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Newsletter #168 May 12th 2021

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### **News from the front: engineering reports (Richard Dekany)**

At around 4am local time on May 9th, the ZTF flammable gas sensor in the tube activated. The gases in question are familiar to readers: propane is used in portable stoves and BBQs and methane is the primary gas in kitchen stoves. Similar safety measures are required to avoid concentrations at which ignition becomes possible. The telescope tube is continually flushed with dry air so only a large leak poses a hazard.

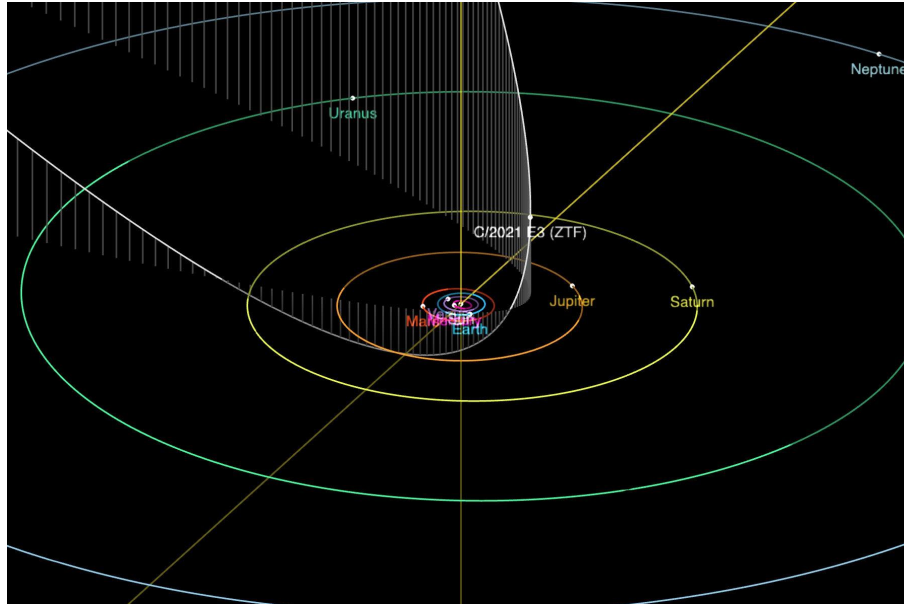
As a precaution we have a combustible gas sensor. This sensor automatically turned off the power to the compressors, as intended. ZTF started warming up but the ZTF software then alerted Richard Walters, who stopped observing operations and started contacting people to look into the matter. Staff at Palomar found that the sensor was failing. (ZTF had not lost refrigerant pressure and no gas was detected.) The compressor power supply was temporarily moved to a different power line, and ZTF started cooling back down again. The instrument was cool enough in the evening to start normal operations, and completed the full night without issue.

A new sensor is on order, and will be installed on May 11 or 12; a spare has also been ordered. The lack of sensing for a day or two represents a very low risk. We still have a sensor in the outhouse where the compressors are located and thus more potential sources of ignition.

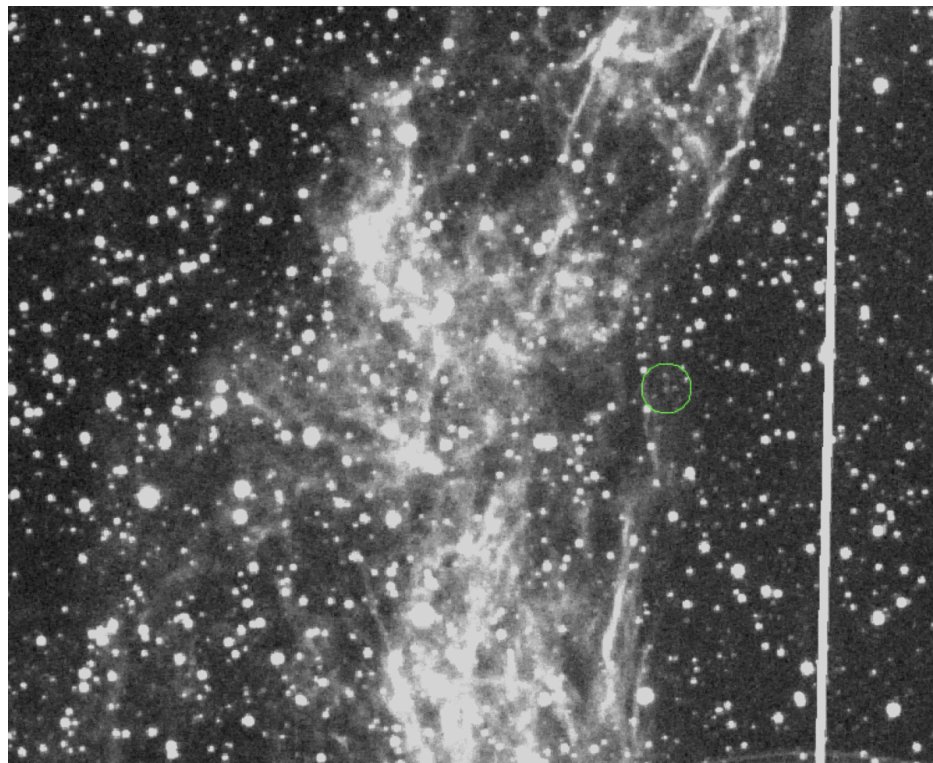
### **News from working groups**

#### **Solar System:**

“This week, the announcement of the discovery of a ZTF comet, C/2021 E3 (ZTF), [was made](#). The comet is on a retrograde orbit with an eccentricity of  $\sim 1$ . The comet is on its way into the inner Solar System where it will reach perihelion at a distance of  $\sim 1.8$  au from the Sun in 2022 June.



