Skywatchers
Newsletter of the China Lake Astronomical Society

Volume 58 No. 10 October 04th, 2021

October 04th CLAS Meeting

Hybrid at Maturango Museum 7:30 PM

Program for the Monday October 4 Meeting

7:00 – Refreshments

We're starting a new tradition and serving **beverages and goodies before the meeting.** Come early for some *stellar* treats and socializing!

7:30 – Hands-on Telescope Workshop

We will have **hands-on demonstrations** for you to set up, collimate, adjust, and use various telescopes for optimum observing. We'll include different types of eyepieces and let you compare the views from each. We'll cover different types of finders, mounts, and other accessories.

Do you have a telescope that you're not sure how to use? Bring it and we'll help you set it up and use it.

Do you have a telescope that you're familiar with? Set up yours and show others how you use it.

Do you want to purchase a telescope but don't know what's best? We'll give you advice on what and how to buy.

We hope to do this under the stars. If the smoke moves in, we'll do it in the museum.

In Person and on Line.

CLAS is inviting you to a scheduled Zoom meeting.

Topic: CLAS Club Meeting

Time: Oct 4, 2021 07:30 PM Pacific Time (US and Canada)

Join Zoom Meeting

https://us02web.zoom.us/j/6727499334?pwd=VWhuVGZ3aFphL283THRKNUNoZ0RSZz09

Meeting ID: 672 749 9334

Passcode: 9V8FQM

One tap mobile

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+1 312 626 6799 US (Chicago)

+1 646 876 9923 US (New York)

Meeting ID: 672 749 9334

Passcode: 562029

Find your local number: https://us02web.zoom.us/u/kzvHNprV6

Upcoming Star Parties at Red Rock State Park.

As this Newsletter goes to press we have scheduled 3 observing sessions for the following dates.
October 02 at Sunset
October 30 at Sunset
November 27th at Sunset.

If you plan on helping with any of the activities at Red Rock you will need to fill out a Covid-19 form and be able to prove you have been vaccinated. Please contact Lou Figueroa Lead Assistant Unit Volunteer Coordinator at 661-839-6553 or email Lou.Figueroa@parks.ca.gov for further information.

Hopefully possible Covid-19 restrictions are not re-instated. Let's keep our fingers crossed.

News from Cerro Coso College

Despite Cerro Coso College opening up for Fall classes the decision has been made not to have their normal fund raising barbeque and Star Party at the Observatory. This is the second year in a row it has been cancelled due to Covid-19 issues. Let's hope 2022 the Barbeque returns.

Out of the Archives 50 Years Today

PROGRAM FOR THE OCTOBER MEETING

AT THE REGULAR MEETING ON MONDAY OCT 04, 1971 WE WILL HAVE A SLIDE SHOW!
FIRST WE WILL SEE SLIDES TAKEN ON MAY 15 ON OUR FIELD TRIP TO MT. WILSON OBSERVATORY. THE SLIDES WERE TAKEN BY GEORGE STILLWELL, RON HISE, AND JOHN ZENOR. SECOND, WE WILL REVIEW THE WESTERN AMATEUR ASTRONOMERS CONVENTION. THE CONVENTION HELD IN HONOLULU WAS THE STARTING POINT OF A FOUR ISLAND TRIP BY SEVERAL CLAS MEMBERS.

