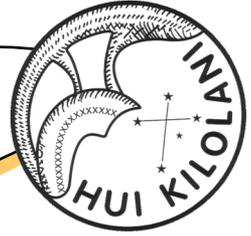


THE ASTRONEWS



Volume 72, Issue 5

May 2022

www.hawastsoc.org

A word from your editor by
Sapavith 'Ort' Vanapraks

Covid-19 Notice

HAS have decided to cancel public HAS events for the time being for both public star party at Dillingham and in town star parties at Kahala and Geiger. These cancellations will continue until Honolulu C&C and State of Hawaii lift restriction on Oahu. At that time, we will announce it on our HAS website and in the AstroNews. Meanwhile, we will continue to have the club member only star party. We will be limiting the club party to the key master and 24 extra members. All attendees must be fully vaccinated. The monthly club meeting is now being done remotely via Zoom. Please check your email and website for an update.

This past Saturday, 4/23/2022, Chris, Marufa, Luis, and I went to Ford Island for Onizuka Day of Exploration Boy Scout event. Chris and Marufa explained about our solar system to visitors of our tent using planet globes that Chris brought. I explained about the different types of telescopes with the display board and telescopes.



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Upcoming Events:

- The next Board meeting is Sun., May 1st 3:30 PM. (**Zoom Meeting**)
- The next meeting is on Tue., May 3rd at the Bishop Museum at 7:30 PM. —**Zoom Meeting**
- Bishop Museum's planetarium shows are every 1st Saturday of the month at 8:00 PM (**Online**) www.bishopmuseum.org/calendar

President's Message

May 2022

Astronomical events are often very predictable. The COVID situation, not so much. The current surge in cases has caused us to delay our move to hybrid membership meetings. However, the high number of people in Hawaii who have been vaccinated and/or who have been infected make the risk of being infected and suffering serious consequences much lower for most people now than earlier in the pandemic. We will wait for this surge to subside, but it looks like our wait to return to a more normal schedule of activities is nearing an end.

Meanwhile, the club has resumed some of our outreach activities. Marufa and I represented HAS at the IfA Open House on April 10th. Our table was located in a high traffic area, and we had almost nonstop visitors from 11 a.m. to 4 p.m.

On April 23rd, Ort, Luis Rosa, Marufa and I staffed a club table at the Onizuka Day of Exploration on Ford Island in Pearl Harbor. The Boy Scouts hosted this event, and many of them were in attendance with their families. We had some wind and a bit of rain, but the table was protected under a canopy. Ort was able to show some terrestrial views through a telescope, but Luis got only some fleeting glimpses of the Sun through his solar scope. (Of course, the overcast sky cleared as we were breaking down for the day!)

We are in the process of renewing our permissions to use Kahala and Geiger parks when we are ready to resume public star parties. I hope that will be by the time the bright planets return to the early evening sky this summer. We'll have Saturn, Jupiter, and Mars well placed for the rest of the year.

In the meantime, Bishop Museum will be holding an event for about 100 people on May 7th and needs a few telescopes. We will be recruiting volunteers at our May meeting. If you've been missing the joy of sharing the night sky with others, here's your chance.

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THE ASTRONEWS is the monthly newsletter of the Hawaiian Astronomical Society. Some of the contents may be copyrighted. We request that authors and artists be given credit for their work. Contributions are welcome. Send them to the Editor via e-mail. The deadline is the last Wednesday of each month. We are not responsible for unsolicited artwork.

