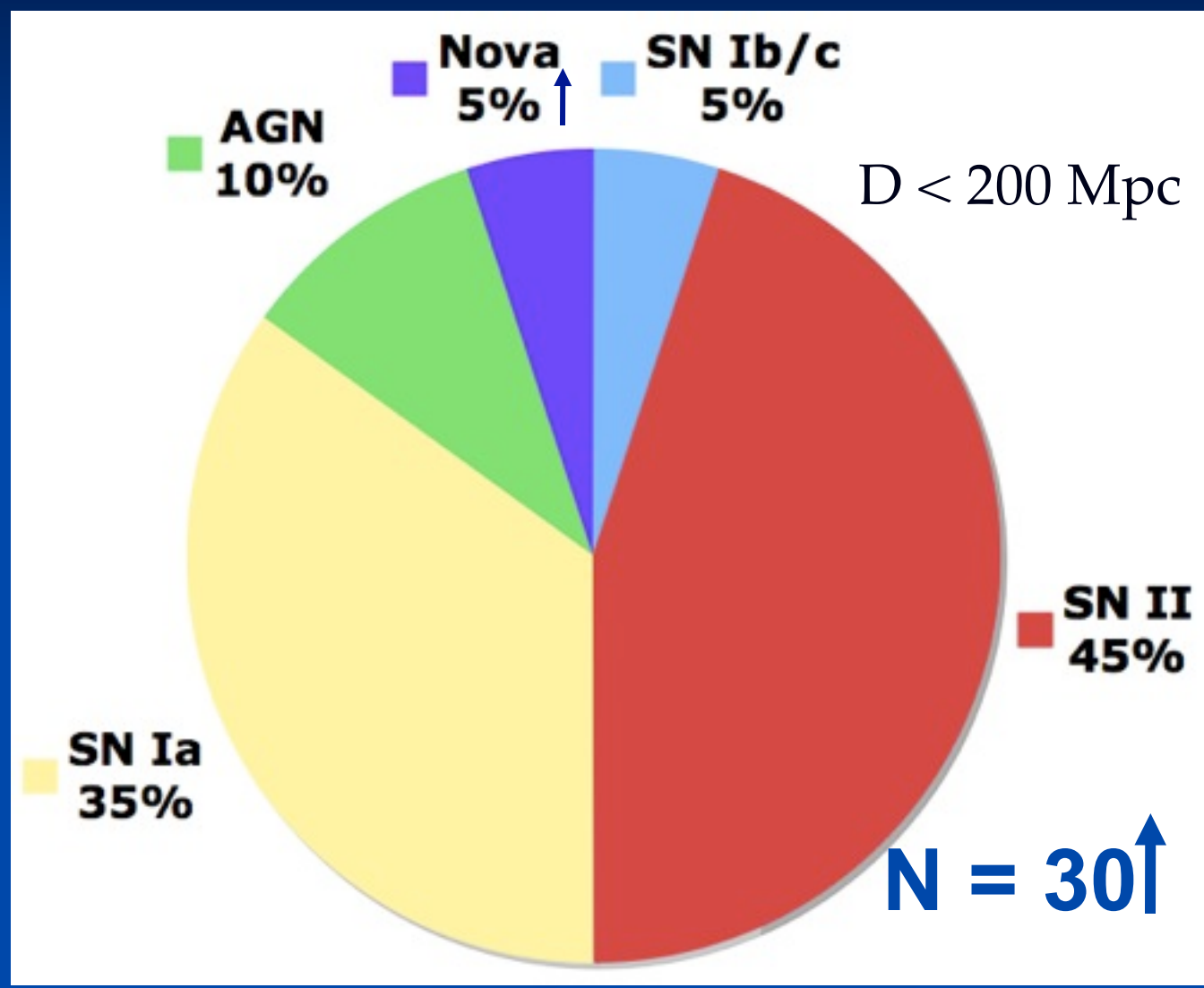


M31 as seen from PTF in February 2009. 412 images went into making this co-add.