FROM THEIR NEARLY 1000 SLIDES GEORGE STILLWELL AND CARROLL EVANS WILL SELECT THOSE WHICH PRESENT THE HIGHLIGHTS OF THE CONVENTION AND THE SUBSEQUENT TOURISM. FIRST, FOLLOWING THE CONVENTION WAS A FIELDTRIP TO THE UNIVERSITY OF HAWAII'S 88 INCH TELESCOPE ATOP 13,600 FOOT MAUNA KEA ON THE BIG ISLAND OF HAWAII. WE THEN VISITED THE GARDEN ISLAND OF KAUAI, WITH THE TWIN ATTRACTIONS OF WWVH AND WAIMEA CANYON. NEXT THE ISLAND OF MAUI WITH 10,000 FOOT HAIEAKEIA (VOLCANIC CRATER) AND SCIENCE CITY. FINALLY, THE BIG ISLAND OF HAWAII, WITH HAWAII VOLCANOES NATIONAL PARK. WHERE ELSE CAN YOU RENT A HOTEL ROOM ON THE RIM OF AN ACTIVE VOLCANO? KILAUEA VOLCANO HAD LAST ERUPTED A LITTLE MORE THAN TWO WEEKS BEFORE OUR VISIT. WE HAVE PICTURES OF THE FRESH LAVA FLOW.

--CLE

Please take the time to read this following article forwarded to us by our member Steven Rainey. It consists of information from Mt. Wilson about the " Hale-Nicholson Law" In addition take time to look at the previous 15 Articles

Discovering Mount Wilson: 'Hale-Nicholson Law' (mailchi.mp)

Vaonis announces Hyperia, its most advanced telescope yet

The telescope will display a resolution of 61 million pixels.

he new Hyperia telescope from Vaonis. (Image credit: Vaonis)

Following the release of the Stellina telescope in 2018 and the Vespera model less than a year ago, telescope maker Vaonis is launching a brand-new, ultra-powerful scope: Hyperia.

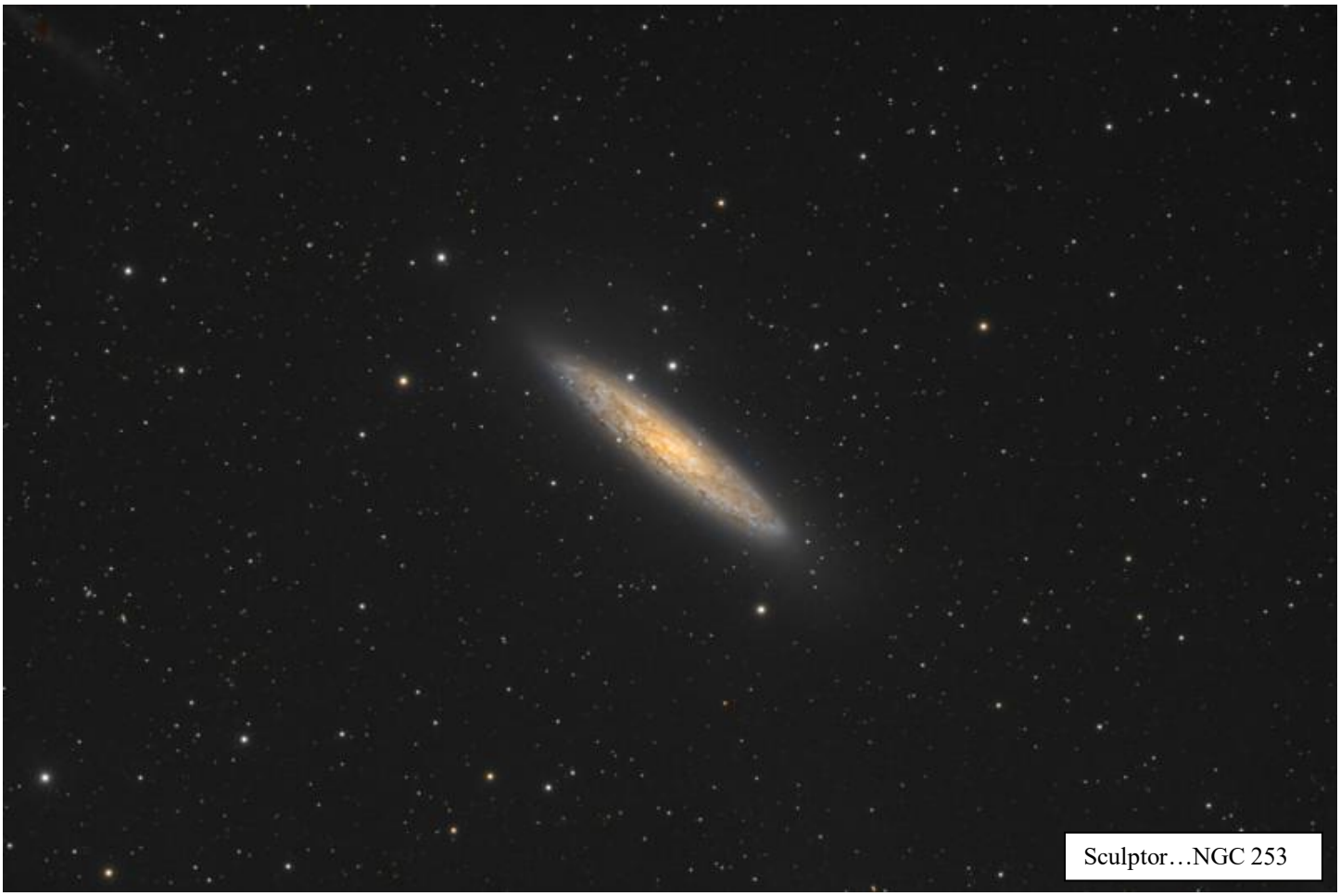
The new telescope, named after Hyperia, a titan in Greek mythology, aims to be a titan in the telescope market, standing at 6 foot 9 in the open position and weighing 165 lbs. (75 kilograms).

