

# THE ASTRONEWS



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

A word from your editor by  
Sapavith 'Ort' Vanapruch

HAS is getting more requests for school & Bishop Museum events. As much as the Board of Directors would like to help with all events, it is just not possible. With summer break arriving, we may not have school events until fall. We may have groups such as Boy Scout or Girl Scout requests for an event. The "3rd Friday monthly evening Planetarium 2024" at Bishop Museum on July 19th, 2024, from 6:00 PM - 9:00 PM is still going on (Full Moon). So, if you have a telescope and the event is in your area, please sign up and help.



Star Party at Dillingham Airfield on 6/1/2024 was total opposite of Clear Outside weather forecast. It showed that we should have partly low clouds. However, that was not the case. We have clear in the north on and off. 8 members stayed until 10 PM. On 6/15/2024, the star party at Kahala Community Park does not have a clear sky. We have 15 visitors there. Geiger Communities Park was a little better. We had 3 members with telescopes and 12 visitors. We showed Moon, Omega Centauri, Mizar, & Ring Nebula (very dim).

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## Upcoming Events:

- The next Board meeting is Sun., Jun 30<sup>th</sup> 3:30 PM. **(Zoom Meeting)**
- The next meeting is on Tue., Jul 2<sup>nd</sup> at the Bishop Museum at 7:30 PM. —**Hybrid (In person and Zoom) Meeting**
- Bishop Museum's planetarium show "Planetarium at night" is every 3rd Friday, 7/19/2024, of the month at 7:00 PM

# President's Message

## July 2024

It is amazing how much information astronomers can gather with telescopes. We can not only detect the existence of objects in the night sky, but we can learn much about their nature (size, shape, mass, and even some information on composition, magnetic fields, etc.) just from the electromagnetic radiation that reaches us. However, much more detailed compositional information can be derived from physical samples.

After the Apollo 11 mission returned lunar samples, it quickly became apparent that the best explanation of what they contained was that the early Moon had a magma ocean that produced mineral crystals as it cooled. Heavier minerals sank and lighter ones floated, trapping most radioactive elements and some others in a central layer dubbed "urKREEP". By the time those samples were analyzed, spacecraft had imaged the lunar farside, never visible from Earth, and it was apparent that much less mare basalt had erupted there than on the nearside. A very large, degraded basin, the Moon's largest and oldest, that ranges roughly between the south pole and a crater named Aitken and is called the South Pole-Aitken basin (or SPA), was identified.

It has been argued that the SPA impactor may have pushed much of the urKREEP to the nearside. It was the decay of the radioactive elements in the urKREEP that generated the heat to melt the rocks that eventually erupted as mare basalt. Some volcanism did occur within SPA, though, and China has just finished conducting its Chang'e 6 mission that returned samples from a mare-covered region located within SPA. It is hoped that analysis of these samples, the first collected on the lunar farside, will help us better understand the geological history of the Moon.

We have now collected samples of the solar wind, cometary material, interplanetary dust particles, and asteroidal material in addition to lunar samples. A Mars sample return is being planned, and some are talking about retrieving

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# Observer's Notebook—July 2024 by Ort

## Planets Close to the Moon Times are Hawaii Standard Time










- Jul 1, 7h, Moon 3.8° NNW of Mars; 54° from Sun in morning sky; magnitudes -8.5 and 1.0
- Jul 1, 23h, Moon 3.8° NNW of Uranus; 45° from Sun in morning sky; magnitudes -7.9 and 5.8
- Jul 2, 21h, Moon 4.9° N of Jupiter; 33° from Sun in morning sky; magnitudes -7.1 and -2.0
- Jul 6, 7h, Moon 3.8° NNE of Venus; 10° and 9° from Sun in evening sky; magnitudes -4.9 and -3.9
- Jul 7, 11h, Moon 3.1° NNE of Mercury; 23° from Sun in evening sky; magnitudes -6.1 and -0.2
- Jul 24, 11h, Moon 0.46° NNE of Saturn; 133° from Sun in morning sky; magnitudes -11.6 and 1.0; occultation
- Jul 25, 5h, Moon 0.59° N of Neptune; 123° from Sun in morning sky; magnitudes -11.3 and 7.8; occultation
- Jul 29, 6h, Moon 4.1° NNW of Uranus; 70° from Sun in morning sky; magnitudes -9.3 and 5.8
- Jul 29, 23h, Moon 4.9° N of Mars; 61° from Sun in morning sky; magnitudes -8.8 and 0.9
- Jul 30, 13h, Moon 5.3° N of Jupiter; 54° from Sun in morning sky; magnitudes -8.4 and -2.1