PTF Totals

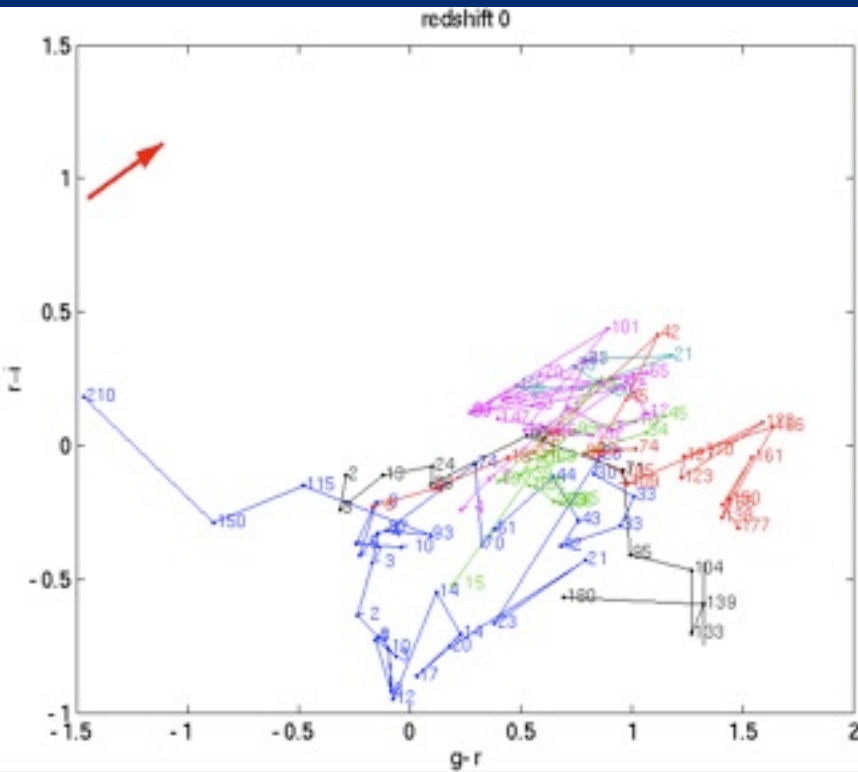


PTF Totals- Local Universe

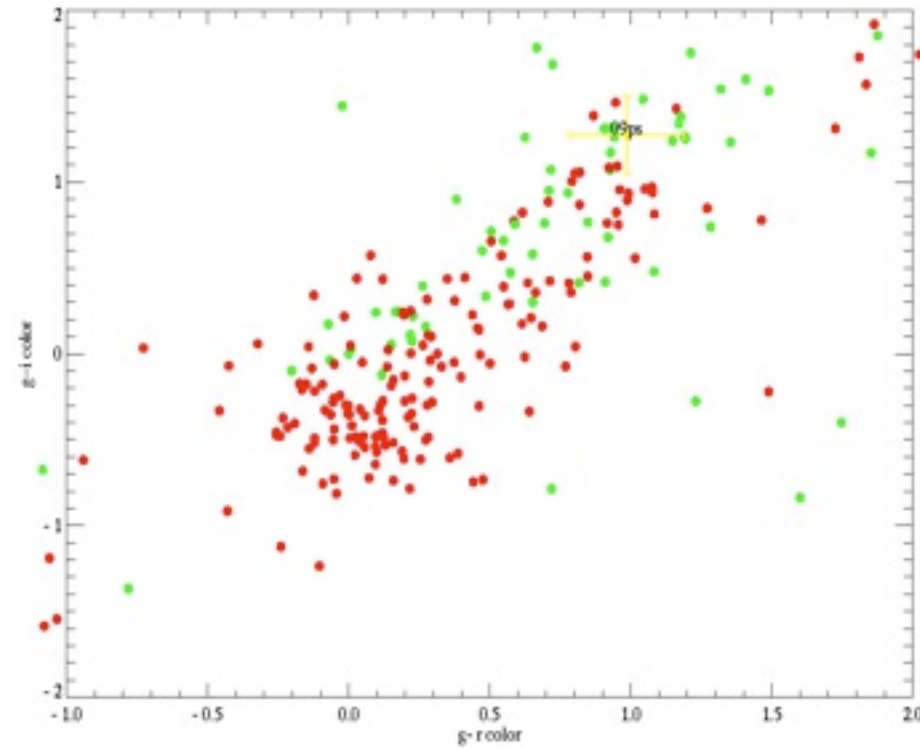


