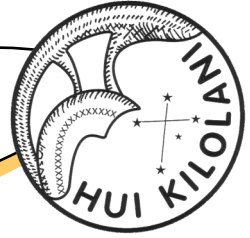


# THE ASTRONEWS



Volume 73, Issue 5

May 2023

[www.hawastsoc.org](http://www.hawastsoc.org)

## A word from your editor by Sapavith 'Ort' Vanaprucks

Since January, Hawaiian Astronomical Society has reopened public star parties for both in-town (Geiger Community Park & Kahala Community Park) and dark site (Dillingham Airfield). Dark site public star party on April 8 had okay weather. Cloud rolled in around 9:30 pm so we called it quit. We had 8 members and 8 visitors.

Dark site club star party on April 15 was also a short one. Sue reported that we have 4 members there. She said "We left at 9:15pm. There were high altitude clouds so seeing wasn't the best. But it stayed pretty clear for most of the evening."

NASA's Night Sky Notes is not available this month on NASA website. I guessed that David Prosper is taking a vacation. I will fill the page up with other images and articles from NASA.

Bill has set up the classified section on HAS Discord. Following are the rules. **CLASSIFIED RULES:** This channel is to introduce items for sale only, and to other club members only. State a price if you like, answer an ad also, but extended negotiations should be either via direct message or in person. The Hawaiian Astronomical Society and Discord bear no liability for transactions gone wrong.

During the April public star party at Dillingham Airfield, I only had time to grab my Dwarf II with me. I took 100 photos of 15 second exposure each of Horsehead Nebula and Bode Galaxy. It did not turn out too badly. Photos are on page 11.

Clear Night everyone.

*(Continued on page 11)*

## Inside this issue:

Club Information	2
President's Message	2
Observer's Notebook	3
Meeting Minutes	4
Event Calendar	5
Hubble Captures an Elusive Galaxy Cluster	6
Meteor Log	7
Treasurer's Report	8

## Upcoming Events:

- The next Board meeting is Sun., Apr. 30<sup>th</sup> 3:30 PM. **(Zoom Meeting)**
- The next meeting is on Tue., May. 2<sup>nd</sup> at the Bishop Museum at 7:30 PM. —**Hybrid (In person and Zoom) Meeting**
- Bishop Museum's planetarium show "The Star Tonight" is every 1st Saturday, 5/6/2023, of the month at 7:00 PM

## President's Message May 2023

HAS participated in two events in April that have become part of our tradition. We judged astronomy entries at the Science Fair and awarded our usual prizes to senior and junior division projects. We also staffed a table at the UH Institute for Astronomy's annual Open House. There was a good crowd as always, and several people learned of our star parties and said they would attend. Thanks to all who helped make our participation in these events successful.

In space exploration news, the European Space Agency successfully launched their JUICE (Jupiter Icy Moons Explorer) mission. It will train its sensors on the three outer Galilean satellites of Jupiter. The spacecraft is very heavy, so it will use gravity assists as it flies by Venus once and Earth three times on its way to Jupiter. It may also pass by Asteroid 223 Rosa.

The long journey will take until July 2031. JUICE will gather images and spectra and use radar, a laser altimeter, and a magnetometer to investigate Europa, Ganymede, and Callisto. After 35 flybys of the moons, JUICE will enter orbit around Ganymede, the only moon in our solar system with its own magnetosphere, and eventually impact its surface in 2035.

All these moons are thought to have oceans beneath their surfaces, although the one on Europa is the largest. These are probably the most likely places outside Earth that life may exist in our solar system. The mission is not designed to detect life, but it will better characterize the conditions there that may be conducive to it.

While it is not scheduled to launch until October of next year, NASA's Europa Clipper mission should beat JUICE to Jupiter, arriving in April of 2030. It will concentrate on Europa and carry a similar suite of instruments plus a dust analyzer and mass spectrometer. It is possible that Europa is venting water to space, and the spacecraft may be able to sample it.

These two spacecraft should give us much more insight into conditions at these moons in the next decade or so. They might bring us closer to answering one of our biggest questions: Is there life beyond Earth?