## Other Events of Interest Times are Hawaii Standard Time

- Jul 5, 5h, Dwarf planet 1 Ceres at opposition in longitude; magnitude 7.3
- Jul 7, 9h, Moon, Mercury, and Beehive cluster within circle of diameter 3.20°; about 22° from the Sun in the evening sky; magnitudes -6, 0, 4
- Jul 30, 14h, Southern Delta Aquarid meteors; ZHR 25; 4 days before New Moon

All month: Possibility of noctilucent cloud displays  
 1 July: Mars lies near the waning crescent Moon (am)  
 6 July: Ceres reaches opposition  
 15 & 16 July: Mars and Uranus in conjunction (am)  
 30 July: Mars, Jupiter, Uranus and crescent Moon in Taurus (am)

## Planets in July

 <h3>Mercury</h3> <p>is emerging into the evening sky as it approaches greatest elongation east. From Honolulu, it will become visible at around 19:41 (HST), 14° above your western horizon, as dusk fades to darkness.</p>	 <h3>Venus</h3> <p>recently passed behind the Sun at superior solar conjunction. From Honolulu, it is not observable – it will reach its highest point in the sky during daytime and is no higher than 5° above the horizon at dusk.</p>	 <h3>Mars</h3> <p>is currently emerging from behind the Sun. From Honolulu, it is visible in the dawn sky, rising at 01:57 (HST) – 3 hours and 58 minutes before the Sun – and reaching an altitude of 45° above the eastern horizon before fading from view as dawn breaks at around 05:22.</p>
 <h3>Jupiter</h3> <p>recently passed behind the Sun at solar conjunction. From Honolulu, however, it is visible in the dawn sky, rising at 02:54 (HST) – 3 hours and 1 minute before the Sun – and reaching an altitude of 36° above the eastern horizon before fading from view.</p>	 <h3>Saturn</h3> <p>is currently visible as a morning object. From Honolulu, it is visible in the morning sky, becoming accessible around 23:18, when it reaches an altitude of 11° above your eastern horizon.</p>	 <h3>Uranus</h3> <p>recently passed behind the Sun at solar conjunction. From Honolulu, however, it is visible in the dawn sky, rising at 01:56 (HST) – 3 hours and 59 minutes before the Sun .</p>
 <h3>Neptune</h3> <p>is currently emerging from behind the Sun. From Honolulu, it is visible in the morning sky, becoming accessible around 00:33, when it reaches an altitude of 21° above your eastern horizon.</p>	 <h3>Pluto (Dwarf Planet)</h3> <p>is visible between 21:40 and 04:44. It will become accessible at around 21:40, when it rises to an altitude of 21° above your south-eastern horizon.</p>	 <h3>1—Ceres (Asteroid)</h3> <p>is visible between 20:45 and 02:57. It will become accessible at around 20:45, when it rises to an altitude of 21° above your south-eastern horizon.</p>

# Meeting Minutes

H.A.S. Secretary

*June 4<sup>th</sup>, 2024 7:30 PM (Bishop Museum Planetarium and Zoom Meeting)*

*Andy Stroble*

Meeting called to order by President Peterson at 7:39, after some technical difficulties.

China's Chang'e 6 has landed on the Moon, according to David Leonard's report, and plans a sample return mission.

Recipient of our senior award from the State Science fair will not be able to speak to us next month, but we hope that this will be possible soon.