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P60 Follow-up

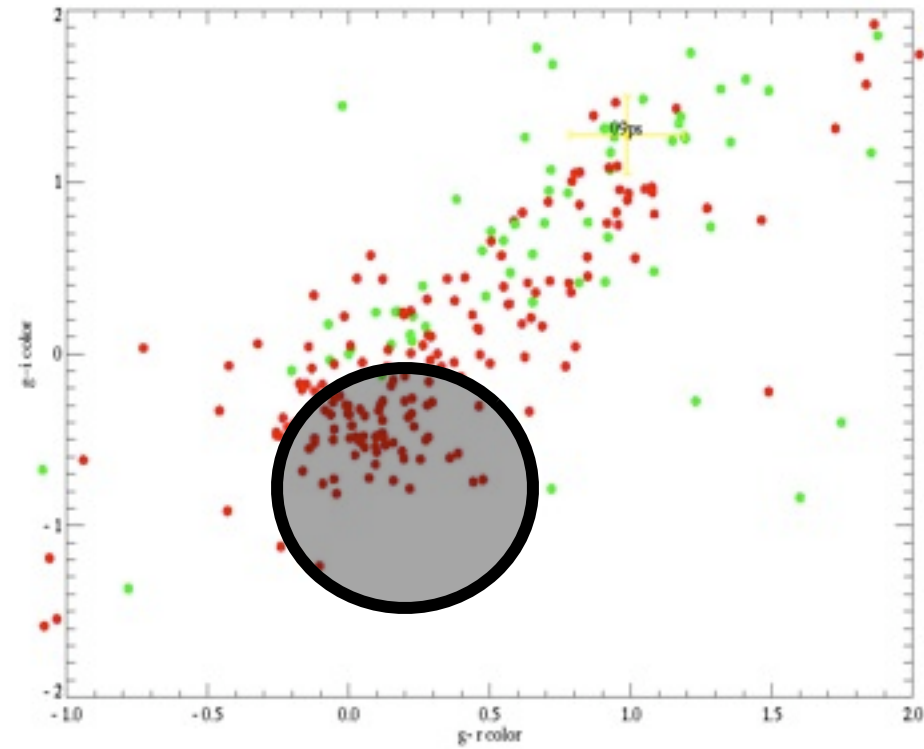
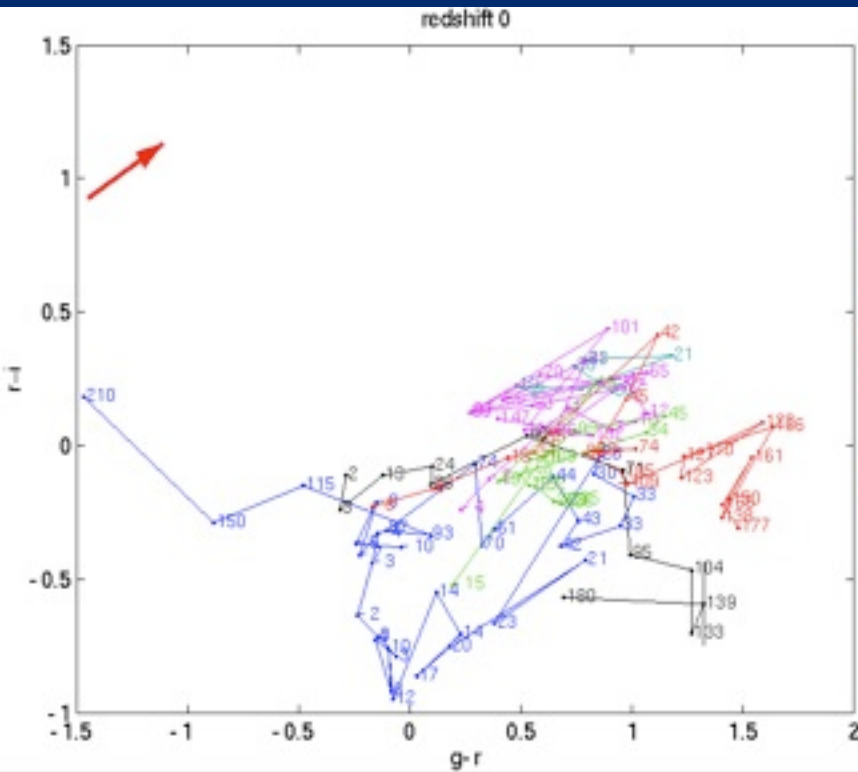


