ZTFbh: AGN and TDE SWG

Who are we?

Suvi Gezari, UMd (coordinator), Matthew Graham, Caltech (deputy coordinator)

Nadia Blagorodnova, Caltech
Tiara Hung, UMd
Sara Frederick, UMd
Scott Anderson UW
Charlotte Ward, UMd
Shri Kulkarni, Caltech
Peter Nugent, LBNL
Tom Barlow, Caltech
Brad Cenko, GSFC
Sjoert van Velzen, UMd
Lin Yan, Caltech
Po-Chieh Yu, NCU
Zeljko Ivezic, UW
Robert Stein, DESY
David Shupe, Caltech/IPAC
Nathaniel Roth, UMd and GSFC
Daniel Stern, Caltech/JPL

ZTFbh SWG Dinner @ Daisy Mint
March 19, 2018

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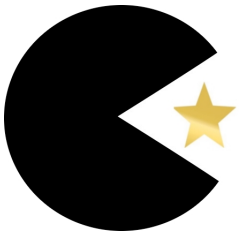

What are we interested in?

Nuclear Transients (< 0.8 arcsec from host galaxy center):

- variable active galactic nuclei
- changing-look quasars
- tidal disruption events
- supermassive black holes (binary, recoiling, intermediate-mass)

Separation determined from iPTF.
Might be smaller for ZTF.

What tools do we use?

GROWTH Marshal (commenting, aggregating follow-up, triggering SEDm)

AMPEL channels (filtering, cross-matching with catalogs, pushing into Marshal)

Light-curve classification, host galaxy characterization, spectroscopic classification

How can you find us?

weekly telecon: Wednesday at 2:30pm Eastern

ztfbh.slack.com

ztfbh@lists.astro.caltech.edu

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Approved follow-up programs:

SEDm (PI: Tiara Hung):

- spectroscopic follow-up of **blue** (g-r < 0) *nuclear* (distnr < 0.8" of galaxy host) **bright** (r < 19 mag) transients
- expect 5 SEDm triggers per week
- expect 6 bonafide TDEs per year
- SEDm confirmed TDEs to be followed-up with panchromatic observations from HST, Gemini, XMM, VLA, Spitzer, Swift

HST (PI: Brad Cenko)

70 orbits of STIS UV spectroscopy of 5 UV-bright TDEs
Includes 2 nights of Gemini optical spectroscopy

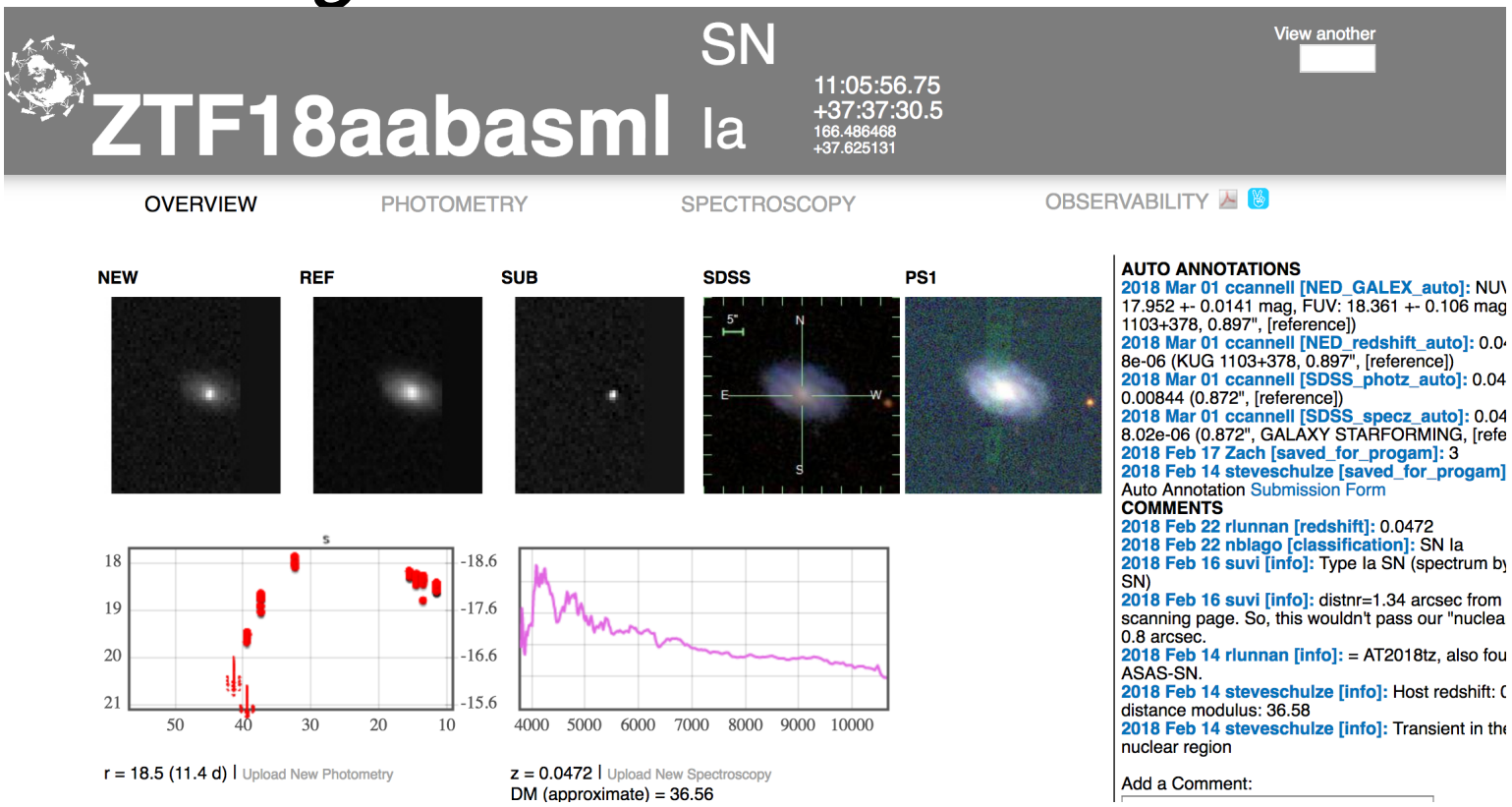
XMM (PI: Suvi Gezari)