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# Observer's Notebook—May 2023 by Ort

## Planets Close to the Moon

### Times are Hawaii Standard Time

- May 13, 6h, Moon 3.0° SE of Saturn; 76° from Sun in morning sky; magnitudes -9.6 and 1.1
- May 14, 18h, Moon 1.96° SE of Neptune; 57° from Sun in morning sky; magnitudes -8.6 and 7.9
- May 17, 3h, Moon 0.74° NNW of Jupiter; 26° from Sun in morning sky; magnitudes -6.5 and -2.1; occultation
- May 17, 14h, Moon 3.3° NNW of Mercury; 21° from Sun in morning sky; magnitudes -6.0 and 1.7
- May 18, 14h, Moon 1.71° NNW of Uranus; 8° from Sun in morning sky; magnitudes -4.8 and 5.9
- May 23, 3h, Moon 2.20° N of Venus; 45° from Sun in evening sky; magnitudes -7.8 and -4.2
- May 24, 10h, Moon 3.7° NNE of Mars; 59° from Sun in evening sky; magnitudes -8.6 and 1.5

- 11 May: Northern regions of the Moon well presented
- 17 May: Daylight lunar occultation of Jupiter for the north of the UK
- 22 May: Approximate start of noctilucent cloud season
- 27 May: Stars of Aristillus clair-obscur effect visible on this evening's Moon
- 30 May: Venus reaches predicted 50% phase

## Other Events of Interest

### Times are Hawaii Standard Time

- May 1, 13h, Mercury at inferior conjunction with the Sun; 0.564 AU from Earth; latitude 0.89°
- May 5, 14h, Eta Aquarid meteors; ZHR 50; near full Moon
- May 8, 16h, Mars 5.0° S of Pollux; 65° and 66° from Sun in evening sky; magnitudes 1.4 and 1.2
- May 10, 14h, 07 Moon at perigee; distance 57.91 Earth-radii



## Planets in May

<p>♀ <b>Mercury</b></p> <p>Inferior conjunction 1 May, Mercury is poorly placed in the morning sky thereafter, so it is unlikely to be seen.</p>	<p>♀ <b>Venus</b></p> <p>This spectacular evening planet has a crescent phase at the end of the month. The Moon is close on 22 and 23 May, so it is well worth a look.</p>	<p>♂ <b>Mars</b></p> <p>Evening planet, now very small telescopically. Close to M44 at the end of the month.</p>
<p>♃ <b>Jupiter</b></p> <p>Morning planet, not well-placed. Occulted by the Moon from the north of the UK on 17 May.</p>	<p>♄ <b>Saturn</b></p> <p>Poorly positioned morning planet. Saturn remains low as the day breaks, so it is probably not worth the effort.</p>	<p>♅ <b>Uranus</b></p> <p>Uranus is in conjunction with the Sun on 9 May and so not currently visible.</p>
<p>♆ <b>Neptune</b></p> <p>Neptune is a morning object but lost in the dawn twilight.</p>	<p>♇ <b>Pluto</b> (Dwarf Planet)</p> <p>is visible in the dawn sky, rising at 23:46 (HST) and reaching an altitude of 45° above the southern horizon before fading from view as dawn breaks around 04:53.</p>	<p>♁ <b>1—Ceres</b> (Asteroid)</p> <p>is visible in the evening sky, becoming accessible around 19:59 (HST), 74° above your south-eastern horizon, as dusk fades to darkness.</p>

# Meeting Minutes

H.A.S. Secretary

*April 4<sup>th</sup>, 2023 7:30 PM (Bishop Museum Planetarium and Zoom Meeting)*

*Andy Stroble*

General Membership Meeting, Bishop Museum Planetarium and via Zoom  
April 4th, 2023, 7:30pm HST

Meeting called to order at 7:32 pm by President Chris Peterson.

Approximately 15 persons in attendance, 11 more on Zoom.

Motion to approve minutes of the March meeting made by the president, seconded by Sue Girard, vote was unanimous.

Upcoming events: The State Science Fair is taking place, judges for the HAS awards were requested, and a link to Fair's website was made available.

The Institute for Astronomy is holding its annual open house April 23rd, people needed to be at HAS table. Sue, Andy, Marufa and Jess volunteered.