- la
- lb
- lc
- II-P
- II-n
- IIb



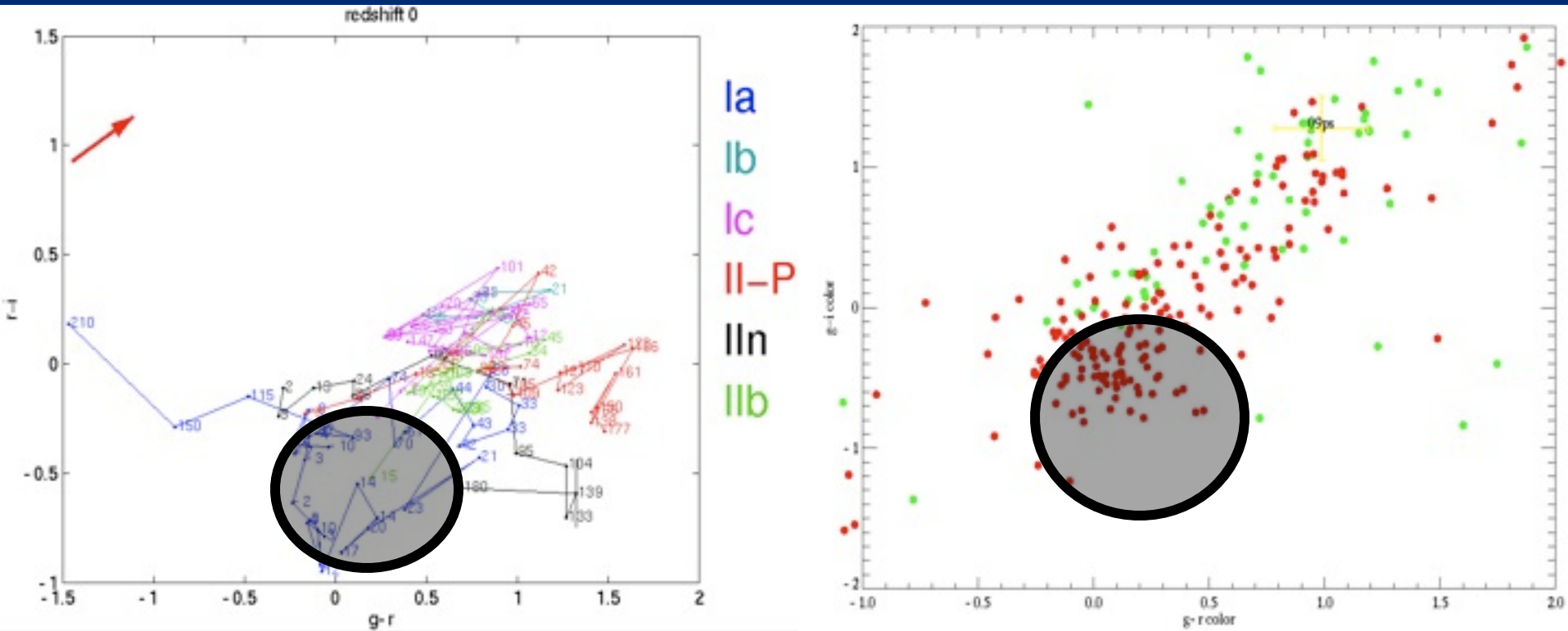
Likely Ia's : $g-r < 0.5$ and $r-i < -0.3$ and $g-i < -0.2$
 Flagged 10 out of 35 candidates on Jun 26 run

