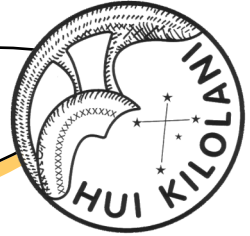


# THE ASTRONEWS



Volume 72, Issue 1

January 2022

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

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

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.

December 2021 had not been good for me as an astrophotographer. Oahu was cloudy and rainy pretty much the whole month. The night of the Geminids Meteor Shower, Monday, 12/13/2021, started out to be a cloudy night, but no high cloud. We had rain past 1:30 AM, but it stopped. It stayed cloudy until around 2:45 AM. After that clouds dissipated, most of my meteor photos came after 2:50 AM. You can read more about it in Tom Giguere's Meteor Log.



Composite Geminids Meteors from Mokuleia Army Beach by Ort

(Continued on page 10)

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## Upcoming Events:

- The next Board meeting is Sun., January 2<sup>nd</sup> 3:30 PM. (**Zoom Meeting**)
- The next meeting is on Tue., January 4<sup>th</sup> 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](http://www.bishopmuseum.org/calendar)

# President's Message

## January 2022

If you attended the December meeting, you may recall that we were planning to make the January meeting a hybrid one where some members would gather at the Bishop Museum planetarium while others joined by Zoom. Since then, the Omicron variant has caused the number of COVID infections to reach record levels in Hawaii, especially on Oahu, so the board has decided to put off the hybrid meetings until a safer time.

I have said before that we live in the age of hype, and that continues to be true. You have no doubt heard that the Parker Solar Probe has "touched the Sun." W-e-l-l, sort of. The spacecraft passed through the outer fringes of the solar corona, kind of like the Sun's atmosphere that we can only see easily during a total solar eclipse. The temperature in the corona rises extremely high over a relatively small distance, and we don't understand quite how that happens.

Parker passed about 6.5 million miles from the Sun's surface and will eventually approach to about 3.83 million miles. The latter is equivalent to passing about 35,000 miles from the surface of Earth. Parker discovered different conditions inside the corona that are helping us understand the behavior of the material there, and that is a phenomenal achievement, but even if an asteroid passed through the tenuous outer part of our atmosphere, would you say it had "touched Earth?"

The other big news in December was the launch (finally!) of the James Webb Space Telescope on Christmas Day. It will take a while for the spacecraft to travel to the Sun-Earth L2 point (about 1.5 million km from Earth) and to deploy its mirror and Sun shield and calibrate its instruments. First science returns will be in about six months. The 6.5-m mirror (Hubble's is 2.4 m) was too large to be flown fully assembled. It is optimized for observing in the infrared, but there is some overlap with Hubble's range. I expect some of JWST's first observations will be of objects Hubble has imaged to correlate the response of the two telescopes' respective detectors. The infrared sensors on JWST will allow it, among other tasks, to observe light from distant galaxies that has been extremely redshifted on its journey to Earth.

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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 15<sup>th</sup> of each month. We are not responsible for unsolicited artwork.

# Observer's Notebook—January 2022 by Ort

## Planets Close to the Moon

### Times are Hawaii Standard Time










- Jan 3, 0h, Moon 7.5° S of Venus; 10° from the Sun in the evening sky; magnitudes -5.1 and -4.2
- Jan 3, 17h, Moon 3.1° SE of Mercury; 19° from the Sun in the evening sky; magnitudes -6.1 and -0.7
- Jan 5, 18h, Moon 4.2° SE of Jupiter; 46° from the Sun in the evening sky; magnitudes -8.1 and -2.1
- Jan 7, 4h, Moon 3.7° SE of Neptune; 64° from the Sun in the evening sky; magnitudes -9.0 and 7.9
- Jan 11, 3h, Moon 1.35° SE of Uranus; 110° from the Sun in the evening sky; magnitudes -10.7 and 5.7
- Jan 29, 6h, Moon 2.43° S of Mars; 36° from the Sun in the morning sky; magnitudes -7.4 and 1.4
- Jan 30, 17h, Moon 7.5° S of Mercury; 16° from the Sun in the morning sky; magnitudes -5.7 and 1.5

