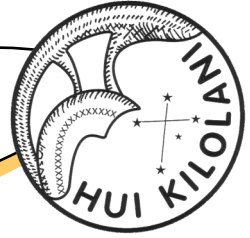


THE ASTRONEWS



Volume 73, Issue 6

June 2023

www.hawastsoc.org

A word from your editor by Sapavith 'Ort' Vanapraks

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).

After my vacation to Thailand that ended on May 5th, 2023, I considered myself to be lucky to live in Hawaii. In the 14 days and 13 nights that I stayed in Thailand, only 1 night I could see Venus and stars, and that did not even last long. Thailand's sky suffered from smoke and dust pollution (PM 2.5). Farmers burned fields like how Hawaii used to burn Sugar Cane fields. People in Thailand have to wear masks all the time.

With that sky in Thailand, I also missed Lyrids Meteor Shower on the night of April 21, 2023. Rob (Meteor Shower friend of Tom Giguere) from Haiku, Kaneohe saw a nice meteor that night. Here is what he said in the email on Sunday, Sunday April 23, 2023.

"Hi guys! Did you happen to see that killer meteor at 9:14??"

She was a Bute! Bright white with bursts of orange sparks coming off into the tail. The angle was very low but at about 55 deg. high. It lasted an easy 4 seconds and traveled from the S SW toward the N NE..

Finally, I'm in the right place at the right time. Awesome!!
Rob.."

While we are on the topic of weather, HAS May star parties have been disturbed with clouds in the sky. The May 13 party was called at 8:40 PM. The May 20 party was called at 8:45 PM. I received a report

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Upcoming Events:

- The next Board meeting is Sun., Jun. 4th 3:30 PM. **(Zoom Meeting)**
- The next meeting is on Tue., Jun 6th 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, 6/3/2023, of the month at 7:00 PM

President's Message June 2023

A supernova, SN 2023ixf, has appeared in M101, the Pinwheel Galaxy, "only" about 21 million light years away from us. M101 is located "above" the Big Dipper, between the end star of the dipper's handle, Alkaid, and the next bright star, Mizar. The precursor star is thought to be a 15-solar mass red supergiant, and this is a Type II supernova, a collapse and explosion caused when the star forms iron. Unlike earlier fusion steps, which release heat, the fusion of iron takes heat from the system, causing the collapse and resulting explosion. This type of supernova produces and disperses the heavy elements that make solar systems like ours possible.

The supernova may have peaked in brightness at a little brighter than 11th magnitude, but it should be visible in small telescopes for several more months. It should leave behind a black hole or neutron star. It is and will remain fairly well placed in the sky for viewing from the northern hemisphere.

There are other types of supernova. Type Ia events occur in binary systems when a white dwarf pulls in enough material from its companion to allow fusion of carbon, and it suddenly undergoes a runaway reaction and explodes. They behave in a very similar fashion to other Type Ia events, so their uniform luminosities can be used as standard candles to allow the measurement of their distances from Earth.

Type Ib and Ic events are also caused by core collapse, but the progenitor stars are more massive than those that result in Type II events. In these stars, the outer layers have been stripped away by fierce solar winds or encounters with other stars. They are referred to as "stripped core-collapse supernovae."

We don't frequently have an opportunity to observe a supernova, and this one is well placed and bright enough to spot in a modest sized telescope. I plan to hunt for it next time I'm out at Dillingham. Perhaps I'll see you there doing the same.

Hawaiian Astronomical Society
P.O. Box 17671
Honolulu, Hawaii 96817

President

Chris Peterson
(808) 732-7046
chrisp@higp.hawaii.edu

Vice President

Bill Barr
dustythepath@gmail.com

Secretary

Andy Stroble
jstroble@hawaii.rr.com

Treasurer

Peter Besenbruch
peter@besenbruch.info

Board Members-at-Large

Steven Chun
sctchun@usa.net

Astronews Editor

Sapavith 'ORT' Vanapruks
astronews@hawastsoc.org

HAS Webmasters

Peter Besenbruch
peter@besenbruch.info

School Star Party Coordinators

Mark Watanabe
mswatanabe@sbcglobal.net

Charles Rykken
cjrykken@gmail.com

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Observer's Notebook—June 2023 by Ort

