

TNS, WISeREP, AstroNotes & ZTF



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NEW



AstroNotes



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What is the Transient Name Server

<https://wis-tns.weizmann.ac.il>



- The TNS was set up by the IAU in order to provide a modern, automatic mechanism to archive and distribute alerts about transients, replacing the manual defunct CBAT system.
- Started operating on Jan 2016 and has since distributed and archived ~25,000 transients.
- The system supports discovery reports as well as classification reports, officially indexed by the ADS and citable.
- Most classified transients are supernovae, but there are also TDEs, AGN flares, novae and (at least) one Kilonova...
- All large professional surveys currently report to the TNS (Pan-Starrs, ATLAS, ASAS-SN, CRTS, Gaia, ZTF...) , mostly via robots (APIs). This enables a rapid distribution of information to the community with negligible delay (no person in the loop).
- Amateur astronomers also report and read TNS reports.
- Many large follow-up groups (e.g., PESSTO) automatically ingest TNS alerts and also post classification reports to the TNS.
- Implementation of *External Catalogs* (K2 – campaigns finished, TESS – currently active), notifying users on coincidences.
- The system is designed to ingest the LSST streams (high capacity) and to be online ~100% of the time

TNS Usage/Statistics

<https://wis-tns.weizmann.ac.il/stats-maps>

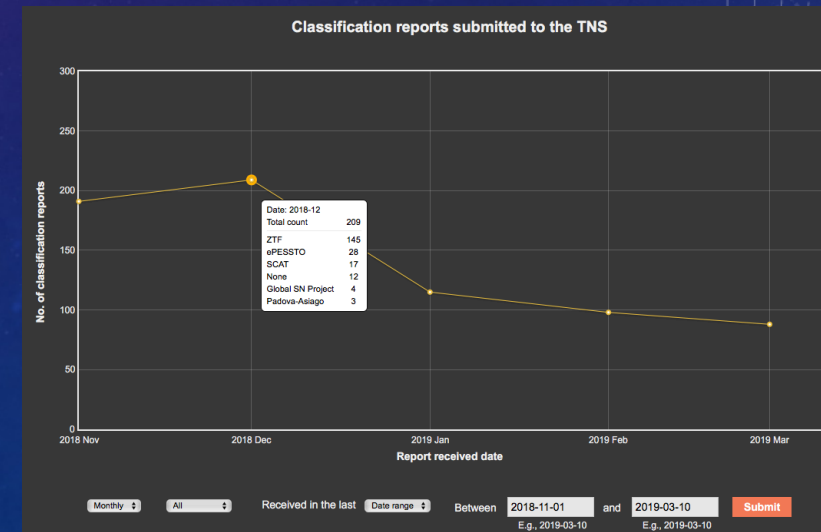
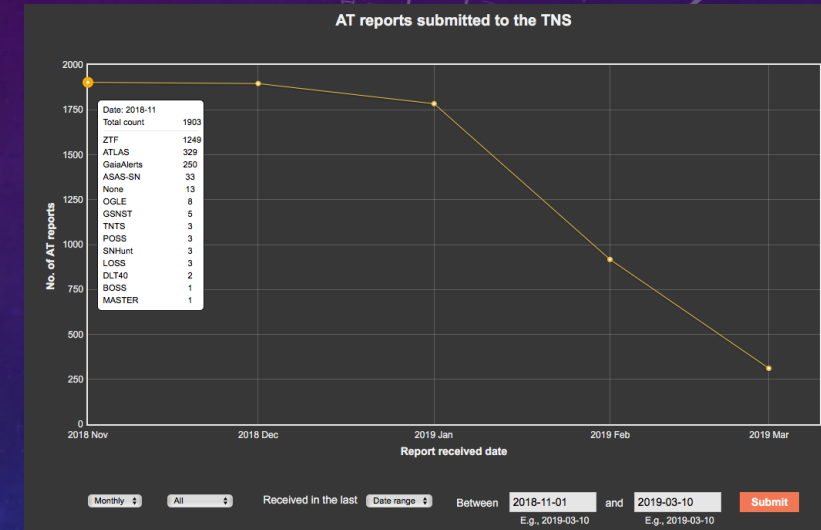