Ort presented information on the Aurora Borealis, including categories of Coronal Mass Ejections, compared to Carrington class events. Recent ones were G2, or moderate. Nonetheless, Aurorae were spotted as far south as Hawaii, Mexico, and Puerto Rico, and as far north as New Caledonia. Some members shared experiences seeing them while on the continent.

Peter shared a video presentation from California member Gary Chock, who captured the Aurora while viewing near Death Valley,

Don shared a photo of the aurora

Reports on April's total solar eclipse continued, with Paul sharing photos taken in Maine, and Paul Montanaro shared some photos, advice, and a picture of the tree leaf crescents.

Tom gave a report on the LPSC he recently attended, with details on using the Lunar Reconnaissance Orbiter to locate Chinese landing sites.

Sue Girard shared her experience on an Eclipse cruise, and a sequence of images. There were, she reported, several ships in the area (off the coast of Mexico), and even some planes that seemed to be there for the same purpose.

Joanne shared eclipse shots from a friend via Facebook, via a drone, over Mt. Katahdin.

Paul M mentioned he would be moving to the Big Island and offered to host members who found themselves on that Moku.

Ort shared some photos of Aquarids taken from the Lanai Lookout. Sabina shared a cell phone photo of an ISS pass from last Saturday.

Don shared about a possible meteorite and discussion ensued about how to verify it actually is a meteorite.

Dillingham: we have clearance to hold star parties for the rest of the year.

Meeting adjourned at 9:00pm

Faithfully submitted,  
Andy Stroble, Secretary

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*(Continued from page 2) President's Message*

samples from the moons of Mars as well. Samples teach us more than we could otherwise learn. The more we learn about objects in the night sky, the richer our experiences as we view them through our telescopes.

# Hawaiian Astronomical Society Event Calendar

July 2024						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
30 BoD Meeting 3:30PM Zoom	1	2 General Meeting Bishop Museum Hybrid 7:30PM	3	4 Indep. Day	5  New 12:57PM	6 Club Party Dillingham Airfield Gate Close 7:00PM
7	8	9	10	11	12 1st Qtr 12:48PM ->	13  Public Party Kahala / Geiger Sunset 7:16PM
14	15	16	17	18	19 3rd Friday Planetarium at night 7:00PM	20
21  Full 12:17AM	22	23	24	25	26 3rd Qtr 4:51PM ->	27  Public Party Dillingham Airfield Gate Close 7:00PM
28	29	30	31	Notes:		

## <<Upcoming Star Parties>>

- Club Party Dillingham July 6 —7:00 PM**
- Public Party-Dillingham July 27 — 7:00 PM**
- Public Party Geiger/Kahala July 13 — 7:00 PM**

