

Program – How Earth REALLY moves through the Galaxy	Volume 29, No.1 May 2023
Greg Smith – editor	Meeting: Wednesday 7pm May 17, 2023 ZOOM/R. A. Long Rm 130

Going to the Dark Side of Astronomy

By Tom Meeks

My wife and I recently purchased a Vespera electronic telescope. My other scope is a Celestron 20 cm (8 in) reflector. The Celestron came with a German Equatorial mount that was fully manual. I later upgraded to a computerized go-to mount. That seemed to be a slight cheat since the Astronomical League requires no go-to methods be used in completing the Messier challenge. Having spent years trying to find astronomical objects with little success, I decided a go-to mount was a reasonable approach.

Technology is constantly improving in all aspects of our lives. Think of the small computer we carry everywhere with us that even makes phone calls! My Celestron gave me wonderful views of the sky but was limited by the ability of the human eye to process photons. I was amazed by the little gray blobs observed for most deep sky objects.

Then Mike Fiest showed us images taken with his first and second electronic scopes. Mary (my wife) said ***“You need one of those scopes”***. That was all it took for me to go online and order one.

It arrived in about 1 week. The set-up time is minimal. I just connect it to my iPhone and let the iPhone GPS tell it where it is. The scope does the rest. No more scope alignment using multiple stars and polar observations. I used to take 30-45 minutes to get the go-to scope set up. Now I take the Vespera outside and set it on the ground. Touch the startup button, connect with Wi-Fi to my iPhone and go to initialization. The scope looks for star patterns and does the rest. I usually go back into the house and relax on the couch. Once the scope is initialized the ***Singularity*** APP suggests objects to observe based on my location. Again, I can do all this from my couch. No more worrying about the bright lights from Willow Grove boat launch or my neighbors’ houses which made observations from my house so difficult. The Vespera is mainly for deep sky objects. I purchased a solar filter for the Vespera and have taken some solar images. The Celestron scope still works great for solar system objects.

Now back to the dark side. Is it cheating to use a scope that doesn’t even require me to do alignment or look through an eyepiece. I spent some time thinking about this. The new scope is less a telescope and more a camera. Should I be in the warm house during observations? If the

scope does all the alignment, what am I really doing? I can see color images of objects that I could barely see with my Celestron. I am more likely to set up the Vespera for a few hours of observation. The Vespera APP allows 5 separate observers to connect to the scope to receive the images. I can share my observations in real time. Technology is always advancing and anything that gets more people interested in astronomy is great. I decided to look at the new generation of scopes like my progression of sailboats.

My first boat didn't have a motor. I sailed to docks and back to the trailer with sometime interesting results. My next boat was an antique wooden boat that had a habit of sinking at the dock and a motor that ran sometime. My next boat was a fiberglass racing boat that was fun to sail but had no room inside.

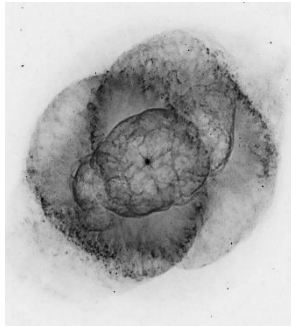
My latest boat is very comfortable, has a 50 hp engine that makes going places with no wind fun. Is it cheating to have an engine? Some sailors think so. Fiberglass boats are ugly to wood aficionados.

Life goes on and technology improves all the time. The evolution of astronomical equipment for amateurs has produced amazing instruments for us to use. I know I don't regret my purchase and look forward to sharing the observations with everyone.

**Every Night is a Starry Night
Every Day is a Star Filled Day**

A couple of Toms Pictures:
from the Vespera electronic telescope





For the first time, astronomers have witnessed a star eat an exoplanet.

The dinner bell has struck for a star in the constellation Aquila, the Eagle. Reporting in the May 4th Nature, Kishalay De (MIT) and a team of astronomers watched the star belch and brighten in a way that suggests it swallowed a closely orbiting planet.

The star in question is a nondescript Sun-like star about 12,000 light-years away. Pre-outburst observations indicate it was slightly bloated, perhaps twice as wide as the Sun, and entering its golden years. This time in a star's life can be a dangerous one for planets. As the star finishes fusing the hydrogen in its core, it brightens and swells. Eventually, it can swell enough to engulf the closest worlds, destroying them in a fiery furnace.

Observations indicate that 30% of all Sun-like stars in our galaxy will eat at least one planet as they evolve. This includes our own Sun, which in several billion years will balloon to envelop Mercury, Venus, and, perhaps, Earth — although astronomers disagree about whether our planet will skirt destruction. (It will certainly be burnt to a crisp, even if the rock itself survives.) The future victims also include roughly 90% of all the exoplanets we've detected so far, most of which nestle close to their stars.

But a planet-gorging star was not what De set out to find. De was searching for brilliant blasts from the remnants of Sun-like stars (a.k.a. white dwarfs), which make the star blaze thousands of times brighter than usual. As he trawled through survey data from the Zwicky Transient Facility (ZTF) at Palomar Observatory in California, though, he stumbled upon a star that had brightened by a factor of a few hundred over the course of a few weeks. Follow-up spectra revealed this “wimpy” outburst had released cool gas, not the hot gas that comes with the thermonuclear explosions he was seeking.