## Other Events of Interest

### Times are Hawaii Standard Time

- Jan 3, 11h, Quadrantid meteors; ZHR 120; 1 day after New Moon
- Jan 3, 17h, Earth at perihelion; 0.9833 AU from the Sun
- Jan 6, 19h, Moon shows maximum libration for the year, 9.89°
- Jan 12, 19h, Mercury 3.4° W of Saturn; 17° and 20° from the Sun in the evening sky; magnitudes 0.2 and 0.7; quasi-conjunction
- Jan 15, 13h, Mercury at perihelion, 0.3075 AU from the Sun
- Jan 15, 22h, Pluto at conjunction with the Sun; 35.428 AU from Earth; latitude -1.80°
- Jan 22, 20h, Venus at perihelion, 0.7184 AU from the Sun
- Jan 23, 0h, Mercury at inferior conjunction with the Sun; 0.663 AU from Earth; latitude 6.76°

## Planets in January

 <h3>Mercury</h3> <p>Evening planet, best in first half of January. Near Venus on 1 Jan, and Saturn 14 Jan.</p>	 <h3>Venus</h3> <p>Inferior conjunction on 9 Jan, thereafter a morning object, blazing at mag. -4.5 at the end of the month.</p>	 <h3>Mars</h3> <p>Morning planet, slowly brightening. Rises nearly two hours before the Sun for much of January.</p>
 <h3>Jupiter</h3> <p>Bright evening planet, best at the start of January. Waxing crescent Moon nearby on 5 and 6 Jan.</p>	 <h3>Saturn</h3> <p>Evening planet. Near Mercury mid-month. Lost after 20 Jan.</p>	 <h3>Uranus</h3> <p>Dim evening planet, best seen at the start of the month.</p>
 <h3>Neptune</h3> <p>Evening planet, deteriorating in visibility throughout January.</p>	 <h3>Pluto (Dwarf Planet)</h3> <p>will pass close to the Sun in the sky as its orbit carries it around the far side of the solar system from the Earth.</p>	 <h3>1—Ceres (Asteroid)</h3> <p>is visible in the evening sky, becoming accessible around 19:05 (HST), 69° above your eastern horizon, as dusk fades to darkness.</p>

Meeting called to order at 7:31 pm by President Chris Peterson with 17 participants.

Pearl Harbor Anniversary was recognized.

First time attendee: Andre Hassid of the West Hawaii Astronomy Club joined us.

Board Elections: there being no new nominations, Steven Chun moved that we re-elect the current board members, Sue Girard seconded the motion, and the Society voted unanimously to do so.

Members who participated reported on the Makahiki event of Dec. at Magic Island. Nick said there was a lot of looking at the peak of Diamond Head, given the cloud cover, but a peek at some astronomical objects did occur. Allegedly, there is talk of holding such events monthly, and on neighbor islands.

Bishop Museum Planetarium Anniversary event Friday, Dec. 10, 5:30-7:30. Projected attendance is now ~40. Tony emailed that volunteers need to have ID and Vax card. Chris, Steve, and Marufa said they would be there.

Discussion on whether to resume monthly meetings in the Planetarium, with the addition of concurrent zoom meeting, took place. Our first meeting of the new year was proposed. There were no objections, and the board was instructed to explore the possibility. [Secretary's note: the Board has since voted to not pursue hybrid meetings at this time, given the Omicron surge of Covid-19]

Andre from the West Hawaii Astronomy Club (WHAC) introduced their club, and explained how the pandemic has impacted them. Previously, they held monthly meetings at the Keck Observatory facilities in Waimea, but Covid-19 put that on hold. Participation in the club fell off, so they went to zoom meeting, much like HAS has, often with presentations by professional astronomers. WHAC is proposing that we hold joint meetings, and will send a zoom invite for their next meeting, 6pm on the second Tuesday of the month.

Astronomical news about Lucy mission to the Trojans, Mars machines Ingenuity and Curiosity, and the upcoming launch of the James Web telescope launch on Dec. 22, was shared.

Marufa Bhuiyan announced that her organization is accepting applicants for Analog Astronaut Training.