### Upcoming School Star Parties

Date	Time	Location

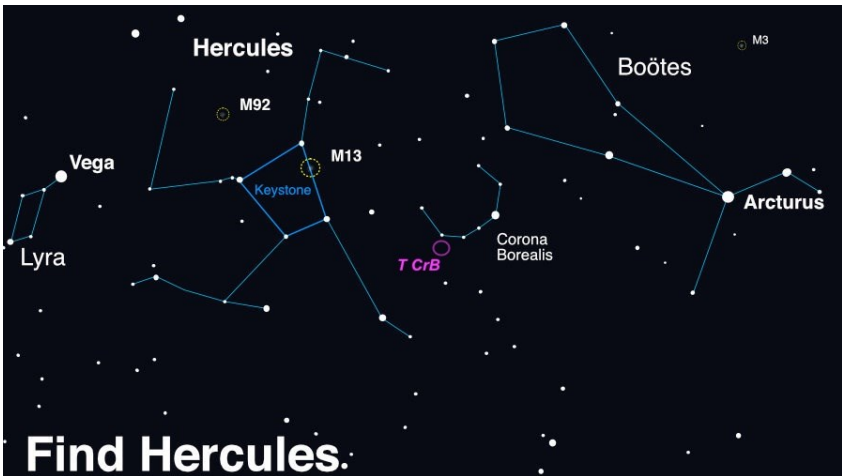
# NASA's Night Sky Notes



## July's Night Sky Notes: A Hero, a Crown, and Possibly a Nova!

By Vivian White

High in the summer sky, the constellation Hercules acts as a centerpiece for late-night stargazers. At the center of Hercules is the “Keystone,” a near-perfect square shape between the bright stars Vega and Arcturus that is easy to recognize and can serve as a guidepost for some amazing sights. While not the brightest stars, the shape of the hero’s torso, like a smaller Orion, is nearly directly overhead after sunset. Along the edge of this square, you can find a most magnificent jewel - the Great Globular Cluster of Hercules, also known as essier 13.



Look up after sunset during summer months to find Hercules! Scan between Vega and Arcturus, near the distinct pattern of Corona Borealis. Once you find its stars, use binoculars or a telescope to hunt down the globular clusters M13 (and a smaller globular cluster M92). If you enjoy your views of these globular clusters, you’re in luck - look for another great globular, M3, in the nearby constellation of Boötes. Image created with assistance from Stellarium: [stellarium.org](http://stellarium.org)

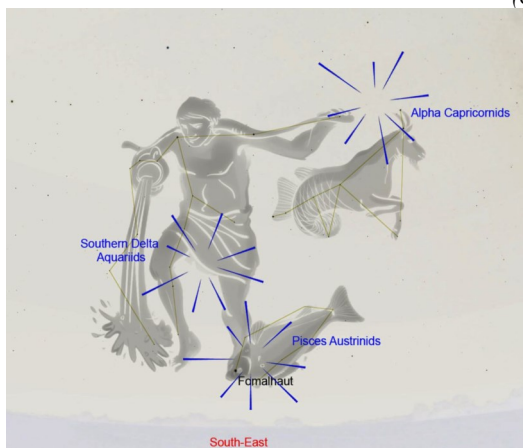
Globular clusters are a tight ball of very old stars, closer together than stars near us. These clusters orbit the center of our Milky Way like tight swarms of bees. One of the most famous short stories, *Nightfall* by Isaac Asimov, imagines a civilization living on a planet within one of these star clusters.

They are surrounded by so many stars so near that it is always daytime except for once every millennium, when a special alignment (including a solar eclipse) occurs, plunging their planet into darkness momentarily. The sudden night reveals so many stars that it drives the inhabitants mad.

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July Pegasids (175 JPE) - Meteors of this essentially northern shower have been observed repeatedly, and the shower was also included in the 1995 edition of the IMO’s Meteor Observer Handbook. Recent video meteor data (VID as well as Koseki, 2021) suggest an activity period which may extend well past July 14th, perhaps to end-July or into early August. The hourly rate is low for this shower, but occasionally bright shower meteors have been recorded visually, photographically and with video. All studies quoted in the IAU MDC database agree on the maximum date. The radiant is above the horizon all night for observers at mid-northern latitudes, with conditions best after local midnight. Pegasid meteors are relatively fast (63 km/s), which is nearly as fast as the  $\eta$ -Aquiriids that we observed last May. New Moon on July 5 provides favourable circumstances for observers.

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Radiant (approximate) of the South.  $\delta$ -Aquiriids, which peak on July 31st.

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

First Quarter	Full Moon	Last Quarter	New Moon
July 13	July 21	July 27	July 5

Shower	Activity	Maximum		Radiant		$V_{\infty}$ km/s	$r$	ZHR
		Date	$\lambda_{\square}$	$\alpha$	$\delta$			
July Pegasids (175 JPE)	Jul 04– Jul 14	Jul 10	108.0°	347°	+11°	63	3.0	3
Pisces Austrinids (183 PAU)	Jul 15– Aug 10	Jul 28	125°	341°	-30°	35	3.2	5
July $\gamma$ -Draconids (184 GDR)	Jul 25– July 31	Jul 28	125.13°	280°	+51°	27	3.0	5
South. $\delta$ -Aquiriids (005 SDA)	Jul 12– Aug 23	Jul 31	128°	340°	-16°	41	2.5	25
$\alpha$ -Capricornids (001 CAP)	Jul 03– Aug 15	Jul 31	128°	307°	-10°	23	2.5	5