Observer's Notebook—May 2022 by Ort

Planets Close to the Moon

Times are Hawaii Standard Time

- May 2, 6h, Moon 1.78° SE of Mercury; 20° from the Sun in the evening sky; magnitudes -5.9 and 0.8
- May 21, 22h, Moon 4.2° SE of Saturn; 96° from the Sun in the morning sky; magnitudes -10.4 and 0.9
- May 24, 4h, Moon 3.3° SE of Neptune; 68° from the Sun in the morning sky; magnitudes -9.1 and 7.9
- May 24, 18h, Moon 2.92° SE of Jupiter; 61° from the Sun in the morning sky; magnitudes -8.8 and -2.2
- May 26, 18h, Moon 0.27° ESE of Venus; 37° and 38° from the Sun in the morning sky; magnitudes -7.3 and -4.0; occultation
- May 28, 5h, Moon 0.38° ESE of Uranus; 21° from the Sun in the morning sky; magnitudes -5.9 and 5.9; occultation
- May 29, 1h, Moon 3.5° NNW of Mercury; 11° and 12° from the Sun in the morning sky; magnitudes -5.0 and 3.4

Other Events of Interest

Times are Hawaii Standard Time

- May 4, 21h, Uranus at conjunction with the Sun; 20.714 AU from Earth; latitude -0.38°
- May 5, 22h, Eta Aquarid meteors; ZHR 50; 3 days before First Quarter Moon
- May 15, 14.1770833333333h, Full Moon; total eclipse of the Moon
- May 24, 7h, Moon, Mars, and Neptune within circle of diameter 4.82°; about 66° from the Sun in the morning sky; magnitudes -9, 1, 8
- May 24, 15h, Moon, Mars, and Jupiter within circle of diameter 3.33°; about 62° from the Sun in the morning sky; magnitudes -9, 1, -2
- May 25, 1h, Mars and Saturn at heliocentric conjunction; longitude 319.4°
- May 26, 15h, Moon, Venus, and the Pleiades within circle of diameter 1.49°; about 38° from the Sun in the morning sky; magnitudes -7, -4, 3
- May 30, 19h, Tau Herculid meteors; ZHR 14; 1 day after New Moon

Planets in May

| | | |
|--|---|--|
|  <h3>Mercury</h3> <p>Impressive evening planet at start of May, near the Pleiades.</p> |  <h3>Venus</h3> <p>Morning planet, near Jupiter on 1 May. 10%-lit waning crescent Moon nearby on 27 May.</p> |  <h3>Mars</h3> <p>Morning planet. Close encounter with Jupiter at end of May.</p> |
|  <h3>Jupiter</h3> <p>Morning planet, near Venus on 1 May and Mars on 29 May. Waning Moon nearby on 25 May.</p> |  <h3>Saturn</h3> <p>Low altitude morning object. Waning gibbous Moon on 22 May.</p> |  <h3>Uranus</h3> <p>Uranus lines up with the Sun on 5 May and not visible this month.</p> |
|  <h3>Neptune</h3> <p>Neptune is a morning planet, but not visible this month.</p> |  <h3>Pluto (Dwarf Planet)</h3> <p>– is visible in the dawn sky, rising at 23:36 (HST) and reaching an altitude of 46° above the southern horizon</p> |  <h3>4—Vesta (Asteroid)</h3> <p>is visible in the dawn sky, rising at 01:18 (HST) and reaching an altitude of 42° above the south-eastern horizon</p> |

Meeting Minutes

H.A.S. Secretary

April 5th, 2022 7:30 PM (Zoom Meeting)

Andy Stroble

Meeting called to order at 7:31pm by President Chris Peterson with 18 participants. The AstroNews not being distributed, the minutes of the last meeting were not approved.

Institute for Astronomy Open House, April 10. HAS will have a table, from 11a-4p. Names for tags, Chris will get table covering from April. Volunteers? Marufa, 11-2; Andy 12-4. Print starmaps and application forms.

Onizuka Day, Saturday, April 23rd, 9am-3pm, at the Pacific Aviation Museum at Pearl Harbor. Parking at the Arizona Memorial lot, with a shuttle to take people to the site. Set-up time 8:00am. Volunteers: Marufa, Luis, Ort with solar.

Bishop Museum event, May 10, expecting about 100 people. Requesting scopes. And we are anticipating a hybrid meeting from the Planetarium sometime!

