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Newsletter #56,, November 18th 2018

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

News from the front (Engineering) (by Roger Smith):

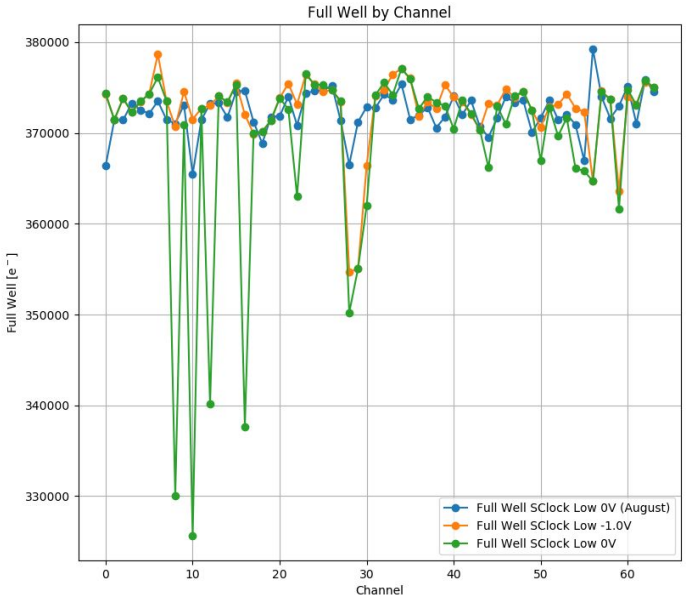
The engineering team is addressing some subtler problems which were not noticed previously and/or appeared recently. These only appear on a subset of the readout channels.

Serial register blooming

On a subset of outputs, horizontal bars appear when the serial register has lower capacity than the image area. Rapid progress is being made by adjusting the low clock level (raising the barrier between pixels), but these changes have only been used by day and are backed out at night. We are proceeding carefully to check that there are no unintended side effects. Once daytime tests (with flats) look promising we will take a few images at start of night, then back out the changes while we check (next day) for side effects. Final release fo the fix will occur in sync with software updates, after approval by Matthew Graham.

We are puzzling over why this problem appeared in late August. Note that serial blooming is easily confused with the horizontal diffraction spikes, as in this image. It is more prominent in the following one.

The presence of serial blooming manifests more clearly in measurements of well capacity versus signal (these are based on the scaling of variance). The orange curve illustrates improvements made thus far.

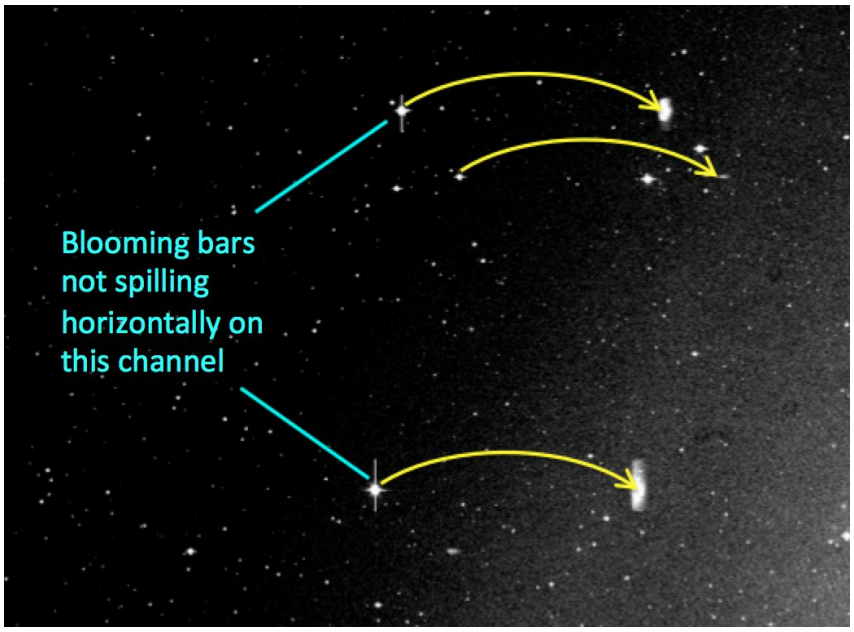


Dark saturated pixels

On some channels we see saturated pixels that produce much less than a full scale signal and look like black cores in bright stars. I have a strong hunch that the signal capacity under the last electrode in the serial register (Summing Well) is less than the rest of the serial register and thus charge is spilling into the sense node while the post-reset level is being digitized. The increased baseline reduces the apparent signal. The fix will be to raise the barrier between SW and the sense node ("Last Gate"). It is has to stay lower than SW_low and SX_low so we are addressing the serial register capacity first. Note that this .effect only occurs on a subset of outputs