Shawn Fields shared an amazing photo of the Heart Nebula. Yours truly shared lens flare Lunar eclipse shots. Ort showed photos of the Pleiades, Orion Nebula, and his impressive composite of the Lunar eclipse. Steve Chun displayed a solar photo taken using a calcium filter and a Herschel wedge, and a lunar photo taken with a Samsung S21 Ultra.

Peter displayed a chart of the progress of comet Leonard, a history of the James Webb telescope, and some information on NASA's Double Asteroid Redirection Test (DART) mission, which aims to move one of the Didymos asteroid system, the moonlet, Dimorphos.

Kim the Harpist played "Mele Kalikimaka" for us. Ort reminded all of the Geminid meteor shower.

*(Continued on page 8)*

# Hawaiian Astronomical Society Event Calendar

January 2022							Feb ▶
◀ Dec	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
							1 New Year's Day  Member Only Party Dillingham Airfield 6:01 PM
2  New Moon 8:33 BoD Meeting 3:30 PM Zoom	3	4  Club Meeting 7:30 PM Zoom	5	6	7	8	
9  1st Qtr 8:11 AM	10	11	12 	13	14	15	
16	17 Martin Luther King Jr.  Full Moon 1:48 PM Wolf Moon	18	19	20	21	22	
23	24	25  3rd Qtr. 3:40 AM	26	27	28	29  Member Only Party Dillingham Airfield 6:19 PM	
30	31	Notes:					

## <<Upcoming Star Parties>>

**Club Party-Dillingham January 1 —6:01 PM**

**Club Party Dillingham January 29 —6:19 PM**

**Public Party Geiger/Kahala January 8 — CANCELLED**

Upcoming School Star Parties

# NASA's Night Sky Notes

## Hunting the Hunter: Observing Orion

By David Prosper



If you are outside on a clear January night, it's hard not to notice one distinctive star pattern above all: Orion! While we've covered Orion in earlier articles, we've never discussed observing the constellation as a whole. Perhaps you've received a new telescope, camera, or binoculars, and are eager to test it out. Orion, being large, prominent, and full of interesting, bright objects, is a perfect constellation to test out your new equipment and practice your observing skills - for beginners and seasoned stargazers alike.

In Greek mythology, Orion is a strong hunter, with numerous legends about his adventures. Being such a striking group of stars, cultures from all around the world have many myths about this star pattern. There are so many that we can't list them all here, but you can find a wonderful interactive chart detailing many cultures' legends on the Figures in the Sky website at [figuresinthesky.visualcinnamon.com](http://figuresinthesky.visualcinnamon.com).

What sights can you see in Orion? Look above the variable orange-red supergiant "shoulder star" Betelgeuse to find the stars making up Orion's "club," then move across from Betelgeuse towards the bright star Bellatrix (Orion's other "shoulder") and the stars of his bow and arrow - both essential tools for the Hunter. Many interesting sights lie near Orion's "belt" and "sword." Orion's belt is made up of three bright giant stars forming an evenly spaced line: Alnitak, Alnilam, and Mintaka. Move from the belt stars towards the stars Rigel and Saiph (Orion's "feet" or "knees") to arrive at Orion's distinctive Sword, parts of which may appear fuzzy to your unaided eyes. Binoculars reveal that fuzz to be the famed Orion Nebula (M42), perched right next to the star Hatysa! Diving in deeper with a telescope will show star clusters and more cloud detail around the Nebula, and additional magnification brings out further detail inside the nebula itself, including the "baby stars" of the Trapezium and the next-door neighbor nebula M43. Want to dive deeper? Dark skies and a telescope will help to bring out the reflection nebula M78, the Flame Nebula (NGC 2024), along with many star clusters and traces of dark nebula throughout the constellation. Very careful observers under dark clear skies may be able to spot the dark nebula known as the Horsehead, tracing an equine outline below both the Belt and the Flame Nebula. Warning: the Horsehead can be a difficult challenge for many stargazers, but very rewarding.