ALL transients reported since Jan 1, 2016	24867		PUBLIC classified SNe by type	
PUBLIC transients reported since Jan 1, 2016	24810		SN Ia	1870
PUBLIC transients for the top 5 contributing groups			SN II	412
	Pan-STARRS1	9706	SN IIP	99
	GaiaAlerts	5862	SN Ia-91T-like	90
	ATLAS	3048	SN Ic	78
	ZTF	2553	SN IIn	69
	iPTF	1577	SN IIb	50
			SN Ib	38
PUBLIC classified SNe reported since Jan 1, 2016	2888		SN Ia-91bg-like	33
PUBLIC classified SNe for the top 5 contributing groups			SN Ic-BL	24
	ATLAS	728	SLSN-I	21
	ZTF	562	SN Ia-pec	21
	ASAS-SN	521	SN Ib/c	17
	GaiaAlerts	326	SN I	13
	Pan-STARRS1	211	SN	11
			SLSN-II	8
ALL spectra reported to the TNS	3623		SN Ibn	8
PUBLIC spectra reported to the TNS	3136		SN Iax[02cx-like]	8
PUBLIC classifications for the top 5 contributing groups			SN Ia-CSM	6
	ZTF	787	SN II-pec	4
	ePESSTO	712	SN Ib-pec	3
	PESSTO	277	SN IIL	2
	iPTF	204	SN Ic-pec	1
	ASAS-SN	190	SN Ib-Ca-rich	1
			SN IIn-pec	1