Planets Close to the Moon Times are Hawaii Standard Time

- Jun 9, 13h, Moon 2.72° SE of Saturn; 101° and 102° from Sun in morning sky; magnitudes -10.6 and 1.0
- Jun 11, 0h, Moon 1.80° SE of Neptune; 82° and 83° from Sun in morning sky; magnitudes -9.8 and 7.9
- Jun 13, 20h, Moon 1.41° NNW of Jupiter; 47° from Sun in morning sky; magnitudes -8.0 and -2.1
- Jun 14, 23h, Moon 1.89° NNW of Uranus; 33° from Sun in morning sky; magnitudes -7.0 and 5.8
- Jun 16, 9h, Moon 4.2° N of Mercury; 17° and 16° from Sun in morning sky; magnitudes -5.5 and -0.8
- Jun 21, 18h, Moon 3.5° NNE of Venus; 44° from Sun in evening sky; magnitudes -7.7 and -4.4
- Jun 22, 4h, Moon 3.6° NNE of Mars; 49° and 48° from Sun in evening sky; magnitudes -8.0 and 1.7

Other Events of Interest Times are Hawaii Standard Time

- Jun 3, 17h, Venus dichotomy (D-shape)
- Jun 6, 14h, Daytime Arietid meteors; ZHR 30; 3 days after full Moon
- Jun 17, 6h, Saturn stationary in longitude; starts retrograde motion
- Jun 18, 3h, Saturn stationary in right ascension; starts retrograde motion
- Jun 20, 15h, June (northern summer) solstice
- Jun 21, 22h, Moon, Venus, and Mars within circle of diameter 4.95°; about 46° from the Sun in the evening sky; magnitudes -8, -4, 2
- Jun 30, 5h, Neptune stationary in longitude; starts retrograde motion

All month: Noctilucent cloud displays are possible










4 June: Venus lies at greatest evening elongation

17 June: Earliest sunrise of the year

21 June: Northern Hemisphere's summer solstice at 15:57 BST (14:57 UT)

25 June: Latest sunset of the year

Planets in June

<p> Mercury</p> <p>The planet makes a disappointing morning appearance but is best mid to late June. The Moon is nearby on 16 June.</p>	<p> Venus</p> <p>Spectacular evening planet. Greatest eastern elongation (45.4o) on 4 June. Visibility deteriorating. Moon nearby on 21 June.</p>	<p> Mars</p> <p>Low evening planet, which is best at the start of June when crossing M44, the Beehive Cluster. But the view is compromised by twilight.</p>
<p> Jupiter</p> <p>Low morning planet. Waning crescent Moon 0.6o to the north of Jupiter on 14 June at 06:00 BST (05:00 UT).</p>	<p> Saturn</p> <p>Poorly placed morning planet. Moon close on 10 June.</p>	<p> Uranus</p> <p>Not visible this month.</p>
<p> Neptune</p> <p>Neptune is a morning object but lost in the dawn twilight, so tricky to view.</p>	<p> Pluto (Dwarf Planet)</p> <p>is visible in the morning sky, becoming accessible around 23:35, when it reaches an altitude of 21° above your south-eastern horizon.</p>	<p> 1—Ceres (Asteroid)</p> <p>will become visible around 20:14 (HST), 70° above your south-western horizon, as dusk fades to darkness. It will then sink towards the horizon, setting at 01:23.</p>

May 2nd, 2023 7:30 PM (Bishop Museum Planetarium and Zoom Meeting)

Andy Stroble

Meeting called to order at 7:30pm by President Chris Peterson.

Reports on April activities: HAS awards to students participating the State Science Fair were announced.

JR Division: Certificate & Subscription to Astronomy Magazine - Ryder Tokuoka, Iao Intermediate School, "Comparison of Exoplanet Transits" (Project ID: PHYS 497)

SR Division: \$75 Cash Award, Certificate & Subscription to Astronomy Magazine - Caleb Vogt & Christian Lee, Christian Liberty Academy, "Estimating Dark Matter Content in Galaxy J010419.02+143012.3" (Project ID: PHYS 197V)

HAS participated in the Institute for Astronomy open house on April 23rd.

The Bishop Museum will be holding its monthly "Stars Tonight" program on May 6th, and has requested some telescopes for the Great Lawn. Sue, Andy, and Glen volunteered.

Attending for the first time were Natalie Cash, and Glen Martinez.