First time attendees? Shamar Aliz Magnic joined us for the first time. (Apologies for my spelling! -Andy)

Our speaker for the evening was Dr. Lingzhi Sun of the Hawai'i Institute of Geophysics and Planetology, UH Mānoa, who informed us about recent updates on spectrographic analysis of Apollo Lunar core samples, with interesting details about space weathering, and the intricacies of determining the origin of lunar core sample material! Landslides on the moon, wow.

Adjourned at 9:01pm. At the peak, there were 23 participants.

Faithfully submitted,
James Andy Stroble, Secretary.
April 30, 2022



Space Launch System Rocket at Dawn

NASA's Space Launch System (SLS) rocket with the Orion spacecraft aboard is seen at sunrise atop a mobile launcher at Launch Complex 39B, Monday, April 4, 2022

Image Credit: NASA/Joel Kowsky

Hawaiian Astronomical Society Event Calendar

| May 2022 | | | | | | |
|---|---|--------------------------------------|-----------|--------------------|--------|--|
| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
| 1 BoD Meeting 3:30 PM Zoom | 2 | 3 Club Meeting 7:30PM Zoom | 4 | 5 Cinco De Mayo | 6 | 7 |
| 8 Mother's Day  1st Qtr 2:21 PM | 9 | 10 | 11 | 12 | 13 | 14 |
| 15  Full Moon 6:14 PM | 16 | 17 | 18 | 19 | 20 | 21 Armed Forces Day Club Party Dillingham Airfield 7:00 PM |
| 22  3rd Qtr 8:43 AM | 23 | 24 | 25 | 26 | 27 | 28 Club Party Dillingham Airfield 7:00 PM |
| 29 | 30 Memorial Day  New Moon 1:30 AM | 31 | Notes: | | | |

<<Upcoming Star Parties>>

Club Party-Dillingham May 21 —7:00 PM

Club Party Dillingham May 28 —7:00 PM

Public Party Geiger/Kahala May 7 — **CANCELLED**

Upcoming School Star Parties

| | | |
|--|--|--|
| | | |
| | | |
| | | |

NASA's Night Sky Notes



Night Lights: Aurora, Noctilucent Clouds, and the Zodiacal Light

By David Prosper

Have you spotted any “night lights”? These phenomena brighten dark skies with celestial light ranging from mild to dazzling: the subtle light pyramid of the zodiacal light, the eerie twilight glow of noctilucent clouds, and most famous of all, the wildly unpredictable and mesmerizing aurora.

Aurora, often referred to as the northern lights (aurora borealis) or southern lights (aurora australis), can indeed be a wonderful sight, but the beautiful photos and videos shared online are often misleading. For most observers not near polar latitudes, auroral displays are relatively rare and faint, and without much structure, more gray than colorful, and show up much better in photos. However, geomagnetic storms can create auroras that dance and shift rapidly across the skies with several distinct colors and appear to observers much further away from the poles - on very rare occasions even down to the mid-latitudes of North America! Geomagnetic storms are caused when a magnetic storm on our Sun creates a massive explosion that flings a mass of particles away from its surface, known as a Coronal Mass Ejection (CME). If Earth is in the path of this CME, its particles interact with our planet’s magnetic field and result in auroral displays high up in our ionosphere. As we enter our Sun’s active period of its 11-year solar cycle, CMEs become more common and increase the chance for dazzling displays! If you have seen any aurora, you can report your sighting to the Aurorasaurus citizen science program at aurorasaurus.org