Why not practice your meteor observing skills on the Southern  $\delta$ -Aquiriids – be ready for the Perseids in August! Credit to the IMO for our meteor shower information. For more info contact: Tom Giguere, 808-782-1408, Thom-

# Cash Flow - 5/10/2024 to 6/9/2024

<b>Beginning Balance</b>	<b>\$6,808.73</b>
<b>Money into selected accounts comes from</b>	
Donation	\$48.00
Membership – Electronic	\$20.00
<b>Total Money In</b>	<b>\$68.00</b>
<b>Money out of selected accounts goes to</b>	
Award	\$75.00
Subscription - Astronomy	\$68.00
<b>Total Money Out</b>	<b>\$143.00</b>
Difference	-\$75.00
<b>Ending Balance</b>	<b>\$6,733.73</b>

Here are the financials up through June 9.

Thanks to everyone who paid, renewed, and donated.

Covid wastewater figures remain high, and the trend continues up over most of Oahu. While Covid levels have begun to rise in the rest of the U.S., we can be proud for now of being #1. Hospitalizations peaked at 141. Remember to mask indoors, or in a crowd.

A brief explanation of the HAS membership expiration dates: Those who receive paper copies of the Astronews will notice your expiration month on the mailing label. Your membership expires on the first of that month. Electronic memberships get a nag e-mail starting a month in advance. Our membership roster goes to the Astronomical League every June, along with our membership dues. That gets you a subscription to the Reflector. Those whose HAS memberships expire June 1 need to get your dues on time, or you will miss getting the Reflector.



### NOAA's GOES-U Satellite Launches

A SpaceX Falcon Heavy rocket with the National Oceanic and Atmospheric Administration's GOES-U (Geostationary Operational Environmental Satellite) satellite lifts off from NASA's Kennedy Space Center in Florida on June 25, 2024. GOES-U is the fourth and final satellite in the current series of advanced weather satellites; it will provide continuous coverage of weather and hazardous environmental conditions across much of the Western Hemisphere.

Image Credit: SpaceX



*(Continued from page 6) NASA's Night Sky Notes*

Back here on our home planet Earth, we are lucky enough to experience skies full of stars, a beautiful Moon, and regular eclipses. On a clear night this summer, take time to look up into the Keystone of Hercules and follow this sky chart to the Great Globular Cluster of Hercules. A pair of binoculars will show a faint, fuzzy patch, while a small telescope will resolve some of the stars in this globular cluster.

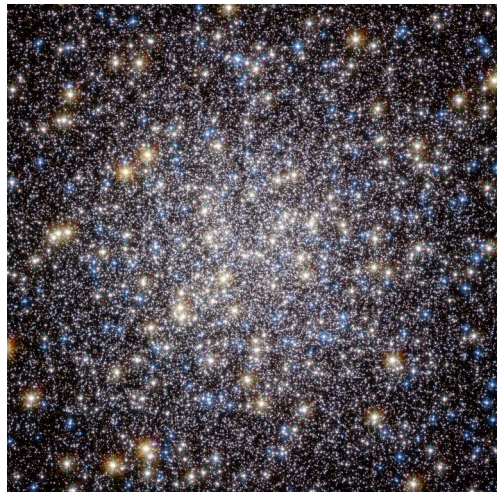


A red giant star and white dwarf orbit each other in this animation of a nova similar to T Coronae Borealis. The red giant is a large sphere in shades of red, orange, and white, with the side facing the white dwarf the lightest shades. The white dwarf is hidden in a bright glow of white and yellows, which represent an accretion disk around the star. A stream of material, shown as a diffuse cloud of red, flows from the red giant to the white dwarf. When the red giant moves behind the white dwarf, a nova explosion on the white dwarf ignites, creating a ball of ejected nova material shown in pale orange. After the fog of material clears, a small white spot remains, indicating that the white dwarf has survived the explosion.