Hyperia is also set to be one of the most powerful instruments on the market as it can display resolutions up to 61 million pixels, according to Vaonis' website. However, with a price that starts at £45,000 (just under $61,480, it's definitely not for the casual stargazer looking for a deal.

If you're looking for more affordable telescope options, you can see our best telescopes of 2021 feature for a rundown of our picks for the year. And if you're looking for an option for your budding astronomer, here's our best telescopes for kids.

“Since the creation of Vaonis, we have been committed to making the exploration of the universe accessible to everyone," Vaonis founder Cyris Dupuy said in a statement. "Making the most efficient technologies on the market accessible to the most demanding public represents a new step taken for our company with the creation of Hyperia. Like the rest of our products, ease of use and experience are in Hyperia's DNA."

According to Vaonis, the Hyperia telescope will be among the most powerful on the market and will be equipped with Direct Drive motorization that is used in the largest professional observatories, giving its users outstanding tracking quality and pointing speeds. Anchored to the ground, Hyperia is designed to be stylish and durable. The material used for the telescope is Zicral, an alloy commonly used in the aerospace industry for its high quality mechanical performance and increased resistance to extreme conditions. For those interested in trying out Hyperia, you will be able to closely follow the manufacture of this mini-observatory with waiting periods expected to be anywhere between 12 and 18 months. Orders for the scope will only be taken from the Vaonis website.



Source: Vaonis announces Hyperia, its most advanced telescope yet | Space

Editors Note: After our President’s discussion on telescopes at the August meeting thought it might be of interest to present info on a new design of Telescope…GFH

In addition: Stellina Smart Telescope Makes Astrophotography a Breeze: Review | Space

Have we detected dark energy? Scientists say it's a possibility

Dark energy, the mysterious force that causes the universe to accelerate, may have been responsible for unexpected results from the XENON1T experiment, deep below Italy's Apennine Mountains

Dark energy, the mysterious force that causes the universe to accelerate, may have been responsible for unexpected results from the XENON1T experiment, deep below Italy's Apennine Mountains.

A new study, led by researchers at the University of Cambridge and reported in the journal *Physical Review D*, suggests that some unexplained results from the XENON1T experiment in Italy may have been caused by dark energy, and not the dark matter the experiment was designed to detect.