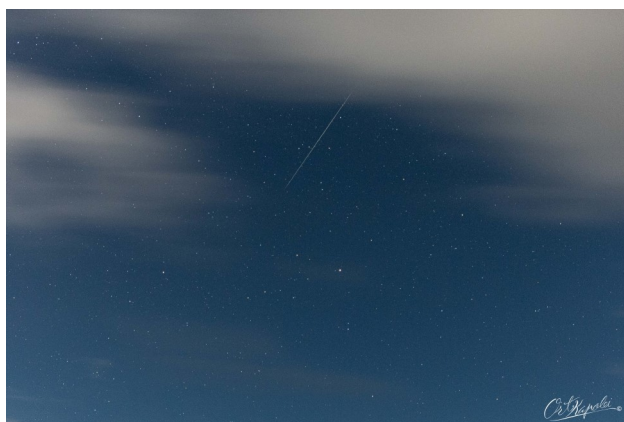
This is just a taste of the riches found within Orion's star fields and dust clouds; you can study Orion for a lifetime and never feel done with your observations. To be fair, that applies for the sky as a whole, but Orion has a special place for many. New telescopes often focus on one of Orion's treasures for their first test images. You can discover more of NASA's research into Orion's stars - as well as the rest of the cosmos - online at [nasa.gov](http://nasa.gov).

*(Continued on page 9)*

Observing the Geminids can be challenging for several reasons. First is the weather. While, the month of December is cooler in Hawaii, the temperature is mild compared to most mainland locations. December is the average wettest month of the year. Second, the peak of the shower is in the holiday season and competes for attention against so many other activities. Sure enough, when the night of the shower peak grew closer, the weather in Hawaii began to turn nasty. I had a red eye flight the evening following the peak, which would result in two sleepless nights in a row, thus I took myself out of the running. Our reliable observing partners, Tom and Rob from Kaneohe, took one look at the large gibbous Moon and the weather and decided to skip this year. This left Ort as the sole observer; we were counting on him to carry the day (or night in this case).

Ort headed to the north shore around 9pm on Monday night (Dec 13th). At 10pm I went to set my camera up in the back yard for some auto-time exposures, however, the light rain prevented this activity. Ort set up on Mokuleia Army Beach along with photo club friend Cliff Kimura. Despite the clouds they managed to see 8 Geminid meteors before midnight. Rain ensued and stopped by 2am, with complete clearing by 3am. Persistence paid off with a total meteor count of 70 (69 Geminids) by 4am.

*(Continued on page 10)*



*Geminids Meteor passing near Polaris from Mokuleia Army Beach by Ort*

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

First Quarter	Full Moon	Last Quarter	New Moon
January 09	January 17	January 25	January 02

Shower	Activity	Maximum		Radiant		V <sub>∞</sub> km/s	r	ZHR
		Date	λ☉	α	δ			
Quadrantids (010 QUA)	Dec 28 - Jan 12	Jan 03	283.15°	230°	+49°	41	2.1	110
γ-Ursae Minorids (404 GUM)	Jan 10 - Jan 22	Jan 18	298.0°	228°	+67°	31	3.0	3

Near new Moon for the Quadrantids; the first major shower of 2022! Tom Giguere, 808-782-1408, Thomas.giguere@yahoo.com; Mike Morrow, PO Box 6692, Ocean View, HI 96737.

# Cash Flow - 11/11/2021 to 12/10/2021

<b>Beginning Balance</b>	<b>\$3,618.99</b>
<b>Money into selected accounts comes from</b>	
Donations	\$69.00
Membership – Electronic	\$140.00
Membership – Family	\$10.00
Subscription – Astronomy	\$34.00
<b>Total Money In</b>	<b>\$253.00</b>
<b>Money out of selected accounts goes to</b>	
	\$0.00
<b>Total Money Out</b>	<b>\$0.00</b>
Difference	\$253.00
<b>Ending Balance</b>	<b>\$3,871.99</b>

Here are the financials up through December 10.

Thanks for the membership renewals and a welcome to the new folks. Thanks also to the person who cashed the check we wrote last April.

We have some expenses that will show in next month's report. The biggest is the \$176 check to the USPS for our HAS mail box. The price increased \$26 from the previous year. That's a lot.

Oh well, time to process the December renewals.

