

Program: Meteorites

**Volume 27, No.04
August 2021**

Greg Smith – editor.

Meeting: August 18, 2021

Smoked Perseids

You've heard of smoked salmon, smoked jerky, have you ever heard of smoked Perseid? Well, this year we have got some. The forest fire smoke sure does not make for easy viewing of those streaks of light. It does some funny things in the day sky too. Not only is the sun redder than normal, but it also makes for odd looking sundogs and rings around the sun. At one point Friday morning, the 22° arc around the sun looked like it had straight edges. It almost looked like a hexagon around the sun.

Did you hear the latest on the asteroid Benu? It may actually collide with the earth. Don't get all excited, and fearful. It will not be on its path to the Earth till sometime around 2180. So maybe 160 years from now our descendants can deal with it. Since it's only 1600 ft in diameter, the technology by then should be ready for it. By then its orbit may be refined enough to find that it will miss us, and Earth's gravity will sling it out of the way for good.

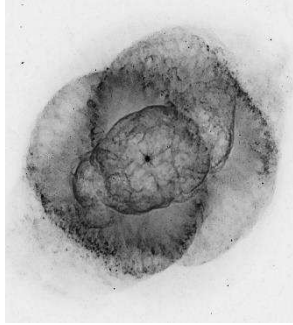
Or we could blow it up and let the debris cloud spread out for the six years that it takes to come back and make a new meteor shower. The Benu Shower.

Did anyone get a glimpse of the new visible supernova in Ophiuchus before the smoke settled in? I was going to try last Thursday night, but the smoke beat me. I've seen a supernova before a few years ago in Delphinus, the dolphin. It was quite a treat. I hope the smoke clears out before RS Ophiuchus dims so I can get a second one under my belt.

My time out observing has been rather truncated. I have had to deal with an unexpected bathroom remodel, heat, and storage of new kitchen cabinets, that totally blocked in my telescope for the past two and a half months and the remodel of our kitchen. I have had either no time, energy, or opportunity to go out and star gaze. It's looking like I can finally retrieve my scopes from their storage shed this next week. Hurray for me.

Star party at Mikes was great and so were the Perseids. Mikes new scope is amazing. Seeing color through the eyepiece is incredible.

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



RED DWARFS AREN'T SO BAD (FOR PLANETS) AFTER ALL

By Tariq Malik

Red dwarf stars appear to flare preferentially at high latitudes, which might keep their exoplanets habitable instead of hellish.

Astronomers have found that the most common stars in the galaxy might not be as perilous as once thought, making way for more potentially habitable exoplanets. The results will appear in the Monthly Notices of the Royal Astronomical Society.

Red dwarf stars — also known as M dwarfs — comprise about 75% of all stars in the Milky Way. They're much cooler and smaller than the Sun and, since some of them lack the internal layers that Sun-like stars have, their churning guts and fast rotation make them prone to extreme magnetic activity, such as flares. Flares occur when the stellar magnetic fields get twisted up and then snap back into alignment, exerting high-energy radiation in the process.

Astronomers used to worry that the radiation and particles from super-powered flares might strip these stars' planets of atmosphere, making them uninhabitable. The potentially habitable planets around cool M dwarfs are in a particularly vulnerable position, because they must orbit close to the star to be in its habitable zone, where water could remain liquid on a rocky surface.

Now, a team lead by Ekaterina Ilin (Leibniz Institute for Astrophysics Potsdam, Germany) presents evidence that flares might not be so destructive after all. Ilin's team combed through data from NASA's Transiting Exoplanet Survey Satellite (TESS), searching for M dwarf superflares that last longer than the rotation period of the star. They found four of these flaring stars — and their flares all occurred at high latitudes, near the poles. These locations are surprising because they're unlike the sites of solar flares, which are found near the Sun's equator. The harmful radiation from high-latitude flares would miss prospective planets, allowing them to retain their atmospheres.

POLAR FLARES

Ilin's team studied the M dwarfs by inspecting their light curves, which show how a star changes in brightness over time. At the onset of a flare, the light curve shows a big spike in brightness. Since these flares lasted longer than the star's rotation period, the spinning of the star alters the flare's signature, leaving a rotational fingerprint that enabled Ilin's team to pinpoint its location on the star's globe.

The flares occurred between 55° to 81° in latitude, farther from the stars' equators than the Sun would have allowed. Solar flares, as a general rule, occur within 30° of the equator.

Although Ilin's team only finds four of these high-latitude-flaring stars, Cynthia Froning (University of Texas, Austin), who was not involved in the study, thinks the results are significant. The team shows that if flares were equally likely to happen at all latitudes, they would have seen them there — statistically speaking, there's only a 1 in 1,000 chance that they would have found all the flares at high latitudes if this was not the norm for red dwarfs.

POTENTIALLY HABITABLE PLANETS

If M dwarf flares typically occur at high latitudes, planets that orbit in the plane of the star's equator — which is the case for planets around such stars where inclinations are known — will never encounter the outbursts of energetic particles.

However, a polar flare may not completely relieve exoplanets from harm's way — Ilin's team studies flares in visible light, but higher-energy ultraviolet and X-ray radiation might not act the same.

“This is significant as it is the high-energy flux that drives much of the heating in exoplanet atmospheres,” says Froning, and that heating and its consequences are what might dissipate atmospheres. However, if this higher-energy radiation flows from the poles along with the visible light, or becomes trapped inside the star's strong magnetic field, planets could still be safe.

As TESS continues to scan the sky, it will observe more long-duration flares and confirm whether red dwarf eruptions really favor high altitudes. Perhaps the most common stars in the galaxy could host habitable planets after all.

Minutes of the June Meeting

General

- Introductions, welcome everybody
- Program – Ted Gruber- The Drake Equation – or- How many civilizations are there right now.
In short; not many.
- Short break
- Sky report
- Business meeting

Business Meeting Topics

- Treasurer's report - Steve (please include mention of 2020-2021 dues options and AL dues)
- Still need a meeting place for the fall. A couple of options may open but nothing confirmed.
- Anything else you feel needs to be discussed

☞ August 2021 Meeting ☞

DATE: **Wednesday, August 18, 2021**

TIME 7:00pm

PLACE: In person at Mike's home / Zoom - a hybrid meeting.
Come if you can, else join us on Zoom from his home.

PROGRAM: Meteorites

Drinks :

Snacks :

The Star Report is posted on the clubs website: Friends of Galileo Astronomy Club - Friends of Galileo Astronomy Club

It is listed in the blog portion of the website.

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

Wed Aug.18 **8:47:06 pm** Wed Sept 1st **8:20:54 pm** Wed Sept 15th **7:52 pm**

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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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