They constructed a physical model to help explain the results, which may have originated from dark energy particles produced in a region of the Sun with strong magnetic fields, although future experiments will be required to confirm this explanation. The researchers say their study could be an important step toward the direct detection of dark energy.

Everything our eyes can see in the skies and in our everyday world -- from tiny moons to massive galaxies, from ants to blue whales -- makes up less than five percent of the universe. The rest is dark. About 27% is dark matter -- the invisible force holding galaxies and the cosmic web together -- while 68% is dark energy, which causes the universe to expand at an accelerated rate.

"Despite both components being invisible, we know a lot more about dark matter, since its existence was suggested as early as the 1920s, while dark energy wasn't discovered until 1998," said Dr Sunny Vagnozzi from Cambridge's Kavli Institute for Cosmology, the paper's first author. "Large-scale experiments like XENON1T have been designed to directly detect dark matter, by searching for signs of dark matter 'hitting' ordinary matter, but dark energy is even more elusive."

To detect dark energy, scientists generally look for gravitational interactions: the way gravity pulls objects around. And on the largest scales, the gravitational effect of dark energy is repulsive, pulling things away from each other and making the Universe's expansion accelerate.

About a year ago, the XENON1T experiment reported an unexpected signal, or excess, over the expected background. "These sorts of excesses are often flukes, but once in a while they can also lead to fundamental discoveries," said Dr Luca Visinelli, a researcher at Frascati National Laboratories in Italy, a co-author of the study. "We explored a model in which this signal could be attributable to dark energy, rather than the dark matter the experiment was originally devised to detect."

At the time, the most popular explanation for the excess were axions -- hypothetical, extremely light particles -- produced in the Sun. However, this explanation does not stand up to observations, since the amount of axions that would be required to explain the XENON1T signal would drastically alter the evolution of stars much heavier than the Sun, in conflict with what we observe.

We are far from fully understanding what dark energy is, but most physical models for dark energy would lead to the existence of a so-called fifth force. There are four fundamental forces in the universe, and anything that can't be explained by one of these forces is sometimes referred to as the result of an unknown fifth force.

However, we know that Einstein's theory of gravity works extremely well in the local universe. Therefore, any fifth force associated to dark energy is unwanted and must be 'hidden' or 'screened' when it comes to small scales, and can only operate on the largest scales where Einstein's theory of gravity fails to explain the acceleration of the Universe. To hide the fifth force, many models for dark energy are equipped with so-called screening mechanisms, which dynamically hide the fifth force.

Vagnozzi and his co-authors constructed a physical model, which used a type of screening mechanism known as chameleon screening, to show that dark energy particles produced in the Sun's strong magnetic fields could explain the XENON1T excess.

"Our chameleon screening shuts down the production of dark energy particles in very dense objects, avoiding the problems faced by solar axions," said Vagnozzi. "It also allows us to decouple what happens in the local very dense Universe from what happens on the largest scales, where the density is extremely low."

The researchers used their model to show what would happen in the detector if the dark energy was produced in a particular region of the Sun, called the tachocline, where the magnetic fields are particularly strong.

"It was really surprising that this excess could in principle have been caused by dark energy rather than dark matter," said Vagnozzi. "When things click together like that, it's really special."

