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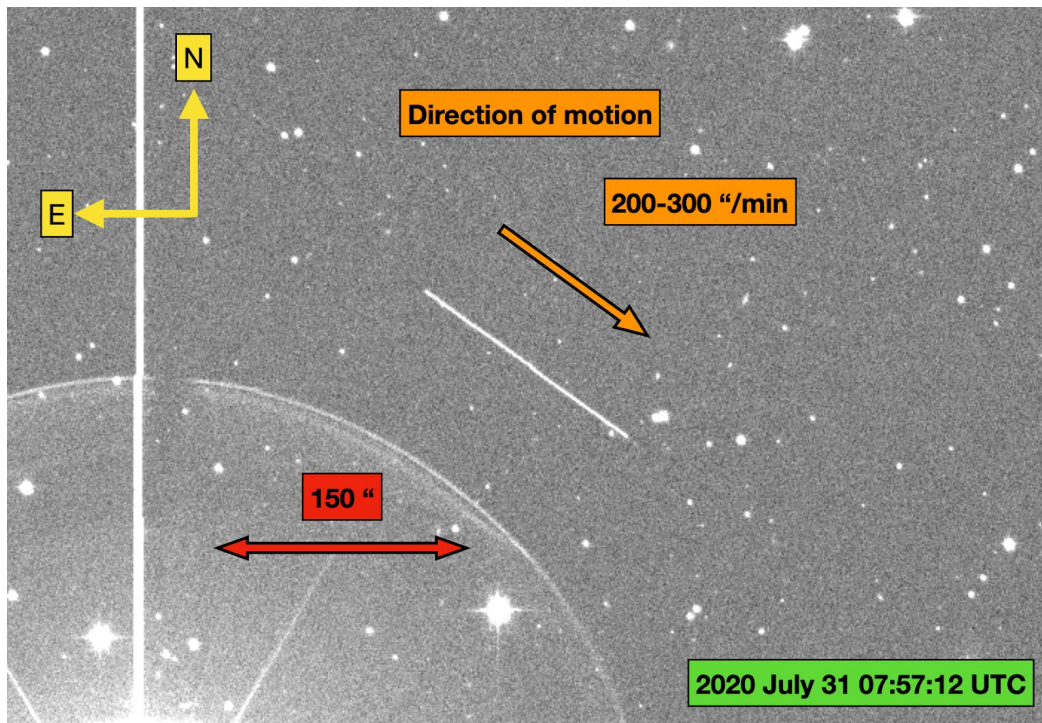
Newsletter #136 August 5th 2020

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If the newsletter does not look good in your email, check the pdf [here!](#) [BUT the new slide movie from the Solar System group can be fully appreciated only from your email version of the newsletter]

News from working groups

Solar System: “The ~20-40 m asteroid 2020 OQ6 was discovered by ZTF on 2020 July 31. Initially flagged in two r-band exposures by Angela Hsu at NCU while at a distance of ~1 lunar distance from the Earth, 2020 OQ6 was moving ~300 "/min in the southwest direction. Preliminary orbit computation indicated that the object likely had originated from outside the orbit of the Earth and passed as close as half a lunar distance in the near future. The subsequent target of opportunity observations were executed several hours after its initial observations extending its orbital arc to 2 h enabling it to be recovered by follow-up observers. A short slide movie is attached showing the initial pair of discovery images and two of the subsequent target of opportunity images. The length of its trailed detection can be seen changing even within its two-hour observational arc due to the combination of the object's close distance and the reflex motion of the Earth.



We also have an update for NEOWISE. ZTF observed the bright comet C/2020 F3 (NEOWISE) in late July. Several fields were targeted in order to cover the long cometary tails. A >10 degree long ion tail is easily seen. Similarly, long dust striae are also visible after some processing. The reduction of these data are complicated by the bright twilight sky, but further progress is expected. Thanks to Quanzhi Ye and Reed Riddle for helping planning, preparing and scheduling the observations. An image enhanced by removing the radial profile of the coma centered on the comet's optocenter from the July 26 observations clearly showing tail features due to ion and/or striae can be seen below.”



Galactic/M31: “We continue to observe the Galactic plane in i-band, focusing on the highest density/lowest dec fields to get enough epochs before the fields are not observable anymore. Work is continuing on the classification of variable stars, with the first two papers submitted (also see previous updates by the ML group). [A paper](#) was published recently that described the second accreting SdB-WD accreting binary (the first was also discovered by ZTF), establishing this type of compact binary as a new class. We continue our exploration of the ZTF data (both the PSF-photometry light curves as well as the alerts) in order to find new interesting variable stars. As always, feel free to join our biweekly meetings at 11AM Pacific.”

Physics of supernovae and relativistic explosions: “At the last telecons, we discussed a severe problem in the reporting of transients to the TNS through AMPEL. People outside of ZTF noticed that the many of the bright transients reported by AMPEL were stars. Independent of that, Jakob Nordin and the

AMPEL team worked on a new strategy to extract transients from the ZTF alert stream. The new system is in commissioning to quantify its performance and the rate of false positives.

Furthermore, Steve presented two papers on the PTF CCSN sample and the host galaxy properties. The sample includes 888 CCSNe that were detected by PTF between 2009 and 2017. The first paper presents the CCSN sample and the host galaxy populations of the ten largest CCSN classes. His team showed that regular CCSNe, i.e., Ib/c, II, IIb, IIc, are found in star-forming galaxies with masses between $1e5$ and $1e12$ solar masses. How frequently these CCSN classes are found in galaxies across this wide mass span is determined by galaxies' star-formation activity. In contrast to that, H-poor SLSNe and Ic-BL SNe are not direct tracers of star-formation. Their progenitors require low-metallicity environments. This work also revealed that a small number of CCSNe are found in extreme environments of star-formation, e.g., elliptical galaxy, starbursts, AGN environments, least-massive star-forming galaxies. These environments are not only rare from the SN perspective but also from the galaxy perspective. His team defined selection criteria to identify these extreme environments in real-time. Although this project is based on the PTF survey, this work describes several science opportunities that can be and are currently tackled with ZTF."

The papers corner:

Igor Andreoni et al. from the multi-messenger astronomy working group recently posted their paper "[Constraining the Kilonova Rate with Zwicky Transient Facility Searches Independent of Gravitational Wave and Short Gamma-ray Burst Triggers](#)" on arXiv.

Adam Miller et al. published their [paper on SN 2019yvq](#) in ApJ, accompanied by a [press release](#). The paper received very good [media coverage](#).

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 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

-**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

“When I have an idea, I turn down the flame, as if it were a little alcohol stove, as low as it will go. Then it explodes and that is my idea.” - Ernest Hemingway

Have a good and productive week!

Erik and Igor