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Newsletter #110, December 24th 2019

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

News from the front: engineering reports (Reed Riddle)

[A small reminder of how the ZTF system works: ZTF is a fully automated system, composed of:
(1) Samuel Oschin 48-inch (1.2m) telescope at Palomar Observatory (P48)
(2) the mosaic camera constructed by Caltech,
(3) a filter exchange system,
(4) associated sensors and electrical systems,
(5) the Robotic Observing Software (ROS) that controls the operation of the entire system]

Try your luck with the ROS maximum observations betting pool!

We are coming into the longest nights of the year, when ROS has the chance to observe the maximum number of targets it can do in the course of one night. The max that we can do theoretically is easy to calculate, as ROS takes about 39s to observe a field adjacent to the previous one. The system doesn't always observe adjacent fields though, and there are filter changes, weather delays, and ToO observations that whittle away the possible number of completed observations in a night. We have already had multiple nights with over 1000 observations, the question is if we can get enough clear nights, without lots of long ToO observations, to blow past 1100.

As a fun challenge, a betting pool is now open for everyone to guess the largest number of completed observations by ROS in a single night between December 10 and January 7 (dates in UT). These are for observations that ROS completes successfully, not for data processed through IPAC (as IPAC includes calibrations), and the closest guess to the maximum value will win. Send your guess to Reed (riddle@caltech.edu); he will announce the winner after the holiday season (and he will not be participating in the pool). The winner will receive bragging rights for their ability to anticipate how much data ROS can take in.

News from working groups

AGNs and TDEs:"Our latest TDE candidate is ZTF19accmaxo, aka Missandei. She shows an increase in the soft X-ray flux in our latest Swift data. We are putting the final touches on the first ZTF TDE population paper, aiming to make a splash at the AAS this January. "

Cosmology with SNe Ia: “ZUDS Science Verification is underway and reference building for ZUDS is close to completion”.

Machine Learning: “There are multiple efforts related to proper period finding going on. Combining different methods as well as different cadences. We continue our labeling efforts. A big push by early 2020 will be holistic classification.”

Multimessenger: “The MMA group had two GW detections this week and one neutrino trigger.

GW detections:

This week we witnessed two GW detections of interest. The event S191213g is a binary neutron star candidate that ZTF followed up covering 1922.7 sq deg, or 29.0% of the localization probability. Several optical counterpart candidates to S191213g were discovered in ZTF data and announced via GCN. Most of these candidates have been observed with other telescopes and spectroscopically classified as unrelated transients. The second GW event, S191216ap, is a high-confidence “mass-gap” detection, where a black hole has a lighter companion with mass between 3-5 M_sun. ZTF covered 86% of the integrated localization probability. As part of routine follow-up of S191216ap, Icecube identified a low-energy neutrino in spatial coincidence 43 seconds before the merger. The chance to observe a coincidence for a given LIGO skymap was calculated to be ~1%. HAWC identified a sub-threshold hotspot coincident with both the neutrino and GW event. Unfortunately poor weather prevented ZTF from observing, and follow up of this region by other observatories did not reveal a counterpart.

Neutrino trigger:

”Icecube reported a high-energy neutrino on December 15th, IC191215A. This neutrino was a bronze alert, with signal probability of 47%, and an energy of 132 TeV. Owing to the poor localisation of this neutrino and the closeness to the sun, with a contour of ~10 sq deg, we decided not to trigger..”

Physics of supernovae and relativistic explosions: “Last week, Adam Miller presented his paper which focuses on fitting the early-time light curves of Type Ia SNe. He concluded that the t2 model is adequate to describe all light curves. Intriguingly, if the power-law index is a free parameter in the fit, it appears that Type Ia SNe at higher redshift have shorter rise times than at low redshift. This could imply an evolution of the progenitor properties. However, this finding is an artefact. At high redshift, Type Ia SNe are detected not as early as at low redshift. Anna Ho gave an update on her FBOT (Fast Blue Optical Transient) project. She found several other interesting candidates that she is studying in detail.“

Multi-messenger workshop after the spring ZTF partnership meeting

Enabling novel real-time multi-messenger studies (26-27 March 2020)

Multi-messenger real-time studies are in an exciting stage both in terms of ongoing observational programs as well as in terms of planning for upcoming large observatories. Besides reviewing the current

status of the field, a main goal of the workshop will be to ensure that follow-up facilities, tools, data formats and policies are all developed according to our needs and at a pace such that the new data streams are optimally used.
More information can be found here.

The papers corner:

Please keep us updated about your submitted/published papers, they will be advertised here.
Please send Joy Painter, the Astronomy Librarian at Caltech, links to papers as soon as they are published. They will be kept track of here.

Reminders:

- PublicAlerts: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 tohttp://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

"You can't ruin Christmukkah. It's got twice the resistance of any other holyday" Adam Brody

Merry Christmas and happy Hanukkah!

Igor and Maayane