Observations

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CHESTER COUNTY ASTRONOMICAL SOCIETY

Vol. 34, No. 4 ***Three-Time*** *Winner of the Astronomical League's Mabel Sterns Award ☼ 2006, 2009 & 2016* *April 2026*

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Earthset

Artemis II crew image taken from Orion capsule on 7 April 2026. In addition to completing their lunar flyby, they also broke the record for being farther from Earth than any other human (252,756 miles). Image courtesy NASA.

April 2026 Dates

1st • Full Moon, the Pink Moon (10:12 p.m. EDT).

3rd • Mercury is at greatest western elongation (28°), 7 p.m. EDT.

10th • Last Quarter Moon (12:52 a.m. EDT).

13th • Mars passes 0.3° north of Neptune, 6 a.m. EDT.

17th • New Moon (7:52 p.m. EDT).

19th • The Moon passes 5° north of Venus, 5 a.m. EDT.

19th • Mercury passes 1.8° south of Mars, 8 p.m. EDT.

23rd • First Quarter Moon (10:32 p.m. EDT).

25th • The Moon passes 0.2° north of Regulus, 9 p.m. EDT.

CCAS Upcoming Nights Out

In addition to our monthly observing sessions at the Myrick Conservancy Center, BRC (for directions, see pg. 13), CCAS schedules special "nights out" throughout the year. Members are encouraged to help out during these events any way they can. See below for more information.

☼ Friday, April 4, 2026: Chester County Parks Night event: Coatesville Star Party at Hibernia County Park. Parking at pavilion #5 lot with observing to take place in Fiddlers Field. The event is scheduled 7:30 to 10:00 p.m. EDT.

☼ Wednesday, April 8, 2026: Downingtown Library Astronomy Night, 7:00 p.m. to 8:00 p.m. EDT.

For more information about future observing opportunities, contact our Observing Chair, Don Miller.

Spring Society Events

April 2026

1st • Introduction to Astronomy Class: Other Kids on the Block—The Planets. Room C106, Peirce Middle School, West Chester, 7 p.m. EDT.

4th • Chester County Parks Night event: Coatesville Star Party at Hibernia County Park. Parking at pavilion #5 lot with observing to take place in Fiddlers Field. The event is scheduled 7:30 to 10:00 p.m. EDT.

8th • Introduction to Astronomy Class: Observing Basics, Star Charts, and Planetarium Software. Room C106, Peirce Middle School, West Chester, 7 p.m. EDT.

10th • West Chester University Planetarium Show: "We Are Made of Star Stuff: The Lifecycle of Stars" in the Schmucker Science Building. The show starts at 7 p.m. and runs approximately one hour in length. For more information and reservations, visit the WCU Public Planetarium Shows webpage.

14th • CCAS Monthly Meeting in Room 112, Merion Science Center, WCU (as well as via Zoom). The meeting starts at 7:30 PM, EDT. Guest Speaker: Dr. Masahiro Ono, NASA/JPL, "From the Surface of Mars to the Oceans of Enceladus and Europa: Advancing the Frontiers of Exploration with EELS Adaptive Robots."

15th • Introduction to Astronomy Class: Observing Equipment, Binoculars, and Telescopes. Room C106, Peirce Middle School, West Chester, 7 p.m. EDT.

17th • CCAS Monthly Observing Session, Myrick Conservancy Center, BRC. The observing session starts at sunset.

20th • Open call for articles and photographs for the May 2026 edition of Observations.

22nd • Introduction to Astronomy Class: Beyond Naked-Eye Observing. Room C106, Peirce Middle School, West Chester, 7 p.m. EDT.

24th • Observing Session with WCU at the Mather Planetarium. Telescopes set up outside the planetarium, 8:00 p.m. to 10:00 p.m. EDT.

26th • Deadline for newsletter submissions for the May 2026 edition of Observations.

May 2026

11th • Downingtown Library Astronomy night. 7:00-8:00 p.m. EDT.

12th • CCAS Monthly Meeting in Room 112, Merion Science Center, WCU (as well as via Zoom). The meeting starts at 7:30 PM, EST. Dr. Anne Pommier, Carnegie Institution of Washington Earth and Planets Laboratory, "Mercury beyond MESSENGER – What We Know and New Missions to our Solar System's Innermost Planet."

15th • CCAS Monthly Observing Session, Myrick Conservancy Center, BRC. The observing session starts at sunset.