Baffled, De and his colleagues turned to infrared observations, which pick up cold stuff. These data, taken a few months after the outburst, revealed that a cloud of dusty gas surrounded the star. Digging into archival data, the astronomers also found that the star had started shedding dust a few months before the outburst ZTF caught.

This behavior looked surprisingly like a red nova, a class of stellar flare-ups thought to occur when two stars merge. Astronomers have a handful of examples in the Milky Way; the quintessential one

is V1309 Sco, which observers actually witnessed conjoin back in 2008. But red novae are hundreds or even thousands of times brighter than this flareup, called ZTF SLRN-2020.

How bright a merger event is depends on the ratio of the masses of the two objects that merge. If the outburst was a thousandth as bright as expected, it must have involved an object a thousandth as big as the star, the team reasoned. That left a planet — specifically, a gas giant.

Based on extensive comparisons with simulations, the astronomers think the star ate a world roughly 10 times Jupiter’s heft, which orbited the star about once a day. As the planet was engulfed by the expanding star, it plowed through the star’s outer atmosphere, throwing material out that cooled and formed dust, causing the initial infrared uptick. The atmosphere dragged on the planet, slowing it down and forcing it deeper. After a few days, it succumbed and plunged into the star, ejecting a bunch of gas seen as the month-long ZTF outburst that then cooled to endure as a dusty cloud glowing in infrared.

“I was really struck by the timeliness and significance of this work,” says Melinda Soares-Furtado (University of Wisconsin, Madison), who studies what happens when stars eat planets. “The scientific evidence hinting at a planetary engulfment event is quite compelling.” Given the world’s mass, it may have dove fairly deep, even reaching below the star’s outer convective zone before disintegrating, she adds.

Romuald Tylenda (Nicolaus Copernicus Astronomical Center, Poland), who with others demonstrated that V1309 Sco was a stellar melding, agrees that the extensive observations and thorough analysis are persuasive. “Yes, I am (almost) convinced that ZTF SLRN-2020 is likely to have resulted from a star-planet merger.”

Astronomers have previously seen chemical fingerprints in stars’ atmospheres that appear to be planetary debris, and they’ve also seen stars oddly spun-up — which could happen if the star ate a planet. But they haven’t caught a star in the act of feasting before.

It would be difficult to see this star’s change in rotation, De says, but they may be able to spot the crumbs in the stellar atmosphere. The team already has JWST data in hand to look for precisely that.

For now, it appears the star has settled back down to its former self, “like the star ate that planet and forgot about it completely,” De says. Given that the planet was so much smaller than the star, that’s unsurprising. “I eat a planet and then move on to my next day.”

Reference:

Kishalay De et al. “An infrared transient from a star engulfing a planet.” *Nature*. May 4, 2023.

☞ May 2023 Meeting ☞

DATE: May 17, 2023

TIME: 7:00pm

PLACE: Hybrid in person / Zoom - originating from R, A. Long H. S. Rm 130

PROGRAM: How Earth REALLY moves Through the Galaxy a PBS video

Moon Phases

New: Jun 17th, Sat. 1st Qtr.: Jun 26th Mon. Full: July 3rd Mon. 3rd Qtr.: July. 9th, Sun.

End of twilight - when the stars start to come out.

Sat Jun 17th 9:44 p.m. Thur. June 29th 9:45pm Mon July 10th 9:40pm Wed July 19th 9:33pm

The Star Report is posted on the clubs website. It is listed in the blog portion of the website.

Minutes of the March FOG Meeting

Steve Powell presented program on the Detection and Measurement of Exoplanets. This was quite a detailed presentation with the math that allows astronomers to figure out the details of an exoplanet.

Member Tom Meeks shared the fun of using his new Vespara electronic telescope/camera. He says set up is all automatic and it is up and running in around five minutes. He showed some examples of what the camera in his scope can reveal. It made for a great commercial on making you want to get one too. All for about \$2700.00

We decided that the June thru August meetings will be held at Mikes for meeting and some star gazing.

Earth Day on April 29th had some people volunteer and offered to bring their sun shielded scopes for public viewing of the sun. The weather is looking good for the 29th.

Mt.St. Helens Star Party is scheduled for Aug 12-13 with the 11th as a private star party for FOG and Rose City Astronomy. More details to come.

Elections of Officers is in May.

Friends of Galileo Club Officers

PRESIDENT	Ted Gruber
VICE-PRESIDENT/ PROGRAM CHAIR	Mark Thorson
SECRETARY	Greg Smith
TREASURER	Steve Powell
WEBSITE	Ted Gruber
NEWSLETTER ED.	Greg Smith
ALCOR	Tom Meek

Next Month's Newsletter Deadline

The deadline for items in
next month's newsletter is:

**Wednesday: seven
days before next
meeting.**

**Please feel free to send in
your thoughts and experiences
about your astronomical
adventures.**

Submit your material by E-
mail to: gryth@msn.com

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