108 ks fo XMM X-ray imaging for 2-6 TDEs discovered pre-peak

VLA (PI: Sjoert van Velzen)

32 hours of VLA radio follow-up of 7 TDEs

Story of ZTF18aabasml



- Transient alert saved to ZTF Science Validation program on 2018 Feb 14
- Star-forming host galaxy at z=0.0472
- Commented by human (Steve Schulze) as “nuclear”
- Bright enough for SEDm (but follow-up request button on Marshal broken)
- Realized distnr = 1.34 arcsec (not nuclear according to our cut!)
- Classified by ASAS-SN as a Type Ia SN on 2018 Feb 16
- Confirmed as a Type Ia SN by SEDm on 2018 Feb 21
- In the end, we wouldn’t have considered a TDE candidate.

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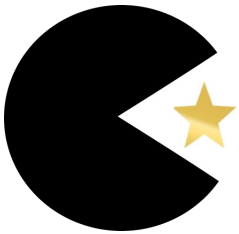

GROWTH Marshal wish list:

- add a histogram of distnr values from all the alert packets to the Marshal page.
- manually add new sources to the Marshal, including the light curve, by uploading an .avro package (or via the ZTF name, but .avro uploads should be more easy to implement?).
- automatically push new sources to the Marshal by supplying .avro or .json data (ie, from an Ampel T3 module).
- have a way to link to the scanning page view of the alert packets for a scanned transient.
- be able to add a saved transient to a science program from the Marshal page.
- have information on the number of alerts generated ingested in a night and how many got through your filter.
- indicate (or remove) photometry from Ref-Science (ie, isdiffposs=0); update: looks like this is fixed for more recent alerts.
- option to classify a source without uploading a spectrum (eg, spectroscopic AGN from SDSS). Note, we can also do this by uploading new info in list_program_sources.cgi, which is the preferred method for bulk annotations.
- import SDSS (host) spectrum automatically
- show SDSS (or PS1 if outside footprint) thumb in Program Reports. This makes it easier to identify your fav transient (perhaps safe the thumb image instead of reloading each time).
- add button that links to the ASASSN light curve tool, https://asas-sn.osu.edu/?days=300&declination=99.9&ra=99.9

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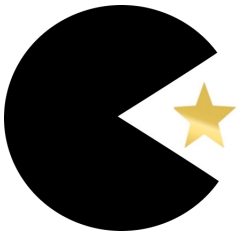

SWG Progress and Future Plans:

- GROWTH Marshal filter is working (but need more data, and better star/gal separation, g-r)
- AMPEL channels being developed (but need ability to push into Marshal)
- Excited to start seriously searching for TDEs and AGNs, but note that we will find SNe too, so cross-SWG communication is important.
- Don't forget to include our SWG (ztfbh) in any correspondence on GROWTH Marshal, AMPEL, or transient alerts.