NASA/Goddard Space Flight Center

**Bonus!** Between Hercules and the ice-cream-cone-shaped Boötes constellation, you'll find the small constellation Corona Borealis, shaped like the letter "C." Astronomers around the world are watching T Coronae Borealis, also known as the "Blaze Star" in this constellation closely because it is predicted to go nova sometime this summer. There are only 5 known nova stars in the whole galaxy. It is a rare observable event and you can take part in the fun! The Astronomical League has issued a Special Observing Challenge that anyone can participate in. Just make a sketch of the constellation now (you won't be able to see the nova) and then make another sketch once it goes nova.

Tune into our mid-month article on the Night Sky Network page, as we prepare for the Perseids! Keep looking up!



*(Continued from page 1) Editor Notes*

At June 3rd Friday monthly evening Planetarium on Friday, 6/21/2024, we have partly cloudy sky that stay low and covered the Moon throughout the evening. Visitors to Bishop Museum saw Moon on and off. Not thing much we could see. However, just as the last visitor left the area. We saw a Moonbows on the NW of Bishop Museum. You can read more about it at <https://www.astronomy.com/science/i-saw-a-rainbow-caused-by-moonlight-how-often-does-this-occur/>.



So, if you are observing and able to capture any night sky object. You can share it in AstroNews by emailing it to me at [astronews@hawastsoc.org](mailto:astronews@hawastsoc.org) with some detail. I will post it.

Clear Night everyone.



Hubble Captures a Cosmic Fossil

This NASA/ESA Hubble Space Telescope image features the globular cluster NGC 2005. It's not an unusual globular cluster in and of itself, but it is a peculiarity when compared to its surroundings. NGC 2005 is located about 750 light-years from the heart of the Large Magellanic Cloud (LMC), which is the Milky Way's largest satellite galaxy some 162,000 light-years from Earth.

Image Credit: ESA/Hubble & NASA, F. Niederhofs

(Continued from page 7) - Meteor Log

Southern  $\delta$ -Aquariids (005 SDA) - The shower is one of the most active annual sources in the southern hemisphere and has a ZHR of around 25 for about two days; the ZHR exceeds 20 between  $\lambda = 124^\circ$  and  $129^\circ$ . During the maximum there are numerous bright meteors visible, causing  $r \approx 2.5$  around the maximum and  $r \approx 3.1$  away from the peak period. “r” is the population index, a term computed from each shower’s meteor magnitude distribution.  $r = 2.0$ – $2.5$  implies a larger fraction of brighter meteors than average, while  $r$  above 3.0 is richer in fainter meteors than average.

Outbursts with a ZHR of about 40 were reported by Australian observers on 1977 July 28/29 and from Crete on 2003 July 28/29. These were before the more recent maximum (e.g., Koseki, 2021). The shower should be monitored to understand the variations and activity level. The last quarter Moon on July 28 leaves the descending branch of the shower activity profile less disturbed.



#### A Solitary Sight

The waning gibbous moon is a small gray circle at the top middle of this photo. Some details of the Moon's surface can be seen. The top half of the photo is black, while the bottom half is a hazy blue.

Image Credit: NASA, ESA/Andreas Mogensen

#### NASA's Hubble Celebrates 21st Anniversary with "Rose" of Galaxies

To celebrate the 21st anniversary of the Hubble Space Telescope's deployment into space, astronomers at the Space Telescope Science Institute in Baltimore, Md., pointed Hubble's eye at an especially photogenic pair of interacting galaxies called Arp 273. The larger of the spiral galaxies, known as UGC 1810, has a disk that is distorted into a rose-like shape by the gravitational tidal pull of the companion galaxy below it, known as UGC 1813. This image is a composite of Hubble Wide Field Camera 3 data taken on December 17, 2010, with three separate filters that allow a broad range of wavelengths covering the ultraviolet, blue, and red portions of the spectrum.



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“Earthrise” by NASA Astronaut Bill Anders

A color photograph of Earth rising over the horizon of the Moon, as seen from the Apollo 8 spacecraft.

Image Credit: NASA/Joel Kowsky