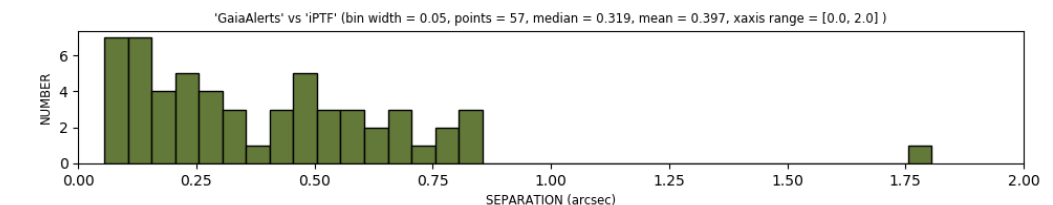
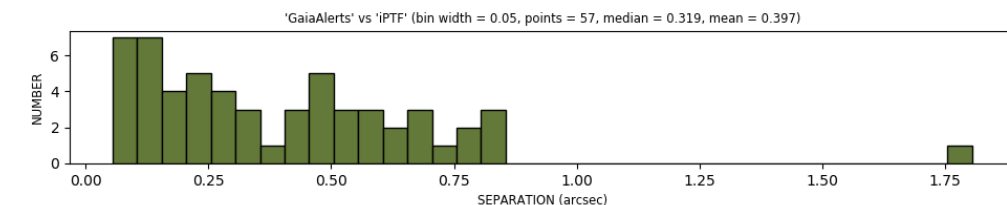
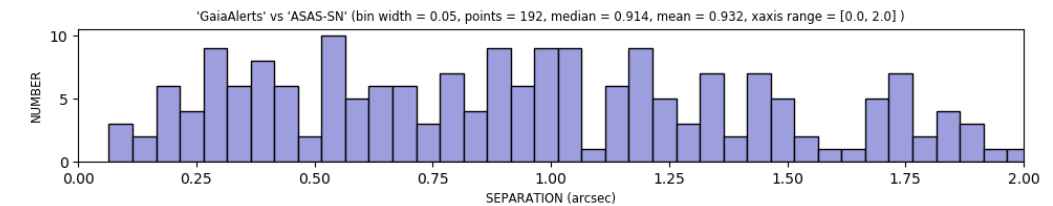
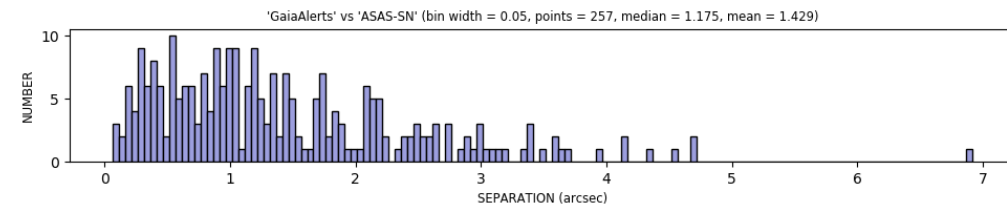
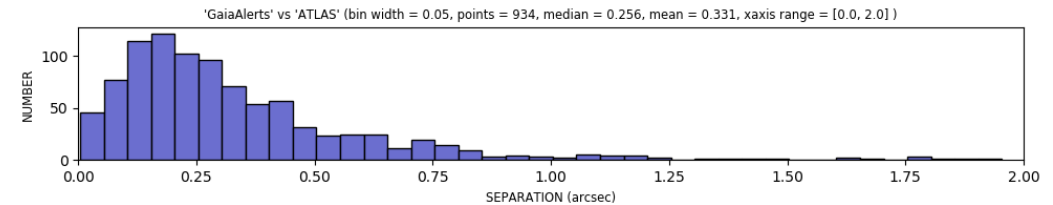
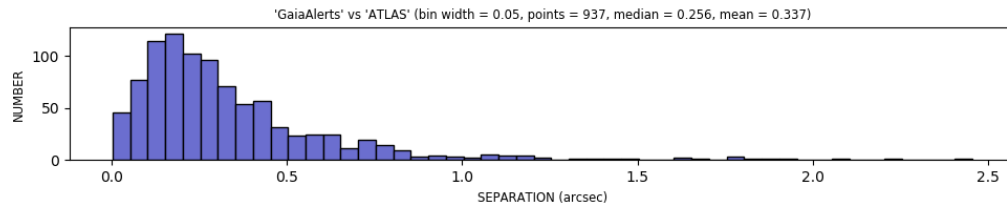
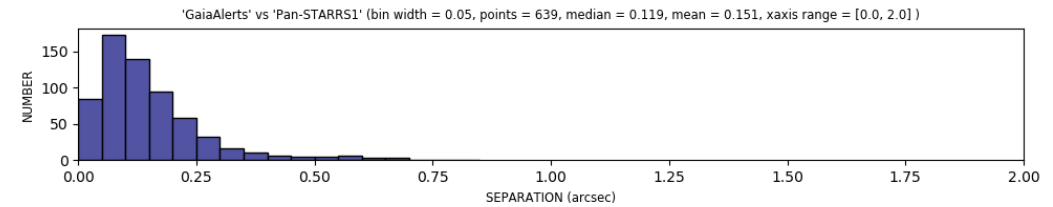
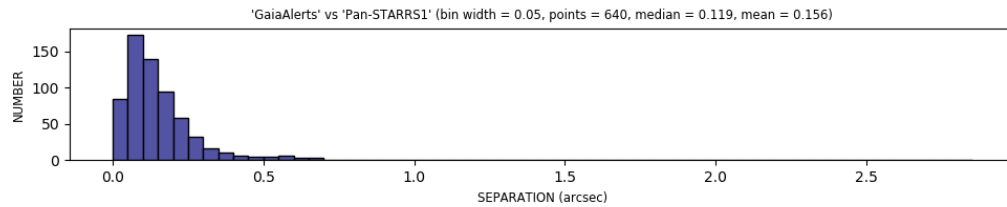
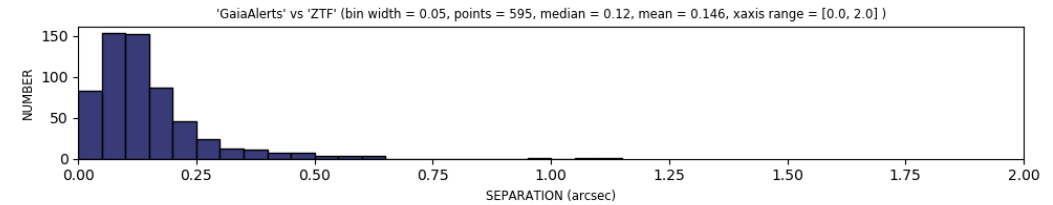
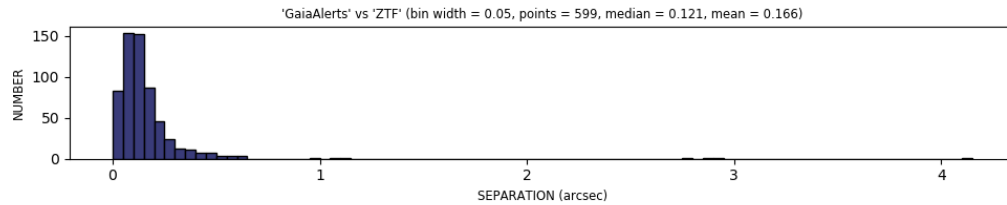
ZTF “Performance” on the TNS



