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Newsletter #9, 15th of December 2017  
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**Last news from the front (Engineering and Data Quality status):**

- (non)linearity - the response of the detector seems to be well-characterized (by a 2nd-order polynomial) in the majority of the quadrants; analysis is ongoing
- shutter-timing correction - the effect of the shutter action on the illumination of the detector is small and looks to be stable; further vetting and analysis is ongoing
- light leakage - the out-of-band leakage for R-filter images has been quantified and will be mitigated when the cryostat comes off; the analysis for g-filter leakage will begin early next week
- contamination monitoring - the contamination came back quicker than expected and is now at the level before of before cleaning. The source of the contamination (a conductive gasket) will be replaced in early January, also at that time the dewar window will be hand washed to remove the current contaminant build-up
- hexapod flexure - the effect of the hexapod flexure on focus is being studied and a correction map is in-progress
- ghosting - there are several experiments currently looking at ghosting effects and how to remove them; analysis is ongoing
- astrometry - analyses vetting the accuracy of the astrometric solutions are currently underway
- filter exchange - we will go back the the g-band filter on Monday

**Archive GUI now ready!**

The interactive image search, filtering and visualization tool is now ready:

<https://irsa.ipac.caltech.edu/applications/ztf>

As always, users who have an account will need to log in.

Both epochal images, associated products, and reference image products are supported.

The following applications are not yet working in this tool. Expect these to be finalized in January:

(1) The ability to overlay external catalogs and report precise positions using the cursor on a displayed image.

This is due to ongoing development to support the new TPV distortion representation in image headers.

(2) The Solar System Object ("Precovery") search tool is not yet supported.

Users can submit questions or report problems to:

[irsasupport@ipac.caltech.edu](mailto:irsasupport@ipac.caltech.edu)

**Real/Bogus and Star/galaxy separation + News from the Machine learning working group**

A star/galaxy separation model has been trained on PS1 data using the five filter data set covering the full 3-pi footprint of PS1. The model is trained using HST morphological classifications of sources in the COSMOS field. Two models are being developed, the first, which employs a simple SDSS photo-like method, achieves a true positive rate of ~65% at a false positive rate of ~0.5% [this is the same figure of merit (FoM) adopted for the PTF s/g model]. This model outperforms SDSS on a set of ~4M sources with spectroscopic classifications. The advantage of this model is that it is easily interpretable. The second model, which utilizes machine-learning, achieves a FoM of ~74%. Both models will be finalized and delivered prior to the start of regular survey observations.

Models are being developed for real-bogus classification using early data. Some help will soon be needed for vetting candidates using zooniverse setup that we have. Keep an eye on the link that we will send out soon.

More eyes on the candidates will mean better automated models sooner.

If you are interested in any aspects of ML, please join the mailing list and/or get in touch with Ashish Mahabal ([aam@astro.caltech.edu](mailto:aam@astro.caltech.edu)).

Regular meetings are currently at 2 PM PT. A doodle will be send out next week for a new time slot earlier in the day

### **Update on AMPEL (see also picture attached!)**

Members of the Berlin, Weizmann and OKC met uptis week to discuss requirements for different ZTF science projects, what software are required to achieve this and how AMPEL can be used to run these in a consistent and convenient way. Smaller groups were formed to discuss requirements on Star/Galaxy separation, host galaxy identification and TNS/Wiserep integration. The groups will work together to implement an early SN trigger with minimal scanning requirements.

See the new AMPEL page on the TWiki:

[http://noir.caltech.edu/twiki\\_ptf/bin/view/ZTF/CosmoAMPEL](http://noir.caltech.edu/twiki_ptf/bin/view/ZTF/CosmoAMPEL)

### **Help is still needed to analyse the engineering data!**

- Help is needed to analyse the calibration data:
  - People who are interested in giving help should subscribe to the qa list through this [link](#):
  - A weekly telecon is every week, wednesday 11 am PT.

### **Help is needed to watch ZTF observing (European and Israeli partners)!**

- Please contact Uli ([ulrich.feindt@fysik.su.se](mailto:ulrich.feindt@fysik.su.se)) if you can help for a few hours on the 23rd,26th,29th or 31st of December (only for a few hours of easy work!)

### **News from working groups**

- **Physics of Supernovae and Relativistic Explosions:**
  - The supernova working group has had a busy week! Many group members were visiting the Berlin group for an AMPEL workshop (see AMPEL paragraph of the newsletter above), while others are hard at work presenting iPTF results at the "Deciphering the Violent Universe" conference in Mexico.
  - K2 SN: In other exciting news, SN2017iws was reported as going off in a galaxy covered by the K2 mission, in a field that is also covered in ZTF commissioning data. Preliminary subtractions show we detect the rising supernova prior to the K2 detection; discussions are ongoing whether and how to report this to the community. Either way, it is very encouraging news for SN science with ZTF! There are now three candidates that popped out during a day or two, and the last one could be relatively nearby.
  - Note next week (Dec. 20) will be our final telecon before the holidays. As always, interested people should join our mailing list and weekly telecons, and write a few sentences at the "Introduce Yourself" section on our Twiki page.
- **AGN and TDEs:** ZTFbh had our telecon this week, and we discussed:
  - preliminary analysis of the SExtractor catalogs (Sjoert) and PSF catalogs (Matthew) from the Stripe 82 Science Validation observations
  - our SEDm white paper for spectroscopic follow-up of ~5-10 TDE candidates per week
  - we began mapping out our strategy for flagging AGN using cross-matches of transient alerts with various AGN catalogs.
  - our group is also interested in light-curve classification, so we are hoping to coordinate with the Berlin group's efforts.

Our next meeting will be in person at the AAS! We hope to meet up with other ZTF folks as well during the meeting. In general, we have common interests with other science working groups (star/galaxy classification, catalog matching, light-curve classification), so we want to make sure to coordinate with other working groups over the next couple months as this important infrastructure is being developed.

- **Stellar Science:** We are continuing the analysis of the commissioning data. Po-Chieh Yu is now deputy coordinator for the WG
- **Solar System:** As a commissioning experiment we have successfully observed near-Earth asteroids 1989 VA as well as comets 103P/Hartley 2 (the target of EPOXI mission in 2011) and C/2016 R2 (one of the brightest comets currently observable). Analysis is ongoing.
- **Machine Learning group:** see the dedicated paragraph of the Newsletter above.

### **Science Validation, now with difference imaging!:**

To date, we have queue files for only a few science validation experiments in the GitHub repo. If you want data for science validation, you need to provide the queue file(s) for your observations.

For the full procedure, please see the previous Newsletters.

### **Experiments that require difference imaging are now possible!**

### **Data Access Procedure (Reminder):**

If you have been using the old archive (not the IRSA one for which access is described below), be aware that it will stop working on **January, the 2nd.**

For the full procedure, please see the previous Newsletter.

### **Reminders:**

- The ZTF Twitter account is now active! <https://twitter.com/ztfsurvey> Re-tweet @ztfsurvey!
- To use the url shortener (e.g. during telecons, talks, in emails), navigate to <http://zwickytf/shorten> (username: ztf password:16chips) and type in the URL you want shortened.
- The Wiki page is active! Check it out at <http://zwickytf/wiki>.
- To request access to the wiki page: please email us at [ZTF.communication coordinators@gmail.com](mailto:ZTF.communication coordinators@gmail.com)

*Special Hanukkah quote!: "It is better to light one small candle than to curse the darkness "* (Confucius)

Have a great and productive week!  
Thomas and Maayane



The SN WG and Cosmology WG working hard at the AMPEL workshop at DESY this week.