Have you ever seen wispy clouds glowing an eclectic blue after sunset, possibly towards your west or northwest? That wasn’t your imagination; those luminescent clouds are noctilucent clouds (also called Polar Mesospheric Clouds (PMC)). They are thought to form when water vapor condenses around ‘seeds’ of dust from vaporized meteorites - along with other sources that include rocket launches and volcanic eruptions - around 50 miles high in the mesosphere. Their glow is caused by the Sun, whose light still shines at that altitude after sunset from the perspective of ground-based observers. Noctilucent clouds are increasing both in frequency and in how far south they are observed, a development that may be related to climate change. Keeping in mind that observers closer in latitude to the poles have a better chance of spotting them, your best opportunity to spot noctilucent clouds occurs from about half an hour to two hours after sunset during the summer months. NASA’s AIM mission studies these clouds from its orbit high above the North Pole: go.nasa.gov/3uV3Yj1

You may have seen the zodiacal light without even realizing it; there is a reason it’s nicknamed the “false dawn”! Viewers under dark skies have their best chance of spotting this pyramid of ghostly light a couple of hours after sunset around the spring equinox, or a couple of hours before dawn around the autumnal equinox. Unlike our previous two examples of night lights, observers closer to the equator are best positioned to view the zodiacal light! Long known to be reflected sunlight from interplanetary dust orbiting in the plane of our solar system, these fine particles were thought to originate from comets and asteroids. However, scientists from NASA’s Juno mission recently published a fascinating study indicating a possible alternative origin: dust from Mars! Read more about their serendipitous discovery at: go.nasa.gov/3Onf3kN

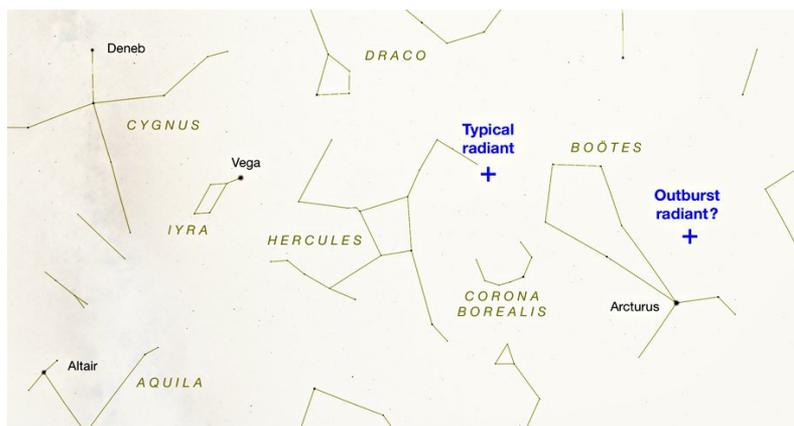
Curious about the latest research into these night lights? Find news of NASA’s latest discoveries at nasa.gov

(Continued on page 9)

Tau Herculids (061 TAH) – possible intense meteor display possible from comet 73P/Schwassmann-Wachmann 3 (SW3). On May 30-31, 2022, we might have a brief-but-intense meteor display, thanks to a comet that split apart in 1995 and is apparently still fragmenting. It might happen, as Earth passes through a particularly dense stream of icy particles which the comet left behind in the years 1892, 1897, and 1995.

Shortly after SW3 was discovered in 1930, a possible meteor shower was predicted when the Earth passed close to the comets node. The available data from 1930 showed no conclusive confirmation of activity. The assumed radiant position near τ Her led to the shower designation, although the expected radiant now is in western Boötes at the border with Canes Venatici. The extremely low entry velocity of the meteors causes a considerable

(Continued on page 10)



The usually weak Tau Herculid meteor shower has a radiant near the “knee” of Hercules. However, the outburst of meteors predicted for May 31, 2022, will shift to a radiant several degrees north of Arcturus, the brilliant anchor star in Boötes. Credit: Sky & Telescope / source: Stellarium.