Star party reports. Kahala Park saw around 20 guests. Boy Scouts are planning on attending the May public session at Dillingham.

Space news: Ryugu samples returned, and OSIRIS-REx samples to arrive in September. Crew for first personed Artemis mission named.

Vice President Barr updated us on a member questionnaire, and announced we will have a speaker for next month's meeting.

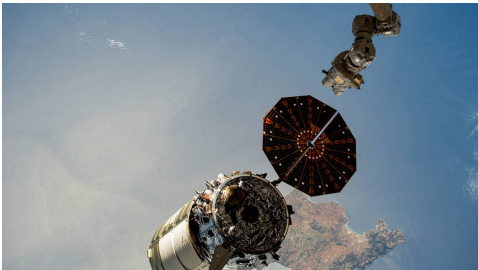
An experimental panel discussion was held, on the topic of "seeing", with some consideration of transparency, atmospheric dust, and turbulence. President Chris pointed out that the club does have a SQM in its possession, as does at least one member.

Ort shared some astrophotography taken using a Dwarf II, a "smartscope" that does auto-stacking!

Joanne once again thrilled all with a tour of the night sky, and a demonstration of some of the abilities of the Planetarium. Spring is the season to view the Southern Cross.

Meeting adjourned at 9:00.

Faithfully submitted,  
James Andy Stroble, Secretary.



The Cygnus space freighter is released from the Canadarm2 robotic arm

iss069e004822 (April 21, 2023) --- The Cygnus space freighter from Northrop Grumman is pictured moments after its release from the Canadarm2 robotic arm as the International Space Station orbited 262 miles above the Mediterranean Sea near the Spanish island of Mallorca.

# Hawaiian Astronomical Society

May 2023						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
30  BoD Meeting 3:30 PM Zoom	1	2  Club Meeting Hybrid 7:30 PM	3	4	5 Cinco De Mayo  Full Moon 07:34AM	6
7	8	9	10	11	12  3rd Qtr 04:28AM	13  Club Party Dillingham Airfield Sunset 7:01PM
14 Mother's Day	15	16	17	18	19  New Moon 05:53AM	20 Armed Forces Day  Public Party Dillingham Airfield Sunset 7:04PM
21	22	23	24	25	26	27  1st Qtr 05:22AM Public Party Geiger/Kahala Sunset 7:07PM
28	29 Memorial Day	30	31	Notes:		

## <<Upcoming Star Parties>>

**Public Party-Dillingham May 20 —7:00 PM**

**Club Party Dillingham May 13 —7:00 PM**

**Public Party Geiger/Kahala May 27 — 7:00 PM**

### Upcoming School Star Parties


## Hubble Captures an Elusive Galaxy Cluster



Oval-shaped, elliptical galaxies. Largest has 2 bright spots in its core. It and 2 others look like galaxy clusters, surrounded by smaller galaxies. Left edge: two bright stars with four long spikes. Right edge: small ring-shaped galaxy.

A menagerie of interesting astronomical finds are visible in this image from the NASA/ESA Hubble Space Telescope. In addition to several large elliptical galaxies, a ring-shaped galaxy is lurking on the right of the image. A pair of bright stars are also visible at the left of the image, notable for their colorful crisscrossing diffraction spikes. This collection of astronomical curiosities is the galaxy cluster ACO S520, located in the constellation Pictor and captured by Hubble's Advanced Camera for Surveys.

ACO S520 represents one of a series of Hubble observations searching for massive, luminous galaxy clusters that had not been captured by earlier surveys. Astronomers took advantage of occasional gaps in Hubble's busy schedule to capture images of these barely explored galaxy clusters, revealing a wealth of interesting targets for further study with Hubble and the NASA/ESA/CSA James Webb Space Telescope.

Galaxy clusters are among the largest known objects in the universe. Studying these objects can provide insights into the distribution of dark matter, the mysterious substance that makes up most of the mass of a galaxy cluster.

Text credit: European Space Agency (ESA)

Image credit: ESA/Hubble & NASA, H. Ebeling

This year the Moon will be near full for the  $\eta$ -Aquariids (031 ETA) and will also affect the minor  $\eta$ -Lyrids (145 ELY), which has peak activity around May 10.