Vice President Bill Barr called for participation in the June meeting, namely, suggesting targets for viewing that can be practiced on in the Planetarium

Josh Walawender of the Keck Observatory gave a talk entitles "What is a Star?" We were given a dizzying tour of the lives of stars, primary sequences, quantum tunneling, and eternal states.

Joanna invited all to the Stars Tonight program, and gave us a planetarium show of the spring sky, featuring the Southern Cross, and the starlines to find it.

Meeting adjourned at 9:00.

There were about 15 persons in person, and 17 participants on Zoom.

Faithfully submitted,
James Andy Stroble, Secretary.



50th Anniversary of the Skylab 1 Launch

This week in 1973, the uncrewed Skylab was launched aboard a modified Saturn V launch vehicle from NASA's Kennedy Space Center.

Image Credit: NASA

Hawaiian Astronomical Society
Event Calendar

June 2023						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1	2	3  Full Moon 5:41PM
4 BoD Meeting 3:30 PM Zoom	5	6 Club Meeting 7:30 PM Hybrid	7	8	9	10  3rd Qtr 9:31AM Dillingham Airfield Public Party 7:00PM
11	12	13	14 Flag Day	15	16	17  New Moon 6:37PM Dillingham Airfield Club Party 7:00 PM
18 Father's Day	19	20	21 Start of Summer (Summer Solstice)	22	23	24 6:15P Public Party Kahala/Geiger
25  1st Qtr 9:49PM	26	27	28	29	30	Notes:

<<Upcoming Star Parties>>

- Public Party-Dillingham June 10 —7:00 PM**
- Club Party Dillingham June 17 —7:00 PM**
- Public Party Geiger/Kahala June 24 — 7:00 PM**

Upcoming School Star Parties

NASA's Night Sky Notes



Look Up in the Sky - It's a Bird

By Theresa Summer

Bird constellations abound in the night sky, including Cygnus, the majestic swan. Easy to find with its dazzling stars, it is one of the few constellations that look like its namesake and it is full of treasures. Visible in the Northern Hemisphere all summer long, there's so much to see and even some things that can't be seen. To locate Cygnus, start with the brightest star, Deneb, also the northeastern most and dimmest star of the Summer Triangle. The Summer Triangle is made up of three bright stars from three different constellations – read more about it in the September 2022 issue of Night Sky Notes. "Deneb" is an Arabic word meaning the tail. Then travel into the triangle until you see the star Albireo, sometimes called the "beak star" in the center of the summer triangle. Stretching out perpendicular from this line are two stars that mark the crossbar, or the wings, and there are also faint stars that extend the swan's wings.

From light-polluted skies, you may only see the brightest stars, sometimes called the Northern Cross. In a darker sky, the line of stars marking the neck of the swan travels along the band of the Milky Way. A pair of binoculars will resolve many stars along that path, including a sparkling open cluster of stars designated Messier 29, found just south of the swan's torso star. This grouping of young stars may appear to have a reddish hue due to nearby excited gas.

Let's go deeper. While the bright beak star Albireo is easy to pick out, a telescope will let its true beauty shine! Like a jewel box in the sky, magnification shows a beautiful visual double star, with a vivid gold star and a brilliant blue star in the same field of view. There's another marvel to be seen with a telescope or strong binoculars – the Cygnus Loop. Sometimes known as the Veil Nebula, you can find this supernova remnant (the gassy leftovers blown off of a large dying star) directly above the final two stars of the swan's eastern wing. It will look like a faint ring of illuminated gas about three degrees across (six times the diameter of the Moon).

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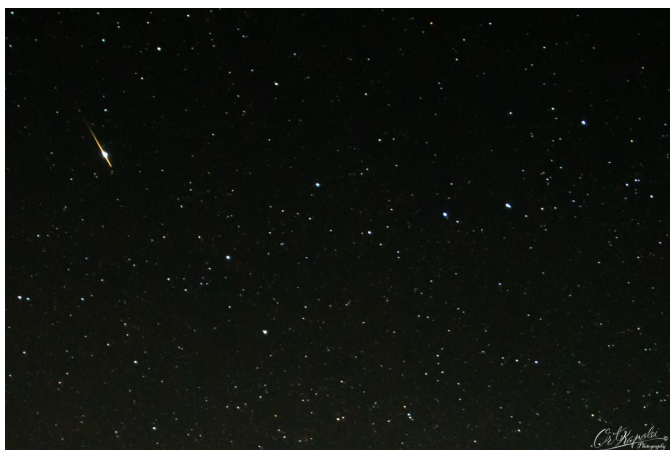