Phases of the Moon (courtesy timeanddate.com)

| First Quarter | Full Moon | Last Quarter | New Moon |
|---------------|-----------|--------------|----------|
| May 8 | May 15 | May 22 | May 30 |

| Shower | Activity | Maximum | | Radiant | | V_{∞} km/s | r | ZHR |
|-------------------------------------|-------------------|---------|-------------------|----------|----------|----------------------|-----|-----|
| | | Date | λ_{\odot} | α | δ | | | |
| η -Aquiriids (ETA), 031 ETA | Apr 19– May 28 | May 06 | 45.5° | 338° | -01° | 66 | 2.4 | 50 |
| η -Lyrids (ELY), 145 ELY | May 03– May 14 | May 10 | 50.0° | 291° | +43° | 43 | 3.0 | 3 |

Observe the the Tau Herculids, it could be a big show! Tom Giguere, 808-782-1408, Thomas.giguere@yahoo.com; Mike Morrow, PO Box 6692, Ocean View, HI 96737.

Cash Flow - 3/10/2022 to 4/10/2022

| | |
|--|-----------------|
| Beginning Balance | \$4,353.99 |
| Money into selected accounts comes from | |
| Donation | \$146.00 |
| Membership - Electronic | \$120.00 |
| Membership - Family | \$4.00 |
| Membership - Paper | \$52.00 |
| Subscription - Astronomy | \$34.00 |
| Total Money In | \$356.00 |

| | |
|---|-------------------|
| Money out of selected accounts goes to | |
| | |
| Total Money Out | |
| Difference | \$356.00 |
| Ending Balance | \$4,709.99 |

Here are the financials up through April 10.

Thanks for the membership renewals (and donations) and a welcome to the new folks.

Your treasurer has had some family health issues to deal with. This meant vacation I was scheduled to take, didn't happen. While my own health is OK, these issues will consume a lot of time.

Speaking of health issues, the new Covid numbers are trickling out of the State Health Department. I put one number out there: a case load daily average from Honolulu County of 246 through April 24. That's up from 99 a month ago. Hospitalizations are going up on the mainland, not so much here, yet. Vaccinations reduce the chances of contracting Covid some, but the benefits aren't great. Where they help far more lies in keeping you out of the hospital, or dying, or contracting long Covid. Speaking of long Covid, HAS would rather its members not suffer from Covid induced strokes, embolisms, or brain damage that even a moderate infection can trigger for a year after infection. Stay safe out there.

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Comet NEOWISE flies high above a batch of noctilucent clouds in this photo from Wikimedia contributor Brwynog.
License and source CC BY-SA 4.0 https://commons.wikimedia.org/wiki/File:Comet_Neowise_and_noctilucent_clouds.jpg



The zodiacal light extends into the Pleiades, as seen in the evening of March 1, 2021 above Skull Valley, Utah. The Pleiades star cluster (M45) is visible near the top.
Credit and source:: NASA/Bill Dunford .<https://www.flickr.com/photos/gsf/51030289967>



A sampling of some of the various patterns created by aurora, as seen from Iceland in 2014. The top row photos were barely visible to the unaided eye and were exposed for 20-30 seconds; in contrast, the bottom row photos were exposed for just 4 seconds- and were clearly visible to the photographer, Wikimedia contributor Shnuffel2022.
License and source: CC BY-SA 4.0 https://commons.wikimedia.org/wiki/File:Aurora_shapes.jpg

(Continued from page 1) Editor Note

Luis set up his 4" telescope with sunspot filter, but we had clouds covered all day. I set up my 5" MAK for ground viewing. I showed our visitors the top of air control tower through it. My hope for taking a photo of the sun with sunspot was smashed. Luckily, when I returned home to Kapolei, the sky was clear enough for me to take that photo.

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(Continued from page 7) Meteor Logs

zenith attraction of the radiant position, but also makes it an obvious criterion for the shower association.