P60 Follow-up



Likely Ia's : $g-r < 0.5$ and $r-i < -0.3$ and $g-i < -0.2$
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P60 Follow-up



Likely Ia's : $g-r < 0.5$ and $r-i < -0.3$ and $g-i < -0.2$
 Flagged 10 out of 35 candidates on Jun 26 run

SN Ia Program

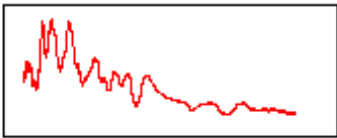
PTF09dsy

53.342100
-4.998677

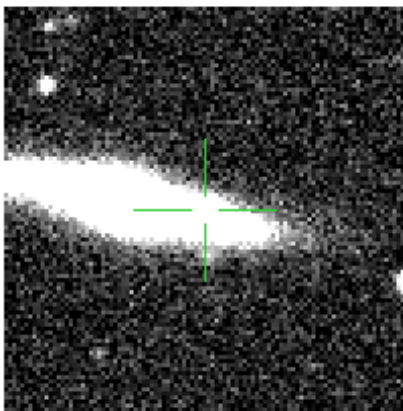
[Finding Chart](#)

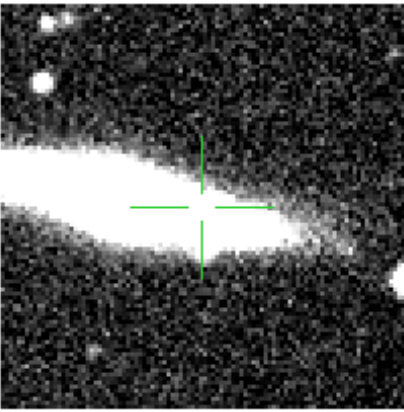
[Scanning Page](#)

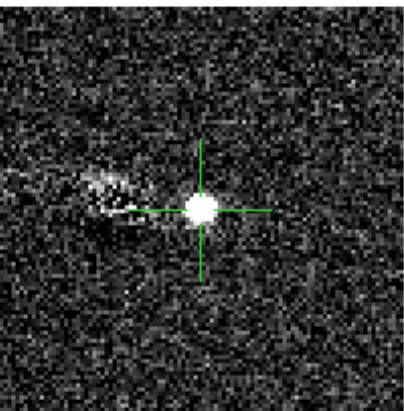
SN Ia




[spectroscopic follow-up](#) 1/1 done







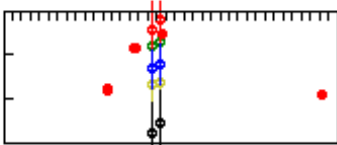
10" 

N

E W

S

r = 15.8 (3.9 d)



[photometric follow-up](#) 13/5000 done

[Check NED](#)

[Check SIMBAD](#)

[Get DSS Image](#)

[Check Skyview](#)

We have spectroscopically identified 97 SNe Ia in 2 months of searching. When we have rolled, we catch the SNe 2 weeks before peak brightness with $z < 0.08$.