- Since Nov 1st 2018 ZTF is the top:
 - Discoverer, with 1898/4656 (41%) objects (ATs + SNe)
 - Co-discoverer: 2307 (50%) ZTF_Bot1: 420, ZTF_AMPEL_MSIP: 1477
 - Classifier, with 326/638 (41%) classified objects
 - Co-classifier: 380 (60%)
- For spectroscopically classified SNe, since Nov 2018 :
 - ZTF being the Discoverer: 268/634 (42%)
 - Co-discoverer: 473/634 (75%)
 - ZTF being classifier: 326/598 (55%)
 - Co-classifier: 380/598 (64%)
- Classified SNe, With discovery date during Dec 2018:
 - ZTF being the Discoverer: 81/136 (60%)
 - Co-discoverer: 116/136 (85%)
 - If relating to DEC > -30:
 - ZTF being the Discoverer: 81/127 (64%)
 - Co-discoverer: 116/127 (91%)



Astrometric accuracies of surveys on the TNS



AstroNotes !!!

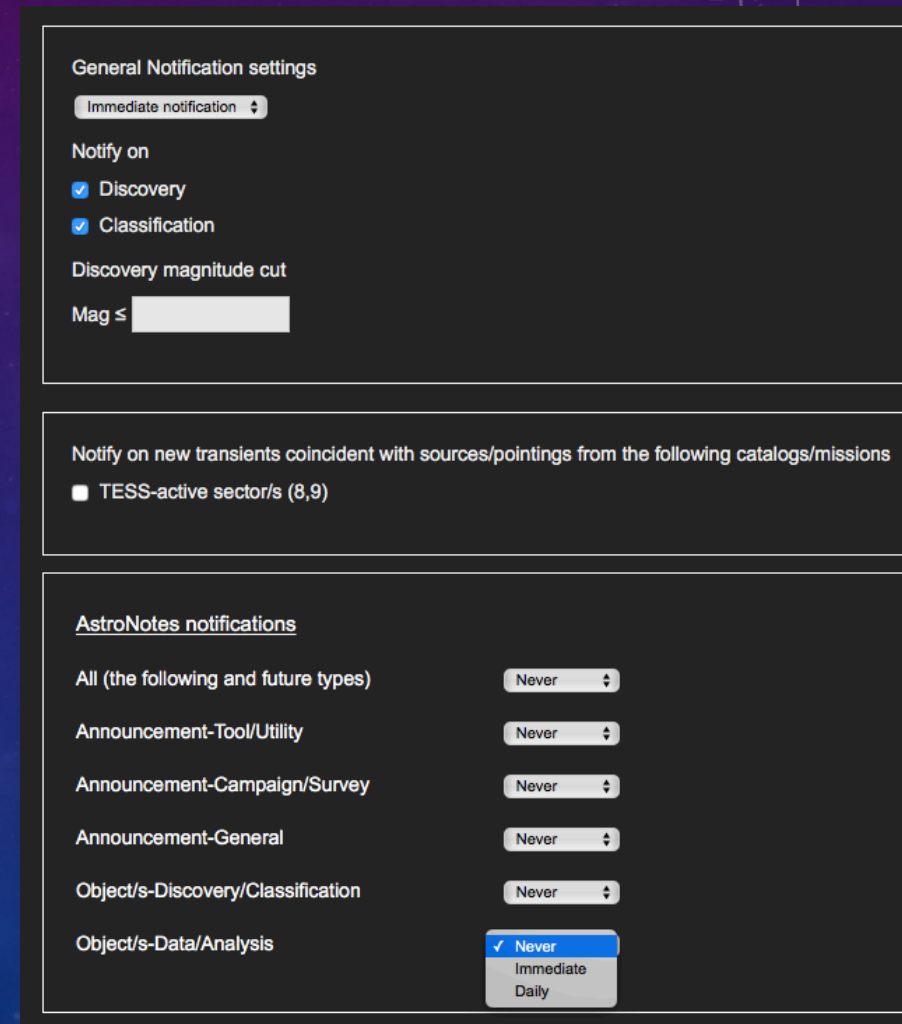
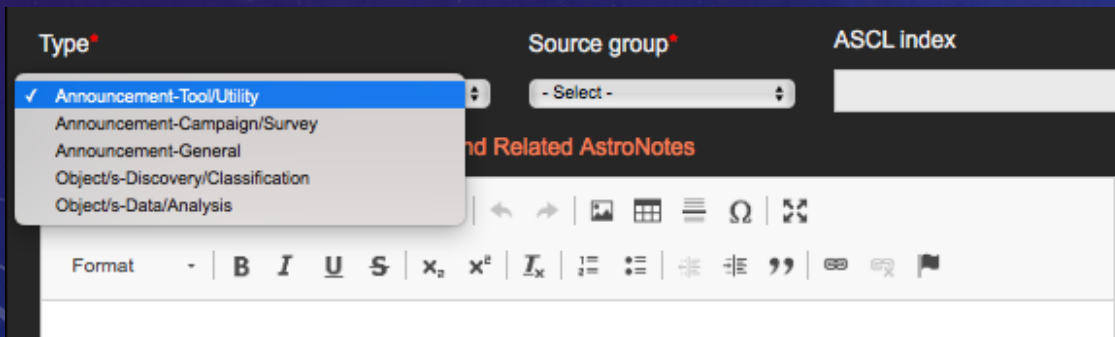
- Ready for release.
- Allowing notifications of various natures to the transient and general astronomical community.
- Tightly linked to objects (searchable).
- Like the TNS discovery/classification reports – officially indexed on the ADS and citable.