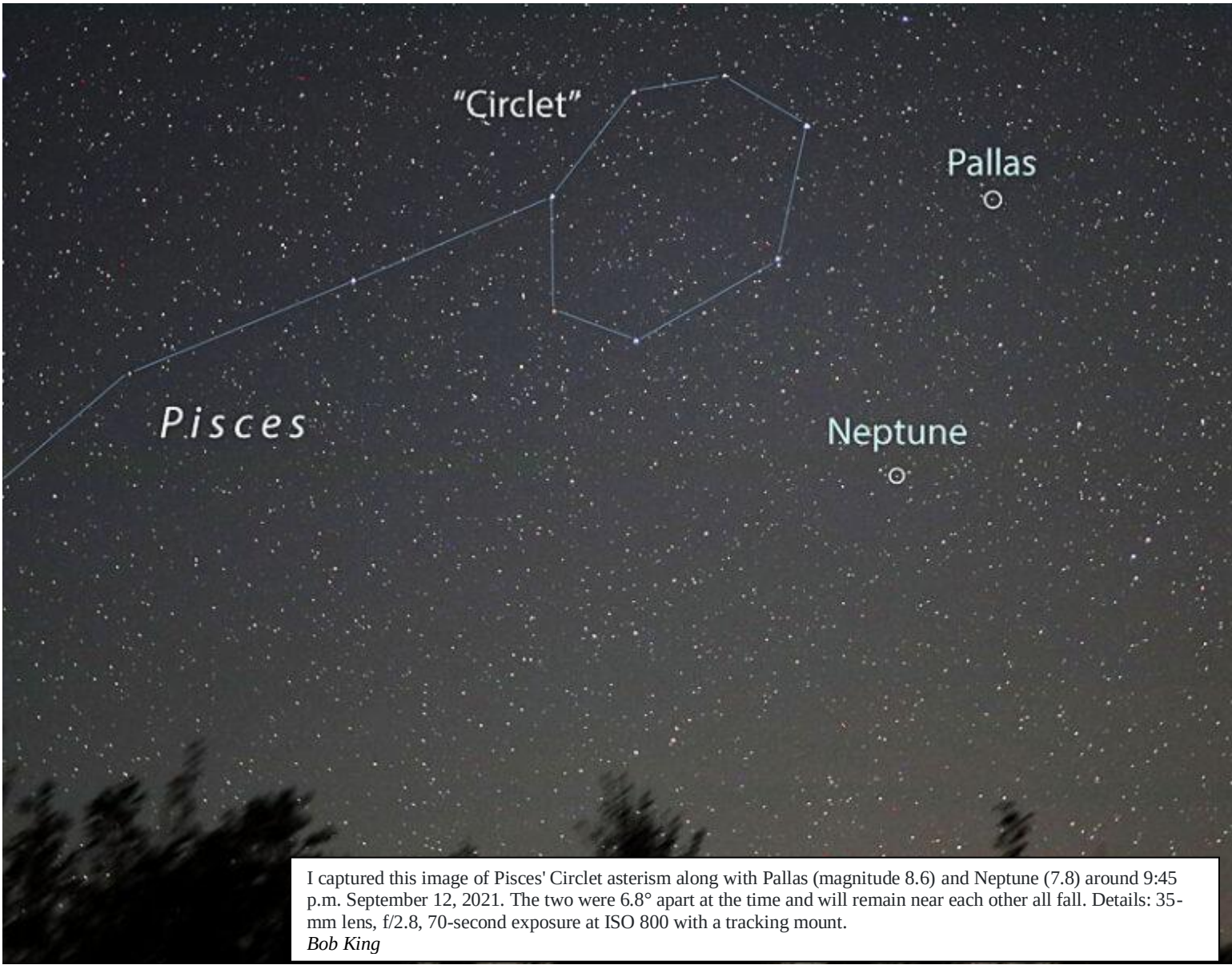
Their calculations suggest that experiments like XENON1T, which are designed to detect dark matter, could also be used to detect dark energy. However, the original excess still needs to be convincingly confirmed. "We

first need to know that this wasn't simply a fluke," said Visinelli. "If XENON1T actually saw something, you'd expect to see a similar excess again in future experiments, but this time with a much stronger signal."

If the excess was the result of dark energy, upcoming upgrades to the XENON1T experiment, as well as experiments pursuing similar goals such as LUX-Zeplin and PandaX-xT, mean that it could be possible to directly detect dark energy within the next decade.

Source: University of Cambridge…Have we detected dark energy? Scientists say it's a possibility -- ScienceDaily

Spice up your fall observing with a dash of Pallas and nibble of Neptune. Both planet and asteroid are easy to spot in a small telescope.