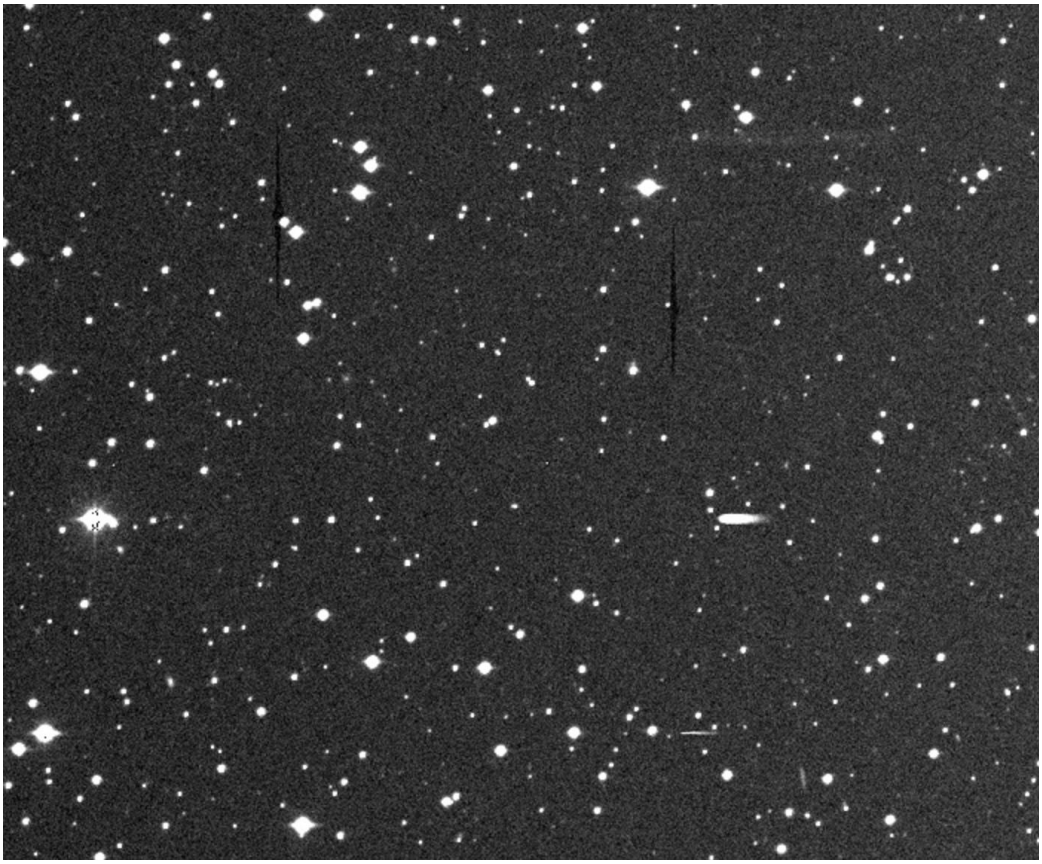
New Ghosts

There are at least two types of compact ghosts that are not explicitly modelled and masked by IPAC. These are hundreds of pixels from the source star yet still quite compact and seen in all the image examples here but are very faint in other CCDs with different AR. We initially thought there was only one mechanism in play but making a movie revealed that some of these ghosts move at the same rate as the stars while others do not. Richard Walters is making more movies (same field over many nights) to .provided a clearer understanding



Crosstalk:

We recently observed crosstalk for the first time and are looking back to see when it appeared and/or why we missed. See the two negative images of bloomed stars below. Most of the other features reported here are present as well. It is possible for a change in the electronics to produce inferior crosstalk immunity without other significant issues. The investigation is in its infancy.



News from DQA:

Work with the ZTF pipeline sandbox is proceeding at a good pace. Three pieces are necessary in order to derive the optimal domeflat color balance from the starflats: re-run calibration pipeline on the 203 starflat exposures, derive starflat maps from the resulting PSF catalogs, and create custom domeflats with arbitrary color-balance. Of these three main ingredients, only the last one is not complete yet. Next week we should be able to have the first results. The software utils developed in the process are available at: https://github.com/MatteoGiomi/ztftoolbox

In order to assess the quality and stability of ZTF photometric calibration a new metric based on comparing ZTF magnitudes with PS1 calibrator stars in the [18.5,17.5] magnitude bin has been developed.

A correlation of all readout channels with the moon seems to be present for at least 3 different fields within the June–September period: When the moon is bright and high the photometric quality decreses to 35 millimag compared to 20 millimag during new moon. Why the effect of the moon is present even after calibration is being analyzed.

Transition to Partnership winter surveys

As recommended by the Experiments & Frameworks Committee, this week marked the start of three months of intensive Galactic Plane and Solar System surveys using the partnership time. There will be no partnership i-band or extragalactic high-cadence surveys in that interval. The MSIP and Caltech surveys will continue unchanged, and the partnership may execute TOO observations as usual.

In the coming weeks the Science & Strategy Committee will be inviting proposals for new partnership surveys to begin on or after February 15.

News from the GROWTH Marshal

The latest set of new features includes:

(i) A new page, add_toO_schedule.cgi, from which users can add new ToO runs. The page can be accessed via a button from master_calendar.cgi.