The screenshot displays the AstroNotes web application. At the top, there's a navigation bar with the 'TRANSIENT NAME SERVER' logo and links for REPORTS, SEARCH, GROUPS, BOTS, and LIGO GW. Below this is a header image featuring an astronaut and a cube in space. The main content area is titled 'AstroNotes' and includes tabs for 'AstroNotes', 'My Draft AstroNotes', and 'Add an AstroNote'. A search section on the left contains filters for 'Posted in the last' (Days), 'Posted between dates', 'Title Includes', 'Authors Includes', 'Type' (with a dropdown menu showing options like 'Announcement-Tool/Utility', 'Announcement-Campaign/Survey', 'Announcement-General', 'Object/s-Discovery/Classification', and 'Object/s-Data/Analysis'), 'Keywords Includes', 'RA', 'DEC', 'RA range', 'DEC range', 'Search radius', and 'Results in page'. On the right, a 'Most Viewed' section highlights 'AstroNote 2019-1' released on 2019-03-11 with 10 views, and a brief description of the 'AstroNotes notifications system' by a team including Avishay Gal-Yam, Ofer Yaron, Avner Sass, Eran Ofek, Nikola Knezevic, and Ilan Manulis (WIS).

This screenshot shows a close-up of the 'Type' dropdown menu in the AstroNotes form. The menu is open, showing options: 'Announcement-Tool/Utility' (selected with a checkmark), 'Announcement-Campaign/Survey', 'Announcement-General', 'Object/s-Discovery/Classification', and 'Object/s-Data/Analysis'. Below the dropdown is a rich text editor with a toolbar containing icons for bold, italic, underline, strikethrough, link, unlink, list, and other formatting options. The text area below the toolbar is currently empty.

AstroNotes !!!

- Ready for release.
- Allowing notifications of various natures to the transient and general astronomical community.
- Tightly linked to objects (searchable).
- Like the TNS discovery/classification reports – officially indexed on the ADS and citable.
- User can define which notifications to receive and in which way – immediate/daily digests.



