

#####

Newsletter #59, December 7th 2018

#####

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

News from the engineering team (Report by Roger Smith)

Cooling system:

“At 17:30 PST Dec 2, signs of a blockage in the SouthWest cold head suddenly appeared: rising head temperature with falling return line pressure. We managed to operate for two more nights, delaying warm-up until clouds set in. During bad weather we spent a day running refrigerant through the head, while keeping it warm with the detector heater servo (at 320K). We started a new cooling cycle last night which has confirmed that — for now at least — the blockage has been cleared. If cooling continues without incident then we will be able to observe Friday through Sunday when the weather forecast is poor again.

In the meantime we have implemented an even-more-aggressive cleaning procedure for the replacement refrigerant hose, since our best guess is that the last cleaning process might have been imperfect. Note that we have to figure this out ourselves, since the vendor is no help and we seem to have become the experts in this! The fact that the SW head delivered best-ever performance for 5 weeks after being cleaned last time suggests that the source of contamination is upstream in the hose.

As part of the new hose installation on Monday morning, we will be adding a supplemental charcoal adsorber at the split point between 50' hose and the 25' hose section. The adsorber was in fact already installed on Tuesday but is at the compressor end of the suspect hose. At the same time, we will adjust the refrigerant charge pressure to adapt to the falling temperatures on the mountain.

DIQ:

Revived efforts to reduce focus/tilt estimation noise have been bearing some fruit in tests with artificial data, and will be tested on sky when we get the camera back online. At the same time the detector folks have discovered an adjustment that substantially mitigates the poor dynamic behavior of the 2Kx2K focus CCD video outputs. This delivers higher gain (lower e-/ADU), lower read noise and faster transient settling. These improvements were made in WaSP which uses the same devices. We await having ZTF cold again to be able to test the optimization there, but we are confident it will also reduce noise in focus estimation.

Image Artifacts:

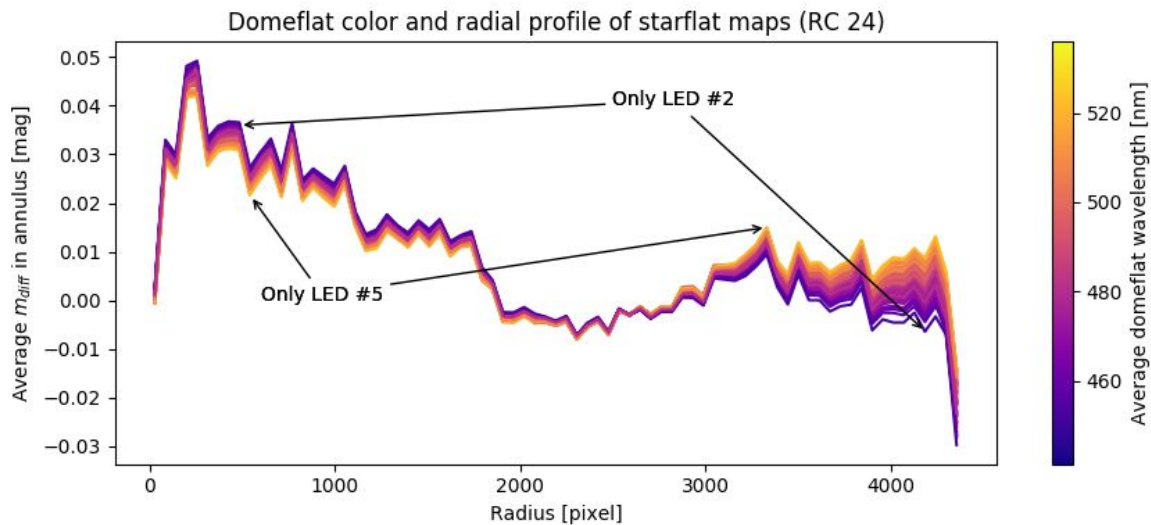
The cause of dark cores in saturated stars has been identified and a fix demonstrated. Serial smearing (blooming) is also under investigation. In the process we discovered that about 20% of the channels were saturating prematurely so the upshot is more uniform (and very high) well capacity at around 375Ke-.The

optimizations have only been tested by day since we have a policy of not releasing operating parameter changes incrementally. We will deploy when fully tested to reduce the chance of unforeseen side-effects, and that requires that the instrument be back on line for a week or so.