This comet was first discovered in the Twilight survey as a point-source near the Veil Nebula on 2021 March 9 UTC (discovery images with the Veil Nebula below).



The activity of the comet was later confirmed by follow-up observers including Kritti Sharma at the Indian Institute of Technology-Bombay using the GROWTH-India Telescope and Chris Copperwheat at Liverpool John Moores University using the Liverpool Telescope. It is likely that the activity of the comet will increase as the comet nears its perihelion passage in mid-2022, therefore, encouraging subsequent monitoring of this comet for development and evolution of its activity.”

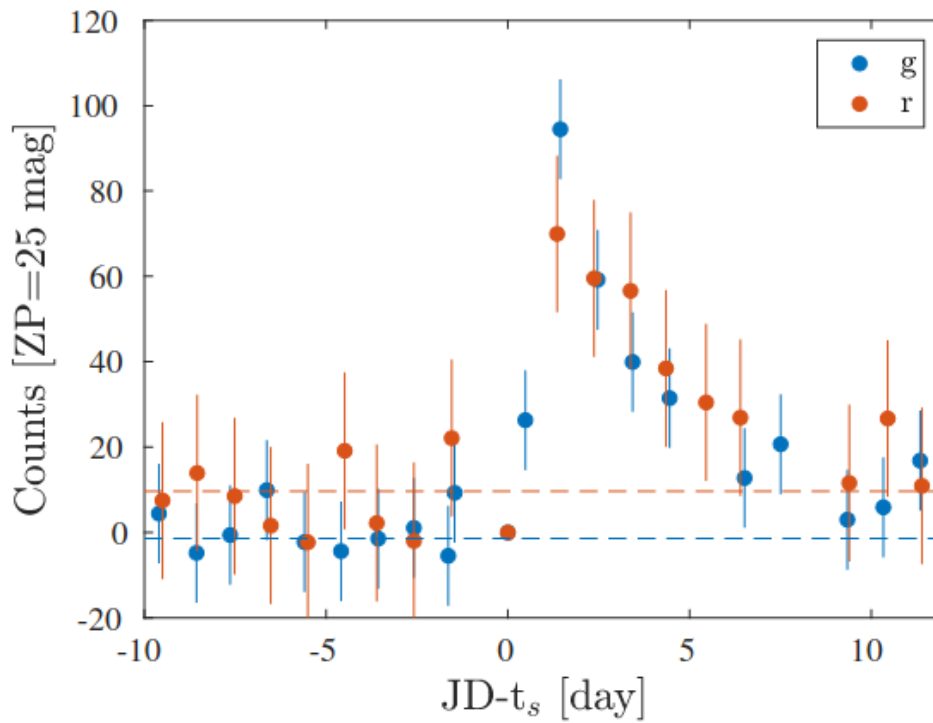
### Cosmology with SNe Ia:

“The cosmology group is currently focussed on one thing: pulling together the first statistically significant sample of SNe Ia for a population analysis. This effort spans the entire WG, with efforts on everything from selection to simulations to characterisation. Last week, the group had a detailed discussion of how to push on with the key step: photometry. Check out the phone-con notes for details, but for a short and snappy summary; the last remaining step in the plan is to generate our own reference images, and integrate them with an updated model of the PSF. All of the components are in place, so the goal is to have early results on this by the collaboration meeting.

This week, we’ve moved on to physics. Early time bumps are the name of the game. Tune in @ 3pm Europe to hear how well we can detect them and what we’re going to do with those we’ve found. Details will be on the Twiki for those late to the party.”

### Physics of supernovae and relativistic explosions:

“Eran Ofek presented his paper draft on the fast blue optical transient AT18lqh. He concludes that it is most likely powered by radioactivity (e.g., nickel decay). The high peak luminosity and short live time require that nearly the complete ejecta (0.08 Msun) consist of nickel and that the efficiency for converting gamma rays to optical photons drops from 100% to a few percent in less than 2 days. Such a transient could, for example, originate from an explosion on the surface of a neutron star or it could be the accretion-induced collapse of a white dwarf.



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### Multi-messenger:

“Two follow-up observations with ZTF were activated this week: the follow-up of Fermi short GRB 210510a and of an IceCube neutrino event. Analysis of promising candidates is on-going.”

### 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 communication coordinator Ivona Kostadinova: [ivonata@astro.caltech.edu](mailto:ivonata@astro.caltech.edu)
- 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 Ivona Kostadinova at [ivonata@astro.caltech.edu](mailto:ivonata@astro.caltech.edu)

*“Warm summer sun, shine kindly here”*

*- Mark Twain*

Have a good and productive week!

Erik and Igor