WISeREP – Ver 2.0

<https://wiserep.weizmann.ac.il>

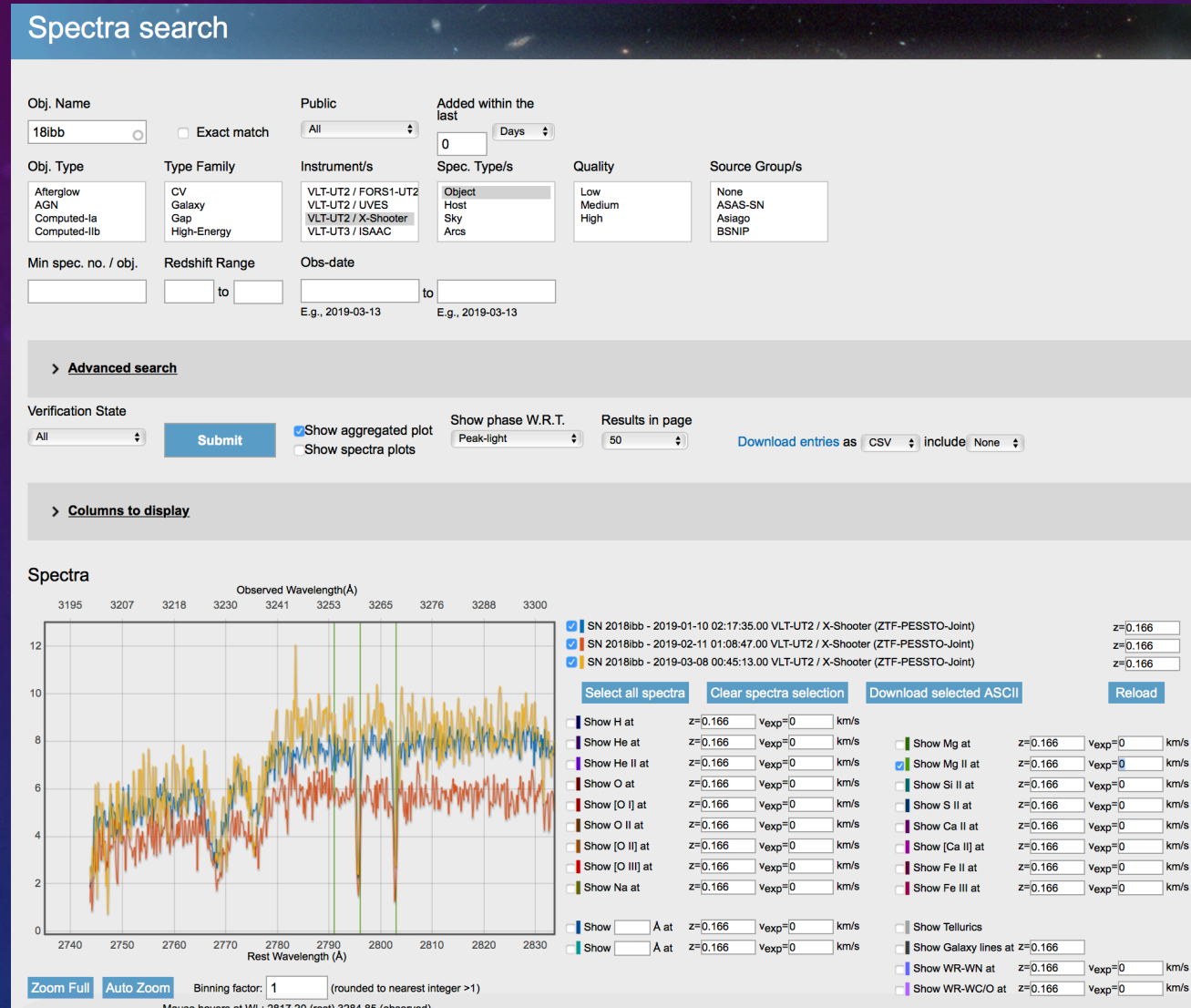


Improvements include:

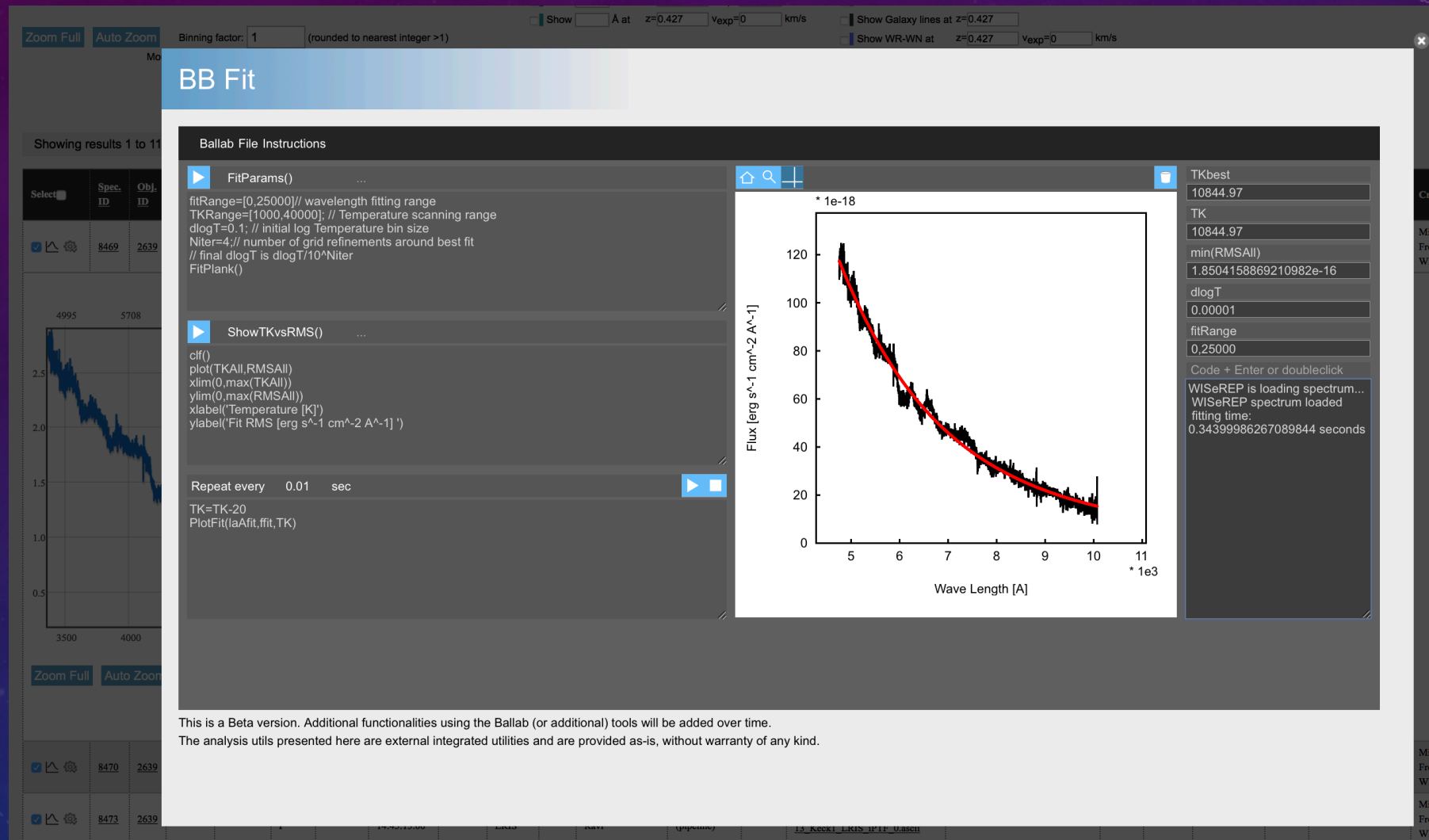
- Bulk downloads of query results – metadata and physical files (spectra...)
- Aggregated spectra plots
- Additional basic analyses functionalities (BBfit, pySuperFit (soon?)...)
- Proper handling of photometry (and LC plots)
- Direct uploads (by registered users) using interactive forms or APIs
- Self management of groups, groups members, proprietary data...