Look up after sunset during summer months to find Cygnus! Along the swan's neck find the band of our Milky Way Galaxy. Use a telescope to resolve the colorful stars of Albireo or search out the open cluster of stars in Messier 29. Image created with assistance from Stellarium: stellarium.org

June meteor showers:

The June Bootids (170 JBO) shower unexpectedly returned in 1998 (ZHR 50 – 100+). Another outburst of similar length (ZHR \approx 20–50) was observed on 2004 June 23. The return predicted in 2010 yielded a poorly established ZHR < 10 on June 23–24. Prior to 1998, only three more probable returns had been detected, in 1916, 1921 and 1927 (however, with different reliability). The orbit of the parent comet 7P/PonsWinnecke (orbital period about 6.4 years, last perihelion passage on 2021 May 27) currently lies around 0.24 astronomical units outside the Earth’s at its closest approach. The 1998 and 2004 events resulted from meteoroids ejected from the comet in the past when the comet was still in a different orbit. For the 2023 return, there are no predictions of peculiar activity published. All observers are asked to monitor throughout the proposed period, in case of any activity. Some moonlight (first quarter on June 25) will affect this shower.

(Continued on page 10)



A tau Herculis (TAH) photo by Ort at Mokuleia Army Beach on May 30, 2022

Phases of the Moon (courtesy timeanddate.com)

New Moon	First Quarter	Full Moon	Last Quarter
June 17	June 25	June 03	June 10

Shower	Activity	Maximum		Radiant		V_{∞} km/s	r	ZHR
		Date	λ°	α	δ			
Dayt. Arietids (171 ARI)	May 14 - Jun 24	Jun 07	76.6°	44°	+24°	38	2.8	30
June Bootids (170 JBO)	Jun 22 - Jul 02	Jun 27	95.7°	224°	+48°	18	2.2	Var

Observing new meteor showers helps our understanding of meteor showers in general ... Tom Giguere, 808-782-1408, thomas.giguere@yahoo.com; Mike Morrow, PO Box 6692, Ocean View, HI 96737.

Cash Flow - 3/10/2023 to 5/9/2023

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

There was no financial activity between April 10 and May 9, so no report this month. That said, I want to thank everyone who renewed and welcome the new members.



Observatory Aligned with Moon Occulting Jupiter

A dark mountain lies in the center with an observatory building sporting two telescope domes. The background sky appears dark blue. Behind the center of the observatory is part of a crescent moon, with an unusual bright spot to its upper left.

Image Credit & Copyright: Rick Whitacre; Text: Natalia Lewandowska (SUNY Oswego)

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

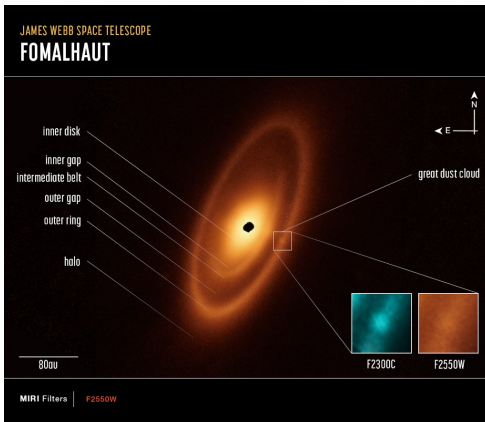
Speaking of long-dead stars, astronomers have detected a high-energy X-ray source in Cygnus that we can't see with our eyes or backyard telescopes, but that is detectable by NASA's Chandra X-ray Observatory. Discovered in 1971 during a rocket flight, Cygnus x-1 is the first X-ray source to be widely accepted as a black hole. This black hole is the final stage of a giant star's life, with a mass of about 20 Suns. Cygnus x-1 is spinning at a phenomenal rate – more than 800 times a second – while devouring a nearby star. Astronomically speaking, this black hole is in our neighborhood, 6,070 light years away. But it poses no threat to us, just offers a new way to study the universe.