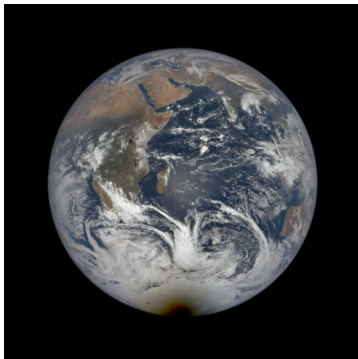
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*(Continued from page 4) Meeting Minutes*

Meeting was adjourned at 9:02 pm. 24 participants participated.

Faithfully submitted, James Andy Stroble, Secretary.  
12/28/2021

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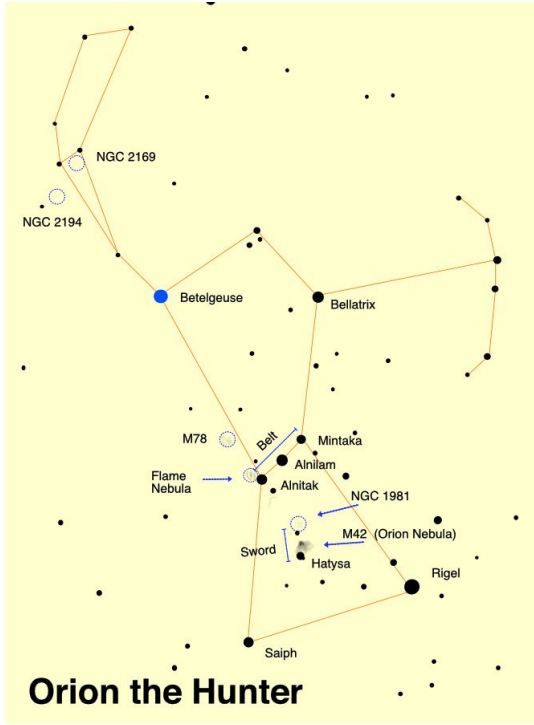


Eclipse Over Antarctica

Earth from 1.5 million kilometers during the total solar eclipse visible in Antarctica on December 4th, 2021.

Image Credit: NASA





Northern Hemisphere observers can find Orion during January evenings in the east/southeast skies. Can you spot the Orion nebula with your naked eye, in Orion's sword? How does it look via binoculars or a telescope? What other details can you discern? Please note that some deep sky objects aren't listed here for clarity's sake. For example, M43, a nebula located directly above M42 and separated by a dark dust lane, is not shown. Orion's Belt and Sword are crowded, since they star-forming regions! You can read more in our November 2019 article *Orion: Window Into a Stellar Nursery*, at [bit.ly/orionlight](http://bit.ly/orionlight).

Image created with assistance from Stellarium.

(Continued on page 11)



Arianespace's Ariane 5 rocket with NASA's James Webb Space Telescope onboard, is rolled out to the launch pad, Thursday, Dec. 23, 2021, at Europe's Spaceport, the Guiana Space Center in Kourou, French Guiana.

Image Credit: NASA/Bill Ingalls

*(Continued from page 7) Meteor Log*

The first major shower of the year peaks on January 3rd. The Quadrantid (010 QUA) have a zenith hourly rate of 110 and moderately fast meteors. The population index for the peak time,  $r = 2.1$ , indicates that there are a larger fraction of brighter meteors than average. The population index increases to  $r = 2.5$  for the off-peak time, which means that fainter meteors will dominate. The shower peak is short-lived with an average duration of approximately 4-6 hours. Since the peak time is over Asia and Eastern European locations (20:40 Universal Time on January 3, 2021), we could miss the peak in Hawaii. However, the mass-sorting of particles across the meteoroid stream is complex, thus there are other peaks both before and after the main peak. This shower is sourced to asteroid 2003 EH1, which takes 5.52 years to orbit the sun. Good luck observing this interesting meteor shower.