SN Ia Program

PTF09dnp
 229.851529
 +49.498980

Finding Chart

Scanning Page

Check NED

Check SIMBAD

Get DSS Image

Check Skyview

SN Ia

no spec fup scheduled

r = 16.9 (10.1 d)

photometric follow-up 7/3000 done

We have spectroscopically identified 97 SNe Ia in 2 months of searching. When we have rolled, we catch the SNe 2 weeks before peak brightness with $z < 0.08$.

SN Ia Program

PTF09bai

230.098128
+26.424681

Finding Chart

Scanning Page

Check NED

Check SIMBAD

Get DSS Image

Check Skyview

SN Ia +58.4d

no spec fup scheduled

r >20.7 (49.0 d)

photometric follow-up 3/3 done

We have spectroscopically identified 97 SNe Ia in 2 months of searching. When we have rolled, we catch the SNe 2 weeks before peak brightness with $z < 0.08$.

SN Ia Program

PTF09awt

236.761734
+40.689086

Finding Chart

Scanning Page

Check NED

Check SIMBAD

Get DSS Image

Check Skyview

SN Ia +63.4d

no spec fup scheduled

r = 19.1 (36.1 d)

photometric follow-up 5/3 done

We have spectroscopically identified 97 SNe Ia in 2 months of searching. When we have rolled, we catch the SNe 2 weeks before peak brightness with $z < 0.08$.

Conclusions - Future

[[Previous](#) | [Next](#) | [ADS](#)]

3 New Supernova Discoveries/Classifications

ATel #2174; [Peter Nugent \(Lawrence Berkeley National Laboratory\)](#), [Mark Sullivan \(University of Oxford\)](#) & [D. Andrew Howell \(LCOGT\)](#)

on 25 Aug 2009; 12:48 UT

Distributed as an Instant Email Notice (Supernovae)
 Password Certification: Peter Nugent (penugent@lbl.gov)

Subjects: Optical, Request for Observations

The Type Ia supernova science working group of the Palomar Transient Factory (ATEL#1964) reports the discovery of three nearby supernova. Confirmation spectra were taken on the Double Beam Spectrograph on the Palomar Hale telescope on August 19 UT by R. Ellis and J. Cooke. Classification of the spectra were carried out using Superfit (Howell et al. 2005). As all three are quite young, STIS/UV spectroscopic observations on the Hubble Space Telescope were triggered by the ToO program "Verifying the Utility of Type Ia Supernovae as Cosmological Probes: Evolution and Dispersion in the Ultraviolet Spectra" (PI: R. Ellis). We strongly encourage additional follow-up of these sources at all wavelengths.

Name	RA	Dec	z	phase	disc	mag (R-band)
PTF09dn1	17:23:41.804	+30:29:49.5	0.03	-15	Aug 17.3	18.5
PTF09dlc	21:46:30.103	+06:25:09.2	0.07	-11	Aug 17.3	19.2
PTF09dnp	15:19:24.432	+49:29:56.4	0.04	-10	Aug 18.2	17.6

Related

- 2174 [3 New Supernova Discoveries/Classifications](#)
- 2067 [Erratum to ATel#2055](#)
- 2055 [Palomar Transient Factory : Discovery, Photometric and Spectroscopic Follow Up Of Fifteen Optical Transients](#)
- 2043 [Confirmation of CRTS Supernovae](#)
- 2037 [Palomar Transient Factory Discovers a Possible super-Chandrasekhar Type Ia Supernova](#)
- 2009 [Confirmation of CRTS Supernovae in Intrinsically Faint Galaxies](#)
- 2006 [Erratum to ATel #2005](#)
- 2005 [Palomar Transient Factory: Discovery and Follow-Up of 25 Transients](#)
- 1983 [Palomar Transient Factory Discovers and Classifies Eleven Optical Transients](#)
- 1964 [Supernova Discovery from the Palomar Transient Factory](#)
- 1212 [A second example of a Ia supernova associated with a super-Chandrasekhar mass white dwarf](#)

3 Incredibly early Type Ia supernovae sent to the Hubble Space telescope for UV spectra.