Check out the beautiful bird in your sky this evening, and you will be delighted to add Cygnus to your go-to summer viewing list. Find out NASA's latest methods for studying black holes at www.nasa.gov/black-holes



While the black hole Cygnus x-1 is invisible with even the most powerful Optical telescope, in X-ray, it shines brightly. On the left is the optical view of that region with the location of Cygnus x-1 shown in the red box as taken by the Digitized Sky Survey. On the right is an artist's conception of the black hole pulling material from its massive blue companion star.

(Credit: NASA/CXC chandra.harvard.edu/photo/2011/cygx1/)



Fomalhaut's Dusty Debris Disk

Fomalhaut is a bright star, a 25 light-year voyage from planet Earth in the direction of the constellation Piscis Austrinus. Astronomers first noticed Fomalhaut's excess infrared emission in the 1980s. Space and ground-based telescopes have since identified the infrared emission's source as a disk of dusty debris, evidence for a planetary system surrounding the hot, young star. But this sharp infrared image from the James Webb Space Telescope's MIRI camera reveals details of Fomalhaut's debris disk never before seen, including a large dust cloud in the outer ring that is possible evidence for colliding bodies, and an inner dust disk and gap likely shaped and maintained by embedded but unseen planets. An image scale bar in au or astronomical units, the average Earth-Sun distance, appears at the lower left. Fomalhaut's outer circumstellar dust ring lies at about twice the distance of our own Solar System's Kuiper Belt of small icy bodies and debris beyond the orbit of Neptune.

Image Credit: NASA, ESA, CSA, Processing: András Gáspár (Univ. of Arizona), Alyssa Pagan (STScI), Science: A. Gáspár (Univ. of Arizona) et

(Continued from page 7) - Meteor Log

The tau Herculis (TAH) are an irregular shower that is not active every year. The shower is associated with comet Schwassmann-Wachmann 3 and featured strong displays seen in 1930 and 2022. Due to recent activity from the comet, this shower could produce more activity in upcoming years. The radiant lies in northern Bootes, 1 degree north of the 4th magnitude star known as Nekkar (beta Bootis). Unlike last year, no exceptional activity is expected from this source in 2023. Rates are not expected to be more than 1 meteor per hour, if that much. With an entry velocity of 15 km/sec., the average tau Herculid meteor would be of very slow velocity.



Halley Dust, Mars Dust, and Milky Way

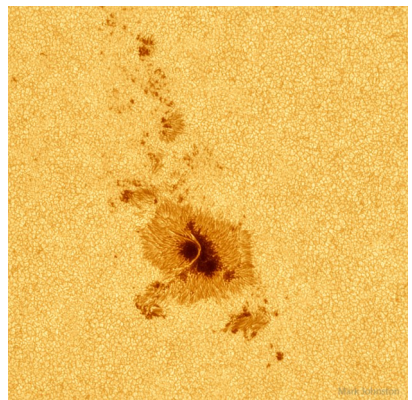
Grains of cosmic dust streaked through night skies in early May. Swept up as planet Earth plowed through the debris streams left behind by periodic Comet Halley, the annual meteor shower is known as the Eta Aquarids. This year, the Eta Aquarids peak was visually hampered by May's bright Full Moon, though. But early morning hours surrounding last May's shower of Halley dust were free of moonlight interference. In exposures recorded between April 28 and May 8 in 2022, this composited image shows nearly 90 Eta Aquarid meteors streaking from the shower's radiant in Aquarius over San Pedro de Atacama, Chile. The central Milky Way arcs above in the southern hemisphere's predawn skies. The faint band of light rising from the horizon is Zodiacal light, caused by dust scattering sunlight near our Solar System's ecliptic plane. Along the ecliptic and entrained in the Zodiacal glow are the bright planets Venus, Jupiter, Mars, and Saturn. Of course Mars itself has recently been found to be a likely source of the dust along the ecliptic responsible for creating Zodiacal light.

Image Credit & Copyright: Petr Horalek / Institute of Physics in Opava (May 4, 2022)

Sunspot with Light Bridge

Why would a small part of the Sun appear slightly dark? Visible is a close-up picture of sunspots, depressions on the Sun's surface that are slightly cooler and less bright than the rest of the Sun. The Sun's complex magnetic field creates these cool regions by inhibiting hot material from entering the spots. Sunspots can be larger than the Earth and typically last for about a week. Part of active region AR 3297 crossing the Sun in early May, the large lower sunspot is spanned by an impressive light bridge of hot and suspended solar gas. This high-resolution picture also shows clearly that the Sun's surface is a bubbling carpet of separate cells of hot gas. These cells are known as granules. A solar granule is about 1000 kilometers across and lasts for only about 15 minutes.