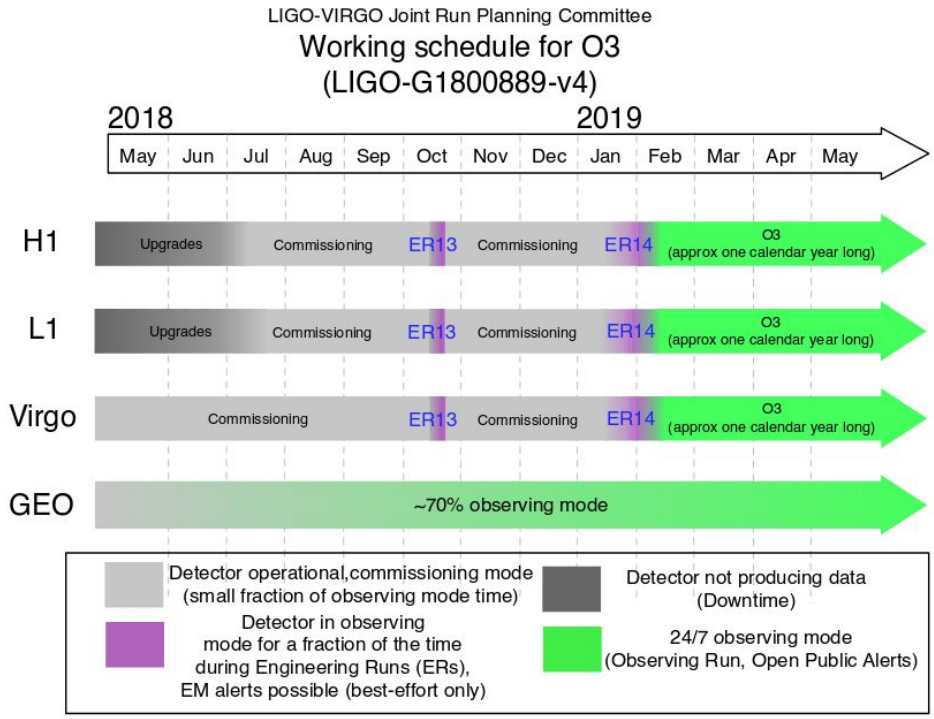
(ii) The ability to trigger ToO follow up for sources on the view_source.cgi page.

(iii) An indicator on the right side of the home page that shows ToO runs scheduled for the current date, which users can hover over to see the contact's information and a list of targets currently assigned to the run.

(iv) A button to deselect all check boxes in master_schedule.cgi.

News from working groups

EM/GW and Neutrino Counterparts: the group would like to update the collaboration about the LVC timeline:



Physics of Supernovae and Relativistic Explosions: ”The Supernova and Relativistic Explosions group continue to scan for interesting new supernovae. We had another infant supernova trigger this week, probably the last in a while as we will not be doing high-cadence partnership observations for the next few months. Another object of interest at the moment is ZTF18aainvic, a type II SN which is surprisingly long-lived, luminous and slow-evolving, potentially an analogue of iPTF14hls. Otherwise we are busy working on our first batch of science papers.”
Cosmology: "With the extragalactic partnership survey ending, we are trying to obtain some more followup data for the last SNe Ia that we found and start to analyse the data set we have collected. Based on that we continue to improve our strategy for next year."
TDEs and AGNs: “The ZTFbh SWG is experimenting with auto-saving on the Marshal using our GROWTH and AMPEL filters. This will transfer our efforts from visual scanning of alerts to ranking and inspection of TDE and CLAGN candidates for follow-up. Thanks to Sjoert, we are now implementing Gaia improved star/galaxy separation, auto-saving scripts, AGN catalog cross-match auto-notations, and daily ranking of TDE candidates for SEDM triggers based on light curve shape, color, and brightness. By the end of next week, we hope to have verified that our infrastructure is working properly, and then we will be close to a well-oiled TDE machine! We have several publications in progress…so stay tuned!”
Galactic/M31: “We have started with our winter Galactic Plane survey. Although the weather was not great for first few nights we still got our first batch of data”

The papers corner: From now on, we will update the collaboration about new publications here. Please let us know one a paper has been accepted!

This week, the star-galaxy paper has been published:
http://iopscience.iop.org/article/10.1088/1538-3873/aae3d9/meta
And the data have been released via MAST:
https://archive.stsci.edu/prepds/ps1-psc/

Reminder: Mark your calendars, next team meeting is coming up:
The Weizmann Institute is happy to invite everyone to the next ZTF collaboration meeting, which will be held at the Weizmann institute for Science in Rehovot, Israel - March 12-15, 2019.

Please have a look at the meeting website here, and please begin registering (no costs involved) at your earliest convenience so that they can have a head count estimate ASAP.

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

"What good is the warmth of summer, without the cold of winter to give it sweetness" John Steinbeck

Have a great and productive week!
Thomas and Maayane