*(Continued from page 1) Word form your editor*

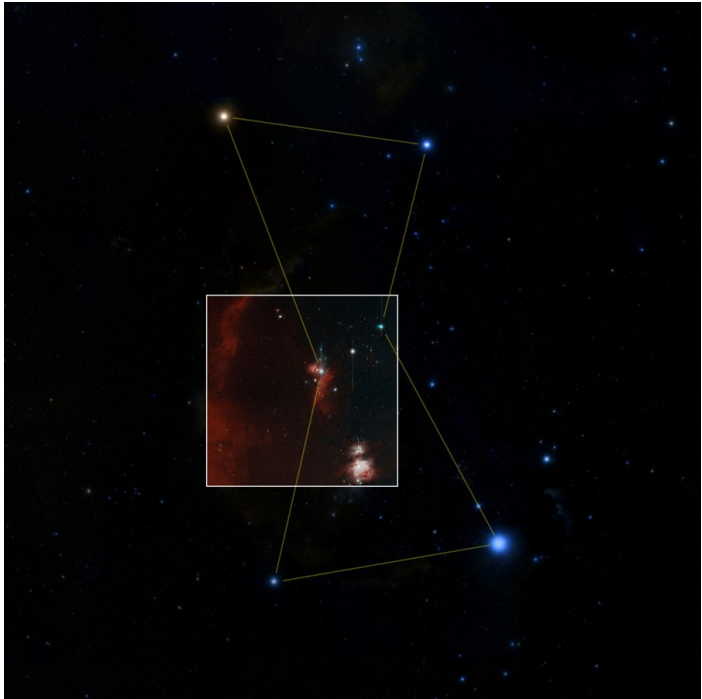
Comet C1/2021 A1 (Leonard) is in the sky now. It has been there since early December. It will get dimmer by January 6, 2022. I went out on Sunday, 12/19/2021, in the evening. It was cleared, but not around horizon. I only took my camera with 50 mm lens. My Leonard on the photo is just a fuzz ball. I am still hoping for a good weather before January 6.

Until next month everyone.

Happy New Year 2022.



(Continued from page 9)



The inset image is the “first light” photo from the Zwicky Transient Facility, a large survey telescope designed to detect changes in the entire night sky by detecting “transient objects” like comets, supernovae, gamma ray bursts, and asteroids. For many astronomers, amateur and pro alike, Orion is often the “first light” constellation of choice for new equipment!

Image Credit: Caltech Optical Observatories



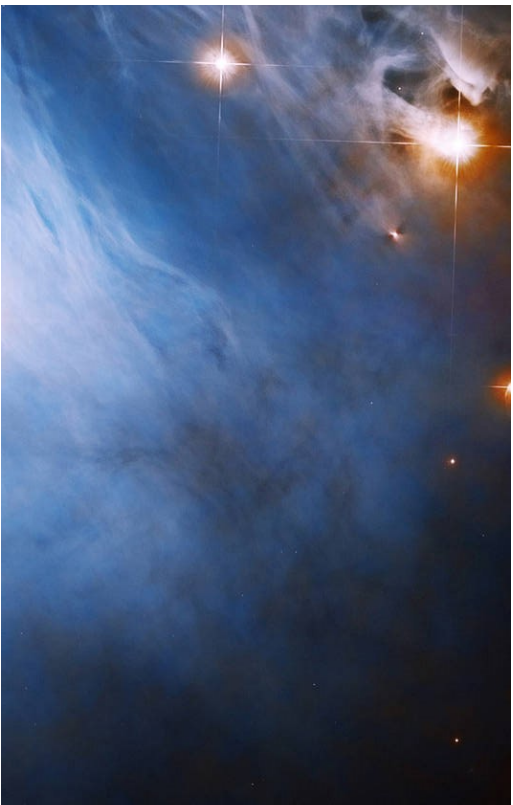
Exploring the Secrets of the Universe

A SpaceX Falcon 9 rocket launches with NASA’s Imaging X-ray Polarimetry Explorer (IXPE) spacecraft onboard from Launch Complex 39A, Thursday, Dec. 9, 2021, at NASA’s Kennedy Space Center in Florida.

Image Credit: NASA/Joel Kowsky



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### Reflections of Starlight

This Hubble Space Telescope image captures a portion of the reflection nebula IC 2631, which contains a protostar, the hot, dense core of a forming star that is accumulating gas and dust.

Image Credit: NASA, ESA, and K. Stapelfeldt (Jet Propulsion Laboratory); Processing: Gladys Kober (NASA/Catholic University of America)