At the end of 1995, a breakup of SW3 was observed, producing fresh trails of dust. Shortly before the comet reaches its perihelion on 2022 August 25, the Earth may encounter the SW3 dust. Several model calculations have been published of the dust from the 1995 trail and others. The model results for the 1995 dust encounter in 2022 are:

May 31, 04:55 UT ($\lambda = 69.^\circ44$; min. dist. +0.0004 au; Jenniskens 2006)

May 31, 05:17 UT ($\lambda = 69.^\circ459$; -0.00214 au; Jenniskens 2006)

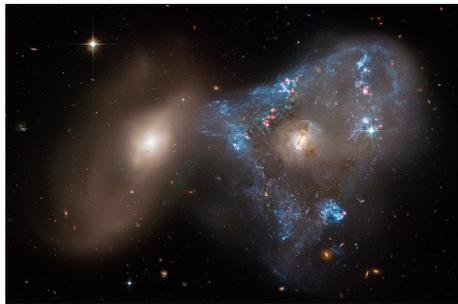
May 31, 05:04 UT ($\lambda = 69.^\circ451$; -0.00041 au; Sato 2021)

Sato adds: "the density of the trail is estimated to be low because of the large ejection velocity. However, we may be able to see a meteor storm. . . because a lot of dust is expected due to the breakup". Dust from the 1990 and 2001 trails, which are in the vicinity of the Earth close to the same time, are too far away to cause activity.

The very low entry velocity of the meteoroids ($V_\infty = 16$ km/s) will also have a significant effect on observations. For example, a (typical) meteoroid mass range of 10 mg – 1 g causes TAH-meteors of +6.7 to +2.1 mag; the same meteoroids entering the atmosphere at Geminid velocity would appear at +3.4 to -1 mag or +0.4 to -4 mag if entering at the Leonids' velocity. However, the mass distribution of the TAH meteoroids is unknown.

The event will be best visible in parts of North and entire Central America (optimum of radiant elevation and darkness: roughly southern California, Mexico to Texas). Since there are other trails (from previous perihelia and other fragments) approaching the Earth, it is worth to collect data between May 28 and June 1. For example, dust from the 1892 and 1897 trails may occur between May 30, about 16 UT and May 31, about 10 UT (Wiegert et al., 2005).

Don't forget to take a look at our regular May showers: the η -Aquiriids (ETA), associated with Comet 1P/Halley, are best viewed before dawn. The η -Lyrids (ELY) is a weak shower, also visible in the early morning hours.



Two galaxies, one on the right and one on the left. The right galaxy has a blue-white triangular star forming region surrounding it. A spectacular head-on collision between two galaxies fueled the unusual triangular-shaped star-birthing frenzy, as captured in this image from the Hubble Space Telescope.

Image Credit: NASA, ESA, STScI, Julianne Dalcanton (Center for Computational Astrophysics / Flatiron Inst. and University of Washington); Image Processing: Joseph DePasquale (STScI)



SpaceX's Axiom-1 is in the foreground on Launch Pad 39A with NASA's Artemis I in the background on Launch Pad 39B on April 6, 2022.

Axiom Mission 1 (Ax-1) is in the foreground on Launch Pad 39A with NASA's Artemis I in the background on Launch Pad 39B on April 6, 2022. This is the first time two totally different types of rockets and spacecraft designed to carry humans are on the sister pads at the same time—but it won't be the last as NASA's Kennedy Space Center in Florida continues to grow as a multi-user spaceport to launch both government and commercial rockets.

Ax-1 liftoff is scheduled at 11:17 a.m. EDT Friday, April 8, from Launch Complex 39A at NASA's Kennedy Space Center in Florida.

Image Credit: NASA/Jamie Peer



Cold as (Dry) Ice

Every winter, a layer of carbon dioxide frost (dry ice) forms on the surface of Mars. At its greatest extent in mid-winter, this frost reaches from the poles down to the middle latitudes, until it is too warm and sunny to persist. In most places this is around 50 degrees latitude, similar to the latitude of southern Canada on Earth.

Image Credit: NASA/JPL-Caltech/University of Arizona



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Apr 1, 2022

Prepping for Wet Dress Rehearsal

Space Launch System rocket poised in the Vehicle Assembly Building with the American Flag on the Mobile Launcher in the foreground.

Image Credit: NASA