There is a unique opportunity to view the Camelopardalids (451 CAM) of comet 209P/LINEAR. This shower had a ZHR of about 15 on 2014 May 29. In 2023 the Earth may encounter meteoroids of three trails on May 24. The positions calculated by Vaubaillon (2022) are:

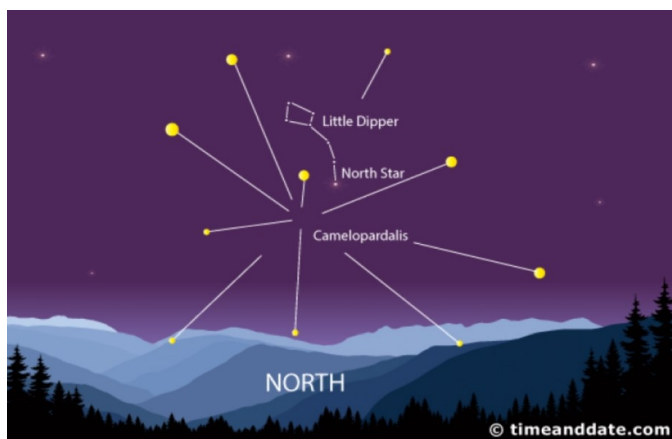
1873 trail: 07h40mUT ( $\lambda = 62.^\circ 526$ ),

1903 trail: 12h40mUT ( $\lambda = 62.^\circ 895$ ),

1909 trail: 13h07mUT ( $\lambda = 62.^\circ 895$ ).

The expected rate is unknown, but it is worth monitoring possible activity. (Radiant:  $\alpha = 180^\circ$ ,  $\delta = +79^\circ$ , in an “apparently empty region” about  $12^\circ$  from Polaris towards  $\delta$  UMA);  $V_\infty = 16$  km/s.

*(Continued on page 10)*



**Phases of the Moon** (courtesy timeanddate.com)

First Quarter	Full Moon	Last Quarter	New Moon
May 27	May 05	May 12	May 19

Shower	Activity	Maximum		Radiant		$V_\infty$ km/s	$r$	ZHR
		Date	$\lambda_\odot$	$\alpha$	$\delta$			
$\eta$ -Aquariids (ETA), 031 ETA	Apr 19–May 28	May 06	$45.5^\circ$	$338^\circ$	$-01^\circ$	66	2.4	50
$\eta$ -Lyrids (ELY), 145 ELY	May 03–May 14	May 10	$50.0^\circ$	$291^\circ$	$+43^\circ$	43	3.0	3

The usual showers might be eclipsed by the Camelopardalids! Tom Giguere, 808-782-1408, Thomas.giguere@yahoo.com; Mike Morrow, PO Box 6692, Ocean View, HI 96737.

# Cash Flow - 3/10/2023 to 4/9/2023

<b>Beginning Balance</b>	\$5,270.31
<b>Money into selected accounts comes from</b>	
Donation	\$120.00
Membership - Electronic	\$120.00
Membership - Family	\$32.00
Membership - Paper	\$52.00
Membership - Paper - Student	\$16.00
Telescope Rental	\$20.00
<b>Total Money In</b>	<b>\$360.00</b>
<b>Money out of selected accounts goes to</b>	
Astronews	\$140.44
snacks	\$36.91
<b>Total Money Out</b>	<b>\$177.35</b>
Difference	\$182.65
<b>Ending Balance</b>	<b>\$5,452.96</b>

Here are the financials up through April 9.

Thanks to everyone who paid, renewed, and donated.

Covid numbers peaked about two weeks ago. For Oahu, the average has declined 87 per day. That said, the sewage treatment numbers, after showing a decline in early April, now indicate a reversal of that decline. These should be reflected in the Covid numbers in a week or two. Hospitalizations are no longer broken down by island, but are averaging 12 per day. Stay safe, use defense in depth (N95 masks and that extra vaccine booster for us old futs).