Work on the newly discovered crosstalk is still pending, but clues were revealed by the controller manufacturer a detector conference that we hosted this week (www.bnl.gov/ispa2018/). **Is anyone interested in mapping the "co-moving but not coincident" ghosts which were noted a few weeks back?**

News from DQA (Matteo Giomi):

Starflat maps produced with dome flats of different colors is finally complete. The dependence of the circular, blob-like structure on LED combination is weak, confirming the hypothesis that such features are due to the presence of the field-flattener lenses in front of each CCD. Analyzing the radial profile of the starflat maps as a function of color, we see a difference of the order of ~ 7 mmag between the radial profile amplitude obtained with the reddest LED in the g-band filter (LED 5) and the bluest one (LED 2), shown in the attached figure.



Future development are: explore other metrics that can be used to isolate the optimal LED color balance, and evaluate the impact of applying starflat correction on the photometry.

News from the GROWTH marshal (Ashot Bagdasaryan)

The latest set of new features includes: (i) Finder charts that can be accessed from the top right link on each of the source pages and the PDF icon for each source in the observing run page. (ii) Offset star lists are now available in the observing run page if selected under 'More query options'.

News from working groups

SNe and Relativistic explosions: “The Physics of Supernovae and Relativistic Explosions working group is hoping for better weather on Mt Palomar and hope both the filter exchanger and cryocooler will cooperate once the weather improves. This week we got a lot of classifications in after a successful Keck run - the spectrum ZTF18acenqto resembles the hitherto unique SN2002bj, which is potentially very exciting. Otherwise we are planning our next round of SEDM proposals and working on papers.”

Machine Learning: “ (1) Deep Streaks has been working well, and we will soon send some NEOs for follow-up to a few GROWTH network telescopes. (2) Classifications from Zooniverse beta testing are being incorporated into the Real-Bogus setup.(3) Meanwhile, on the advice of Zooniverse project folks, we have dumbed down the interface, and should be releasing it soon.”

Cosmology with SNe Ia: “We have completed a first quick comparison between number of SNe expected based on the light-curve simulations and the number of SNe found with ZTF. The comparison was limited to the public alert data (extracted using AMPEL) for 40 fields and only contained detections during July (the fields were chosen to have complete sets of reference images in g and r by the beginning of July). The analysis found 37 likely SNe Ia in that time frame based on simple cuts to lightcurve fit parameters, which agrees well with 44 SNe predicted to be found by applying the same cuts on the simulations. Furthermore half (19) of these SNe have been spectroscopically confirmed as SNe Ia, while most of the remaining SNe were either not followed up or did not pass the alert filters used at that time.”

The papers corner: Please let us know one a paper has been accepted!

March collaboration meeting:

A kind reminder to please register to the coming ZTF meeting if you plan to attend (this is not committing and no costs involved).The meeting website is [here](#). For registration go [here](#). Also, the organisers would like to start to collect and organise the potential contributions, so please begin sending in your proposed talks (via your meeting account or by replying to this email), even if there's no abstract yet.

As mentioned in Ofer Yaron’s email, the talks will be scheduled to the following general sessions:

- **Survey engineering/technical updates, operations and methodologies**
- **Pipelines and utilities**
- **Reviews from the various working groups**
- **Scientific highlights & results (incl. session on unique events; e.g. 18cow)**
- **Future activities/plans**
- **Workshops/discussions (Friday potential sessions)**

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

“Decision making, like coffee, needs a cooling process” George Washington

Have a great and productive week!
Thomas and Maayane