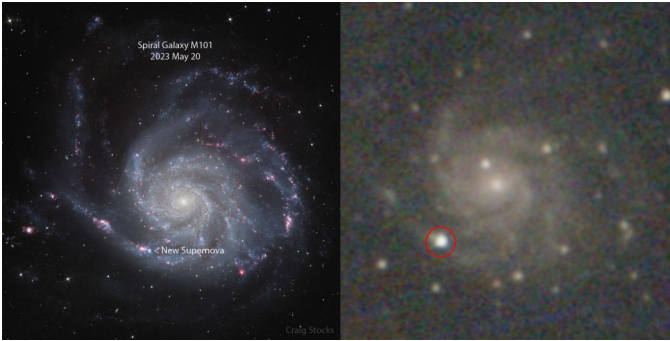
Image Credit & Copyright: Mark Johnston



(Continued from page 1)- word from your editor

from the Geiger Star Party on May 27, 2023. We had 2 members there (Steven & Tom), but no visitors.

On Friday, May 26, 2023, the sky looked good enough so I went out with my Dwarf II and tried to catch the supernova, SN 2023ixf. I think I get it. Below are the comparison photos between the NASA stock photo taken on May 22 and mine from that night.



Next day (Saturday, May 27, 2023) is the 2nd day of Lahaina Noon on Oahu. You can get 2023 Lahaina Noon from Lovebigisland.com. (Lahaina Noon in Hawai'i: When and Where to BEST see it (2023) (lovebigisland.com) I went out at 12:18 PM to start taking a picture of my Yeti with no shadow. Pretty cool. Next Lahaina Noon for Oahu will be on July 15 - 16, 2023 at 12:37 PM.

Clear Night everyone.



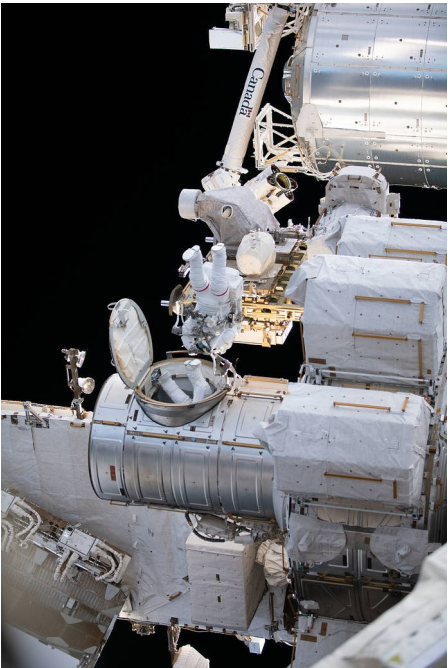
The Spanish Dancer Spiral Galaxy

If not perfect, then this spiral galaxy is at least one of the most photogenic. An island universe containing billions of stars and situated about 40 million light-years away toward the constellation of the Dolphinfish (Dorado), NGC 1566 presents a gorgeous face-on view. Classified as a grand design spiral, NGC 1566 shows two prominent and graceful spiral arms that are traced by bright blue star clusters and dark cosmic dust lanes. Numerous Hubble Space Telescope images of NGC 1566 have been taken to study star formation, supernovas, and the spiral's unusually active center. Some of these images, stored online in the Hubble Legacy Archive, were freely downloaded, combined, and digitally processed by an industrious amateur to create the featured image. NGC 1566's flaring center makes the spiral one of the closest and brightest Seyfert galaxies, likely housing a central supermassive black hole wreaking havoc on surrounding stars and gas.

Image Credit: ESA, NASA, Hubble; Processing: Detlev Odenthal



**H.A.S.
P.O. Box 17671
Honolulu, HI 96817**



Spacewalkers Stephen Bowen and Sultan Alneyadi exit the Quest airlock

NASA astronaut Stephen Bowen and United Arab Emirates astronaut Sultan Alneyadi (partially obscured) are pictured in their spacesuits, exiting the International Space Station's Quest airlock and beginning a spacewalk on April 28, 2023.

Image Credit: NASA