I captured this image of Pisces' Circlet asterism along with Pallas (magnitude 8.6) and Neptune (7.8) around 9:45 p.m. September 12, 2021. The two were 6.8° apart at the time and will remain near each other all fall. Details: 35-mm lens, f/2.8, 70-second exposure at ISO 800 with a tracking mount.
Bob King

I've never been able to wrap my mind around the fact that the total mass of the main asteroid belt equals just 4% the mass of the Moon. That seems hardly enough to matter, and yet our fate rests on those scraps and shards. A single smack from a 10-kilometer-wide stray and humanity — along with thousands of other species — could face the possibility of extinction. Their small bulk paired with their outsize destructive potential is just one reason to observe asteroids. Certainly, they appear innocent enough. Even at high magnification in amateur telescopes minor planets look like inconsequential pinpoints of light. But unlike stars, they move against the

stellar backdrop as they orbit the Sun. This makes them fun to track, like watching a favorite runner in the race. Irregularly shaped asteroids often show light variations that betray their rotation. Other have been linked to meteorites found on Earth, proving that siblings of these bodies continue to affect the planet in the most direct way imaginable — through routine impacts. German astronomer Heinrich Olbers, the same person who made us pause and ponder the finitude of the universe with his famous Paradox, discovered Pallas while following Ceres (the first asteroid discovered) in Virgo on March 28, 1802. As he acquainted himself with additional stars in that constellation to more easily track Ceres' motion that evening, he noticed a "new" 7th-magnitude star close to 20 Virginis. After more than two hours of observation he suspected motion. Luckily, the following night was clear. Olbers confirmed its movement and claimed discovery of the second asteroid.

Like other early asteroids, Pallas was initially considered a planet. The rapidly increasing number of similar discoveries nudged astronomers into recategorizing them as minor planets or asteroids. Pallas is the third largest with dimensions of 582 × 556 × 500 kilometers and an ellipsoidal shape. After the discovery of 3 Juno in 1804 (by fellow German astronomer Karl Ludwig Harding), Olbers hypothesized all three were fragments of a defunct planet that had undergone catastrophic destruction. There must be more pieces. So he searched the sky where the orbits of the trio approached one another and in 1805 discovered the fourth asteroid Vesta. Although we now know no planet inhabited the asteroid belt thanks to the waving of Jupiter's gravitational wand, Olbers's hunch inspired his Vesta find. Pallas came to opposition on September 10th and remains bright enough to see in 50-mm binoculars all month from a moderately dark sky. Currently at magnitude 8.6, it fades to 8.9 by month's end while crossing from western Pisces into eastern Aquarius. Closest approach to Earth of 320.4 million kilometers occurs on September 15th, but this opposition isn't a particularly close one. At best Pallas can shine as brightly as magnitude 6.6 and be seen without optical aid from a very dark sky. That next happens in March 2028. Still, anytime an asteroid is bright enough to see in binoculars and small telescopes it adds welcome spice to the evening lineup.