WISeREP – live demonstrations

Displaying the X-shooter spectra of 2018ibb

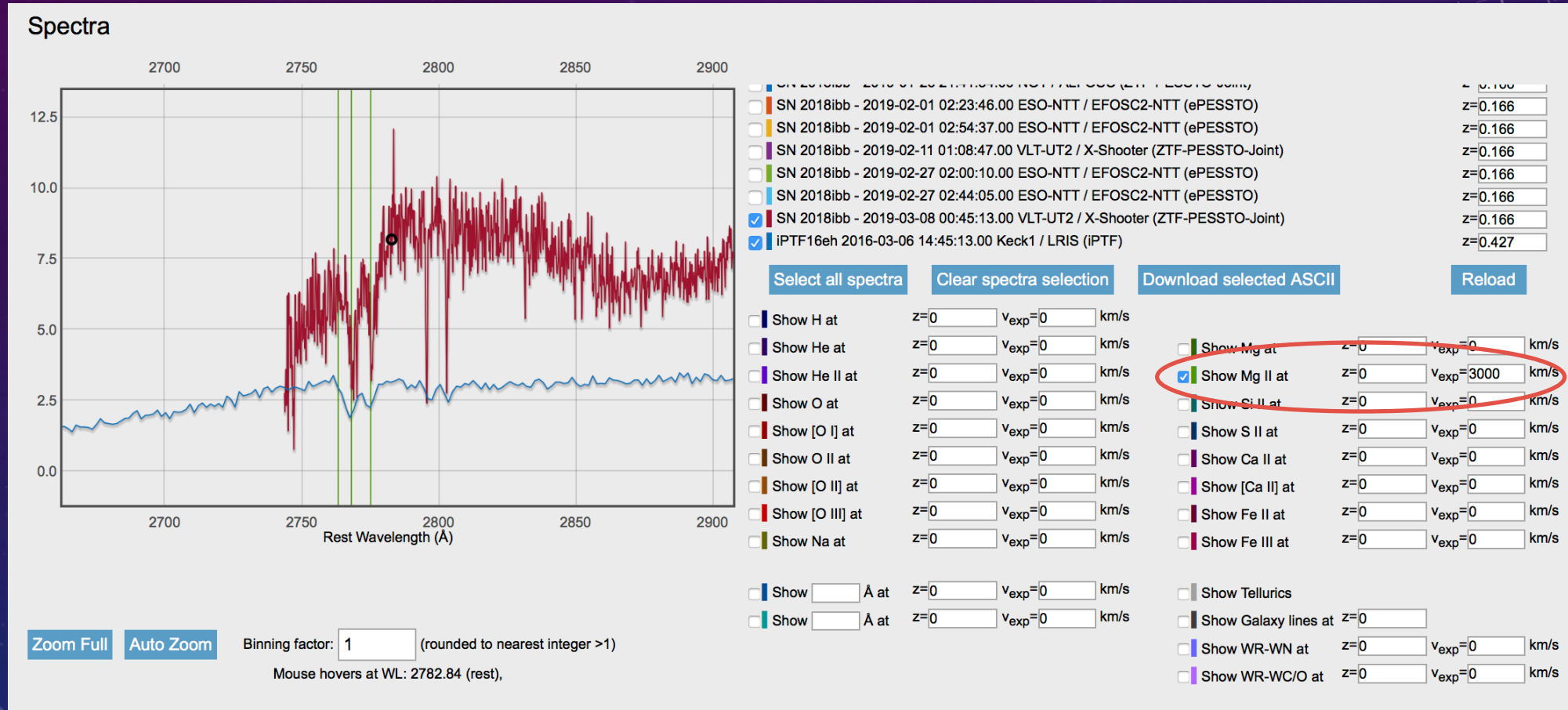


Over-plotting the Mg II
~2800 narrow absorptions
at host redshift.
Existence of blue-shifted
broader lines (from outer
shell) in all spectra.



WISeREP – live demonstrations

Comparing the spectra of 2018ibb and iPTF16eh;
Both showing similar sets of the Mg II absorption
lines – at the host redshifts and blue-shifted by
similar velocities ~ 3000 km/s.



ZTF <=> TNS

*** DISCUSSION ***

ZTF reports to the TNS:

- Discoveries - Currently RCF (semi-manually) and AMPEL (automatically)
 - Need to further adjust and revise filtering parameters
 - Additional reporting channels (different bots) from the various WGs?
- Classifications – currently quite a lot from SEDM
 - In which way to send additional classifications...?

ZTF <=> WISeREP

- Most PTF/iPTF spectra were automatically ingested to the previous WISeREP
 - Do we want to do the same for ZTF...?
 - Both spectra & photometr (clearly possible as proprietary, switching to public at some point...)
 - If so, how, and with whom to coordinate?