

If the newsletter does not look good in your email, check the pdf [here!](#)

News from the front (Engineering and DQA):

As Roger wrote us very wriily, "this week's adventures merit more detailed description". Below are a short and a long version, depending on the level of details you are interested in.

Short version:

ZTF experienced two thermal runaways in just over a week. Unfortunately this cannot be fixed in situ and so the instrument was brought back to campus where the cryocooler system components will be thoroughly cleaned. We will also need to run a full thermal test before reinstalling the instrument. The minimum downtime for this work is estimated at two weeks and it is likely to be closer to three.

Long version:

ZTF is cooled by two Joule Thompson refrigerators operating in parallel and completely independently. On Sep 29 ZTF warmed up inexplicably but seemed to recover completely when cooled again form nearly ambient. COO electronics engineer, Stephen Kaye, implemented a change to the control waveforms to shut down CCD amplifiers during idle and exposure delay. Outputs were powered up when initiating "shutter close" and stays on during readout (of course). This reduced the average load on the coolers enough that they maintained much more stable temperature.

Unfortunately last week we started to see intermittent drop in cooling capacity on the center cooler. The power from the other cooler (in Southwest corner) proved sufficient to ride over the bumps. We were obviously concerned so Michael Feeney made the trip to Palomar to replace the compressor on the misbehaving cooler with a spare. The behavior persisted pointing to a *partial* blockage of the cold head. It seemed we might get by with "flying on one engine" until poor weather and/or full moon when downtime for repairs would have less impact on science.

However not long after, at 4pm local time on Oct 8, the Center Cooler stopped working entirely. The return line pressure dropped to near zero and supply pressure rose slightly indicating a total blockage in the cold head. On Oct 9 Feeney and Kaye took a moving van to Palomar and with the help of the Palomar crew had the instrument off the telescope and back in the lab on the 10th.

In the process of disconnecting the compressor Michael discovered a significant quantity of oil in the supply line. There was so much that it seems the seal in the compressor must have failed. The compressor that failed was in fact a refurbished compressor used for (only) the last few years in PTF. We

expected it to still have plenty of service life. It was intended to be kept as a spare but it is easy to see how it could find its way into service. It has now been retired.

Today (Oct 11) Steve and Michael removed the back cover and extracted both cryocoolers while initiating ultrasonic cleaning of the lines. Meanwhile our mechanical tech, Hector Rodriguez, has been ultrasonically cleaning the long hoses that had to be unthreaded from the telescope. As a precaution we are cleaning hoses and cold heads for both coolers.

Currently we stand ready to re-shim the four CCDs which are still slightly tilted, expecting this to improve DIQ from 2.3 arcsec to 2 arcsec in the corners of the CCDs. The final decision has not been made at time of writing.

We will re-shim the guider to place it on the other side of focus so we can make our tip-tilt-focus measurements immune to seeing fluctuations. We are setting up a guide camera on the bore-sighted finder telescope. While we will lose some sensitivity due to the smaller aperture, this is a simpler route to getting the guider working and guiding will become available even when ZTF shutter is closed.

Updates from the GROWTH Marshal:

The GROWTH marshal continues to add features based on feedback from the users. The latest set of new features includes:

- (i) Update light curve from both the ZTF and the iPTF databases by pressing buttons on plot_lc.cgi
- (ii) Detailed examination including changing stretch/scale of cutouts of all ZTF detections using view_candidate.cgi
- (iii) Sort on your scanning page before loading it and filter previously saved candidates
- (iv) Add comments to your filters enclosed between /* and */
- (v) A name resolver that lets you load the view_source page by specifying either the ZTF name or the IAU name
- (vi) Science Program Reports page can be limited to a date range
- (vii) Specify permissions on spectra
- (viii) Change status of spectroscopic request for each target: Observed or Not Observed
- (ix) Assign a program at the time of requesting a spectrum on the view_source page,
- (x) Filter the observing run page (prepare_run.cgi) to show candidates that belong to a set of programs/classifications/magnitudes/positions

Updates from AMPEL:

We will use the ZTF downtime for a complete rerun of the ZTF archive to optimize channel (filter) parameters. This will include many parallel versions of each channel and will allow a quantification of exactly when a given transient is detected based on a specific combination of parameters, as well as of

how many bogus alerts are admitted. Let us know if you have potential channels that you would want to add to this run.

Having problems accessing the TWiki? Please contact us:

If you encounter any problem accessing the twiki, please do the following:

1. Try this [url](#)
2. If it does not work, please email us at [ztf.communication.coordinators@gmail.com](mailto:ztf.communication coordinators@gmail.com)

News from IPAC: update to image differencing

The image differencing pipeline has been updated in production to significantly improve subtractions in the galactic plane (or high source density regions in general). In a nutshell, the relative gain-matching preprocessing step was having difficulty for about 20% of the galactic plane exposures acquired in Jul/Aug. Much R&D has gone into this effort. The new version is effective since October 9. Please contact Frank Masci in case you find any issues. Regenerating subtractions (and alerts) from the high-cadence experiments conducted in Jul/Aug is TBD.

News from working groups

Supernovae and relativistic explosions: “The Supernovae and Relativistic Explosions group are sad that the weather+camera failure means no new supernovae for several weeks! We are looking into get photometry of the transients we were already following from other sources to avoid gaps in light curve coverage, and otherwise taking this opportunity to work on the several papers we have in progress on interesting objects found so far”

Galactic/M31: .”We have started with the field selection and observing strategies for the upcoming winter Galactic Plane observations”

Jobs across the collaboration:

1. University of Maryland: faculty job opening at the University of Maryland in Theoretical Astrophysics. Theory related to time domain astrophysics is one of our areas of interest. Please see the add on the AAS Job Register here: <https://jobregister.aas.org/ad/7fef9223>

2. University of Wisconsin – Milwaukee (UWM): The Department of Physics at the University of Wisconsin – Milwaukee (UWM) invites applications for a tenure-track assistant professorship, beginning fall 2019. Areas of interest include but are not limited to gravitational-wave science, observational astronomy, and theoretical astrophysics. Further information about the University, the Department and the Center: www.uwm.edu/physics and cgca.uwm.edu. Please see David Kaplan’s email from last week and this [link](#) for further info

3. Stockholm University : a post doc position in both modeling and observations is advertised [here](#). Note observations can be both/either macronovae or supernovae.

Reminder: IMPORTANT: We (still) need your help for the ZTF FAQs page! (and would love to remove this item from the newsletter)

During several weeks, we have listed the questions that people across the collaboration would like to have in the [FAQs](#) page. Now it is time to add answers. Please help us fill the voids (and elaborate on the answers already there).

More reminders:

- Public Alerts: There is a [link](#) to the alerts archive on the [website](#)!
- Please help us keeping track of all the available softwares! A preliminary list is available on the [twiki](#). Let us know if you are building a software which you think could benefit (or be relevant to) a large portion of the collaboration.
- **ZTF general slack channel**: Please join through this [link](#)!
- If you want to get access to the **ZTF data** via the IRSA interface, please request data access to the communication coordinators: ztf.communication.coordinators@gmail.com
- **Archive GUI** now ready! The interactive image search, filtering and visualization tool is now ready ().
- 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://zwicky.tf/shorten> (username: ztf password: 16chips) and type in the URL you want shortened.
- The **Wiki page** is active! Check it out at <http://zwicky.tf/wiki> . To request access, please email us at ZTF.communication.coordinators@gmail.com



"Sometimes you just need a break. In a beautiful place. Alone. To figure everything out"

Have a great and productive week!
Thomas and Maayane