The precious element palladium (discovered in 1803 by English chemist William Wollaston) is named after Pallas, which in turn is named for Athena, the ancient Greek goddess of wisdom. The chief use of the precious metal is in catalytic converters for cars. Each contains a few grams apiece of palladium, rhodium, and platinum, all worth good money and the reason they're targeted by thieves. Reflectance spectroscopy indicates that Pallas is a B-type asteroid related to CK and CM carbonaceous chondrite meteorites. These materials provided crucial carbon-rich compounds, water, and amino acids to the early Earth that may have played a role in the evolution of life. Carbon-rich rocks also tend to be dark-colored, which probably accounts for Pallas's low albedo of about 0.12, making it as gloomily reflective as our own Moon. We'll soon have the first in-situ samples of the B-type asteroid 101955 Bennu in hand when NASA's OSIRIS-REx spacecraft dispatches a sample cannister to Earth during its September 2023 flyby. Perhaps these blackened bits will also illuminate our understanding of Pallas. Despite Pallas's "boring" appearance in a telescope it's important to keep such facts in mind because they deepen our appreciation of the little we see directly. Let me share a couple more. While many asteroids cycle around the sky near the ecliptic, Pallas's steep inclination of 34.8° means it strays far to the ecliptic's north and south. Additionally, Pallas has a very high axial tilt of approximately 84°. Large parts of its surface experience continuous sunlight or darkness for a period up to a year and double that for areas near the poles. I hope you two get acquainted this month. Coincidentally, the planet Neptune also reached opposition this month on September 14th in eastern Aquarius not far from Pallas. Slightly brighter at magnitude 7.8, it's relatively easy to spot in a pair of 10×50 binoculars. On the night of September 23–24 the methane-blue planet passes just 1.6′ south of 6.3-magnitude HD 221148. Modest-aperture telescopes will show it as a tiny, aqua disk at a magnification of 100× or higher. If you have a 10-inch or larger instrument be sure to look for its brightest and

largest moon, Triton, which never strays far from the mothership. This season its distance ranges from 9.5″ to 17″. Use 200× or higher to separate the 13.5-magnitude speck from Neptune's glare when it's at or near greatest elongation. To pinpoint its position anytime, check out *Sky & Telescope*'s Triton Tracker.

Source: Bob King: Asteroid Pallas Makes a Point in Pisces - Sky & Telescope - Sky & Telescope (skyandtelescope.org)

OCTOBER EVENTS:

The next club meeting October 4th. We will be having our meeting in the Maturango Museum. The time will be 7:30 PM. Current Covid requirements will be enforced. You can also join us on zoom.

https://us02web.zoom.us/j/6727499334?pwd=VWhuVGZ3aFphL283THRKNUNoZ0RSZz09

OCTOBER CELESTIAL CALENDAR:

1. Jupiter and Saturn remain in the evening sky this month. Look for them in the southeast after sunset.
2. Mars remains too close to the sun to be easily visible this month.
3. Venus is still in the evening sky but is getting lower in the sky. look for it in the west soon after sunset.
4. Mercury moves to the morning sky where it can be seen in the east the last two weeks of the month.
5. The Orionid meteor shower peeks on the 21st but will mainly washed out by full moon on the 20th.

INFORMATION:

Please visit us at our website ChinaLakeAstro.org.

For more information, contact the China Lake Astronomical Society at 760-446-0454 or 760-384-8666.

Roger Brower

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Basic CLAS dues are $25.00 per year - due in January. Students and Skywatchers Newsletter are FREE.
Members also receive discounted rates for Astronomy Magazine and /or Sky and Telescope Magazine.

The fee schedule is as follows: Verify current magazine prices with Roger!

Basic membership $25.00 per year.
Membership with Astronomy magazine is $59.00 per year.
Membership with Sky and Telescope magazine is $58.00 per year.
Membership with both S & T and Astronomy is $92.00 per year.

Send your Check or Money Order to:

Roger Brower, Treasurer, China Lake Astronomical Society, P.O. Box 1783, Ridgecrest, CA 93556.

PRESIDENT – Ralph Paonessa – 760-384-8666 (email ralph@rpphoto.com)

VICE-PRESIDENT – Keith Weisz – 760-375-9114 (email kerniew@gmail.com)

SECRETARY – Ted Hodgkinson - 661-754-0561 (email ghodkinson@sbcglobal.net)

TREASURER – Roger Brower - 760-446-0454 (email brower@iwvisp.com)

NEWSLETTER EDITOR – Ted Hodgkinson – 661-754-0561 (email ghodkinson@sbcglobal.net)

Meetings of the China Lake Astronomical Society are held at the Maturango Museum at 7:30 p.m. on the first Monday evening of each month, except when the first Monday is a holiday.

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