ELVES Lightning over Italy

What's that red ring in the sky? Lightning. Less well known and harder to photograph is a different type of upper atmospheric lightning known as ELVES. ELVES are thought to be created when an electromagnetic pulse shoots upward from charged clouds and impacts the ionosphere, causing nitrogen molecules to glow. The red ELVES ring pictured had a radius of about 350 km and was captured in late March about 100 kilometers above Ancona, Italy. Years of experience and ultra-fast photography were used to capture this ELVES -- which lasted only about 0.001 second.

Image Credit & Copyright: Valter Binotto





#### *Solar Eclipse from a Ship*

*Image Credit: Fred Espenak*

*Explanation: Along a narrow path that mostly avoided landfall, the shadow of the New Moon raced across planet Earth's southern hemisphere on April 20 to create a rare annular-total or hybrid solar eclipse. From the Indian Ocean off the coast of western Australia, ship-borne eclipse chasers were able to witness 62 seconds of totality though while anchored near the centerline of the total eclipse track. This ship-borne image of the eclipse captures the active Sun's magnificent outer atmosphere or solar corona streaming into space. A composite of 11 exposures ranging from 1/2000 to 1/2 second, it records an extended range of brightness to follow details of the corona not quite visible to the eye during the total eclipse phase. Of course eclipses tend to come in pairs. On May 5, the next Full Moon will just miss the dark inner part of Earth's shadow in a penumbral lunar eclipse.*



#### *Northern Lights over Southern Europe (4/25/2023)*

*Image Credit & Copyright: Lorenzo Cordero*

*Pictured, an impressively red aurora was captured last night near the town of Cáceres in central Spain. Auroras were also reported in parts of southern Spain. The auroras resulted from a strong Coronal Mass Event (CME) that occurred on the Sun a few days ago.*

*(Continued from page 7) - Meteor Log*

Background from a 2014 article: Comet 209P/LINEAR was discovered in February 2004 by the Lincoln Near-Earth Asteroid Research project, a cooperative effort of NASA, the Massachusetts Institute of Technology Lincoln Laboratory, and the US Air Force. It is a relatively dim comet that dips inside the orbit of Earth once every five years as it loops around the sun.

Two years ago, meteor experts Esko Lyytinen of Finland and Peter Jenniskens at NASA Ames Research Center announced that Earth was due for an encounter with debris from Comet 209P/LINEAR. Streams of dust ejected by the comet mainly back in the 1800s would cross Earth's orbit on May 24, 2014. The result, they said, could be a significant meteor outburst.

Other experts agreed, in part. There is a broad consensus among forecasters that Earth will indeed pass through the debris streams on May 24th. However, no one is sure how much debris is waiting. It all depends on how active the comet was more a century ago when the debris streams were laid down.



Terran 1 Burns Methalox  
Image Credit: Relativity / John Kraus

In this close-up of a Terran 1 launch on the night of March 22 from Cape Canaveral, icy chunks fall through the stunning frame as intense blue exhaust streams from its nine Aeon 1 engines. In a largely successful flight the inovative rocket achieved main engine cutoff and stage separation but fell short of orbit after an anomaly at the beginning of its second stage flight.

*(Continued from page 1)- word from your editor*



Gear: Dwarf II & Tripod

Target: Barnard 33 Horsehead Nebula

DEC:  $-2^{\circ}27'25''$  RA:  $5^{\text{h}}41^{\text{m}}0^{\text{s}}$ ,

Left: (exp: 15, gain: 80, format: FITS, Shots To Take: 100, Shots Taken: 100, Shots Stacked: 100)

Right: Post Processing in Siril and adjust in Adobe Lightroom



Gear: Dwarf II & Tripod

Target: M81 Bode's Galaxy & M82

DEC:  $+69^{\circ}3'38''$  RA:  $9^{\text{h}}55^{\text{m}}33^{\text{s}}$ ,

Left: (exp: 15, gain: 100, format: FITS, Shots To Take: 100, Shots Taken: 100, Shots Stacked: 100)

Right: Post Processing in Siril and adjust in Adobe Lightroom



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Martian Milestone for Ingenuity

This enhanced color image of NASA's Ingenuity Mars Helicopter was taken by the Mastcam-Z instrument aboard Perseverance on April 16, 2023, the 766th Martian day, or sol, of the rover's mission.

Image Credit: NASA/JPL-Caltech/ASU/MSSS