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Newsletter #68, February 10th 2019

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

**News from the front (engineering and DQA)**

The ZTF engineering team continues to address issues arising from science user feedback and items remaining on the development close-out list:

Ghosts and Echoes:

The mysterious "ghosts" that appear on the same rows as bloomed pixels, proved to be charge spillage into the serial register from saturated pixels in the last line of the image area. The 787 pixel delay is because spillage was occuring during the first concurrent clock edge. These edges have been slowed so the transient is much smaller and clocks levels have been manipulated to assure that well capacity during readout that exceeds that during readout. A tricky maneuver is required to make the transition from integrating under 3 phases to storing (during readout) undr two phases to avoid charge coming in contact with traps at the surface. We have tested using flat during bad weather and look forward to confirming on sky. Once this is done we plan to measure and refresh linearity corrections.

DIQ:

Work continues on upgrading flexure compensation to improve delivered image quality consistency. With the successful implementation of an offset guider, the 4th auxiliary CCD in the ZTF cryostat is being repurposed for flexure compensation. The addition of a 4th sensor to this subsystem should improve consistency of tip/tilt/focus measurements, as well as slightly improve noise robustness. Bringing this so-called T1 detector into the system resulted in our revisiting the Tx numbering scheme and restoring the original ordinal numbering scheme for the focuser (Tx) detectors. Set-point calibration for T1 is underway; we are also investigating poorer apparent flexure control using the ztf-g filter relative to ztf-r filter flexure control performance.

Shutter:

A few repairs have been needed. We lost half a night (several weeks ago) when a power cable came loose due to not being properly latched.

A background effort to confirm exposure start/duration stability is begining in to produce results. Goals include:

Address concerns about exposure closure time, sometimes flagged by shutter limit switches.

Measure accuracy and precsion of UT recorded at exposure start (DATE_OBS in header).

Verify the sign of the exposure duration correction that was mapped by Matteo Giomi, by direct measurement of flux profile during shutter open/close.

Refrigeration:

A very slow leak required a top up of refrigerant on the infamous SW cooler. No observing time was lost and the full capacity has been restored.

Observing overhead optimization:

We are undertaking a reconsideration of all major system observing overheads, including re-measurement of certain timing quantities baselined 10 months ago. Our goals are to evaluate consistency of performance and understanding the cost-effectiveness of reducing remaining (removable) overheads. Consideration of effects is occurring at the level of a fraction of a second per exposure.

**Press release: help us advertize the first ZTF papers by retweeting!**

A press release was put out on Thursday (7/02) on the News section of ZTF website, coinciding with the first batch of papers appearing on arXiv.

Help us advertize it by re-tweeting the ZTF tweets!

**First release of Lasair : the UK broker for LSST (running on ZTF)**

The Lasair team have a working prototype of the UK's Lasair Broker and invite us to scientifically test and exploit the system. There is an open, public service now running on the Zwicky Transient Facilty (ZTF) alert stream.

All information and access points are here.

The Lasair team welcome you to scientifically use it in earnest and give us your feedback. "Make watchlists, make stored queries, make comments on objects".

**News from working groups**

**SNIa cosmology:** "We are continuing our work on creating and evaluating a year 1 "golden" Type Ia supernovae sample. In addition the paper outlining the simsurvey lightcurve simulation code and presenting our predictions for ZTF has now been submitted."

**Solar System:** "We logged 13 new NEAs in January, which we are very happy about given the weather. Among these new discoveries is 2019 BE5. It turns out that BE5 breaks the record of fastest-spinning asteroid (12 sec vs the previous record holder, 2014 RC, at 16 sec). It also has a tight orbit, with perihelion well inside Mercury and aphelion at Earth's orbit."

**Supernovae and relativistic explosions:** "We discussed the mysterious SN ZTF18aceqrrs/SN2018ijp. Its light curve shows two peaks and its spectra are quite unusual. We are speculating whether it is SN-IIn/Ia-CSM or maybe a SN-Ic interacting with hydrogen. We will continue obtaining spectra of this object to pin down its nature. We also heard updates about catsHTM."

**Galactic/M31:** "We finalized and submitted a response to the SSC for ZTF year-2 cadence"

**The papers corner:** Please remember to let us know if your paper was submitted/accepted. We will let the collaboration know here.

Below are the papers from the press release now on the arxiv!

"The Zwicky Transient Facility: System Overview, Performance, and First Results," led by Eric Bellm of the University of Washington;

"The Zwicky Transient Facility: Science Objectives," led by Matthew Graham;

"The Zwicky Transient Facility: Data Processing, Products, and Archive," led by Frank Masci of IPAC;

"Machine Learning for the ZTF," led by Ashish Mahabal of Caltech;

"The Zwicky Transient Facility Alert Distribution System," led by Maria Patterson of the University of Washington;

"The GROWTH Marshal: A Dynamic Science Portal for Time-domain Astronomy," led by Mansi Kasliwal of Caltech; and

"A Morphological Classification Model to Identify Unresolved PanSTARRS Sources: Application in the ZTF Real-Time Pipeline," led by Yutaro Tachibana of Tokyo Institute of Technology and Caltech and Adam Miller of Northwestern University and the Adler Planetarium.

**March collaboration meeting in Israel:**

**1.** A preliminary program is now available here.
As you can see, there are still available slots, so **please do send us additional proposed contributions in the coming days**.
(We're missing e.g. updates/reviews from some of the WGs, additional interesting science results, possible sessions for Fri, etc...)
**2.** Depending on your expression of will and travel plans, we thought to propose an additional tour to Jerusalem (~45 min drive from Rehovot) on Fri Mar 15th, leaving Rehovot around noon (see program). The plan is to stop at a few interesting spots in Jerusalem, including some nice view points, the old city and some parts of the city centre/markets, as much as time allows.
If you were thinking to book a night or spend the weekend in Jerusalem that's a good opportunity for you to just remain in Jerusalem.
Our minibus/van will anyhow return to Weizmann in Rehovot towards evening.
**Please contact the organizing team (ofer.yaron@weizmann.ac.il) if you're interested in such an organized visit to Jerusalem, so we will know if to try and arrange this or not.**

**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

*"Well, all I know is what I read in the papers"* (Will Smith)

Have a great and productive week!

Thomas and Maayane