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Newsletter #148 December 2nd 2020

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### **ZTF Data Release 4 (Frank Masci)**

ZTF will have its fourth Public Data Release on December 9, 2020. This release builds upon the third data release to include products from (i) an additional 6 months of survey operations from the public portion of the survey, giving a total observation span of March 2018 - June 2020, and (ii) data acquired under private survey time during the first ~15.4 months of the survey, spanning March 2018 - June 2019. The private surveys include observational programs awarded by Caltech and performed by the ZTF collaboration.

The products include ~18.5 million single-exposure images, ~144,000 co-added images, accompanying source catalog files containing ~296 billion sources extracted from those images, and ~2.7 billion lightcurves constructed from the single-exposure extractions. Note: transient alerts extracted from difference-images commenced public distribution on June 4, 2018. These alerts continue to be generated and distributed as the public survey proceeds.

A guide to ZTF Data Release 4, with data access instructions and supporting documentation is available at <https://www.ztf.caltech.edu/page/dr4>

### **News from working groups**

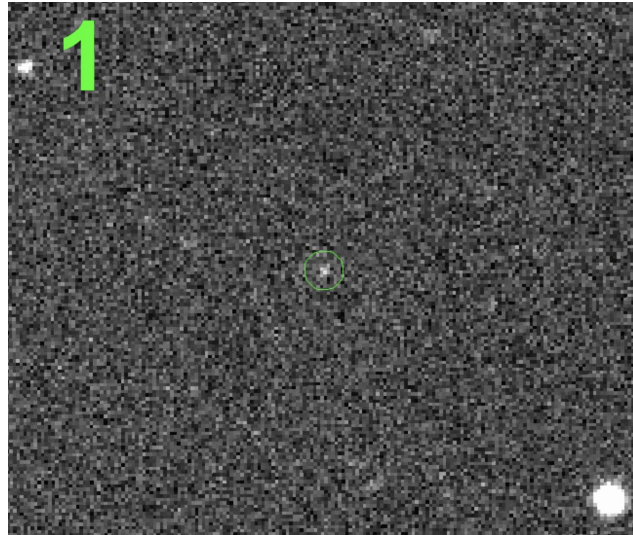
#### **Galactic and M31 Science:**

“The paper by Ilaria on a rapidly rotating white dwarf has been submitted and can already be read [here](#). We continue to explore the rich ZTF dataset with machine learning; and finding new CVs and high amplitude variables. We are also preparing for the next release of ZTF lightcurves, as well as the new Gaia release on December 3rd.”

#### **Solar System:**

“This week, the discovery of comet [C/2020 V2](#) (ZTF) was announced. This is the first comet to be discovered named after ZTF. The comet was discovered on 2020 November 2nd in the morning Twilight Survey and had a non-extended appearance in the individual ZTF images, see below a .gif with the comet detected in five individual 30 s exposure r-band images. Its parabolic orbit as shown in the diagram below

tipped off comet hunters to take a closer look where deep-stack images revealed that the comet had a cloud, diffuse coma. The comet has a perihelion distance of 2.2 au which it will pass through in 2023 May. The comet is predicted to have a brightness of  $V \sim 10$  during that time. It is possible the comet could brighten more than that as it nears the Sun if it experiences outbursts as other comets on parabolic orbits have demonstrated. It will be something for us to watch!"



#### AGNs and TDEs:

*Collaboration with SRG:* Shri Kulkarni is spending time to develop a collaboration with the Russian SRG group. Following discussions with R. Sunayev, Marat Gilfanov (MPE and IKI) was appointed as the primary contact for ZTF/SRG. The initial thrust has been on Galactic transients, TDEs and AGNs. Shri hopes that in due course there will be increased collaboration between Russian SRG and ZTF and perhaps even leading to a partnership.

*Stellar Astronomy:* SRG recently identified a transient/variable X-ray source in the Galactic plane near to Cygnus X. The object coincides with ZTF18abjpmzf. We have determined that this ZTF counterpart is not related to Cygnus X complex but is much further away (5 kpc, perhaps). Based on our analysis and modest contemplation we have concluded that ZTF18abjpmzf is most likely an accreting high mass X-ray binary (HMXB).

*Kitt Peak 84-inch telescope:* KP84 equipped with KPE is up and running, thanks to considerable work by Reed Riddle and Michael Coughlin. The dynamic photometric duo, Coughlin and Burdge are keeping KPED busy, night after night."

#### Cosmology with SNe Ia:

"Following a meeting on the partnership cadence, we decided that our goal is to shadow the MSIP fields with  $\text{Dec} > -20$ ,  $\text{EBV} < 0.1$  and  $\text{airmass} < 2$ ."

### Multimessenger:

“We are currently following-up sGRB 201130A. We have obtained two epochs so far, but due to bad weather have not detected any interesting candidates yet.”

### Physics of supernovae and relativistic explosions:

“Last week, we had a long discussion about the strategy of the high-cadence survey. One of the suggestions was to rotate the fields every 10 days, rather than following the same areas of the sky over a long season. Another option is to choose fields with existing deep multi-colour data that are up for ~4 hours a night. At the same time, the field strategy should also take into account our approved ESO/VT programs. It was also proposed to use the new, deeper reference images to go deeper, have better subtractions and. Adam, Jakob and Shri will dive into this into more detail.“

### Reminders:

- PublicAlerts: There is a [link](#) to the alerts archive on the [website](#)!
- Please help us keep 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](mailto: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](mailto:ZTF.communication.coordinators@gmail.com)

*“Sometimes, the best answer is a more interesting question.”*

*- Terry Pratchett*

Have a good and productive week!

Erik and Igor