March 2026 Meeting Minutes

by Bea Mazziotta, CCAS Secretary

- The March meeting of the CCAS was held on Tuesday March 10, 2026, in person at WCU, and via Zoom and YouTube. Club president Dave Hockenberry welcomed attendees.
- Don Miller, Observing Chair, reviewed upcoming club and outreach events, both solar and night sky. Go to ccas.us for more information on those.
- He also reviewed some of the observing opportunities in the March night sky including the Rosette Nebula and the occurrence of the Zodiacal Light around March 20th. Also called 'False Dawn or Dusk', Zodiacal Light is a cone of light above the sunrise or sunset point on the horizon. It appears at certain times of the year when all twilight is gone from the sky. You can see it around the September and March equinoxes and it's at its best with a moonless sky.
- Bruce Ruggeri reviewed the list of programs and speakers for upcoming meetings. More information on these is also on the CCAS website.
- He also announced that 3 WCU students were each awarded a $1500.00 scholarship and the Fund has a surplus going forward to put toward next year's awards.
- Bruce welcomed the evening's first speaker, Claire Lewis. She is the director of development for the West Chester University Foundation working to support the College of Science and Mathematics. The West Chester University Foundation is the nonprofit organization that accepts and manages private contributions made to support West Chester University. Claire discussed and answered questions on the proposal that the CCAS Scholarship Fund become part of the West Chester University endowment fund. This would work to ensure the continuity of the club's scholarship program well into the future.
- Club President, Dave Hockenberry was the evening's second speaker. An avid and experienced night sky photographer, Dave discussed the ins and outs of astrophotography and shared some of his photographs.

April 2026 CCAS Meeting Agenda

by Bruce Ruggeri, CCAS Program Chair

Our next meeting will be held on April 14, 2026, in person at West Chester University's Merion Science Center, Room 112. The Science Center is located at 720 S. Church St., West Chester, PA.

Our guest speaker is Dr. Masahiro Ono, NASA/JPL, "From the Surface of Mars to the Oceans of Enceladus and Europa: Advancing the Frontiers of Exploration with EELS Adaptive Robots."

Please note that inclement weather or changes in speakers' schedules may affect the program. In the event there is a change, CCAS members will be notified via e-mail with as much advance notice as possible.

As for future meetings, we are looking for presenters for the coming 2026-2027 season. If you are interested in presenting, or know someone who would like to participate, please contact me at programs@ccas.us.

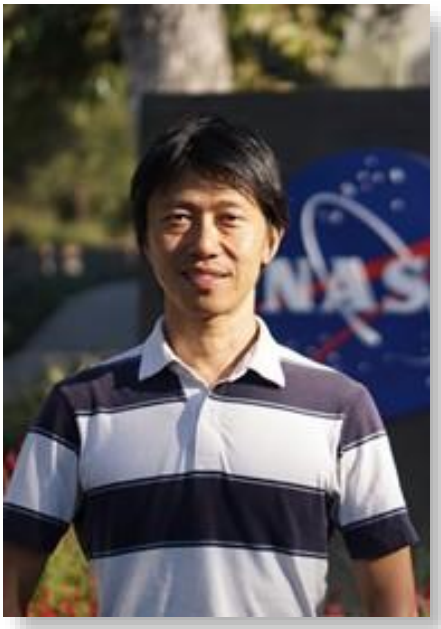
April 2026 Monthly Meeting Featured Speaker

by Bruce Ruggeri, Program Chair

I am pleased to announce the in-person and Zoom April 2026 meeting for Tuesday, April 14th, beginning informally at 7:00 p.m. EDT, with the meeting program commencing at 7:30 p.m. EDT.

Our guest speaker is Dr. Masahiro Ono, NASA/JPL. His presentation is titled "To boldly Go where No Robots have Gone Before – Searching Alien Landscapes and the Search for Life beyond Earth with Autonomous Robotic Probes." A synopsis and biosketch follow.

Synopsis: Are we alone in the universe? This is one of humanity's oldest and most profound questions, asked for millennia by philosophers, scientists, and stargazers alike. Numerous science fiction novels, movies, and conspiracy theories used rich imagination to speculate on alien landscapes and alien life forms, but only recently has human technology advanced to the point where we can search for scientific evidence of life beyond Earth.



Masahiro Ono, Ph.D.

Today, robotic explorers are leading this search. On Mars, NASA's Perseverance rover, equipped with unprecedented onboard autonomy, is collecting rock samples that may preserve evidence of ancient microbial life from billions of years ago.

Farther out in the solar system, icy moons such as Europa, Enceladus, and Titan are known to harbor subsurface oceans of liquid water—environments that may be habitable. Ongoing research on robotics technologies aims to enable access to these oceans, buried beneath ice shells tens of kilometers thick.

In this talk, Dr. Ono will present key robotics technologies enabling this exploration, including fast autonomous navigation for Mars rovers, a snake-like robot (Exobiology Extant Life Surveyor or EELS) designed to access Enceladus's subsurface ocean, and emerging applications of artificial intelligence for planetary exploration. These technologies bring us closer than ever to one of the greatest scientific discoveries of humankind - and potentially end our cosmic solitude.

Bio sketch: Dr. Hiro Ono is the Group Supervisor of the Robotic Mobility Group at NASA's Jet Propulsion Laboratory.

Currently, he serves as the PI of the EELS project to create a highly versatile and intelligent autonomous robot for exploring unknown environments such as Enceladus vents. As a member of the Mars 2020 Rover

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April Light Pollution News Roundup

by Bill McGeeney, Host of Light Pollution News Podcast

This month, I welcomed three amazing guests to the Light Pollution News Podcast: Leo Smith of ReduceLP.com, Chetna Misra of Lightbahn, and Johan Eklöf, bat researcher and author of the Darkness Manifesto. The two episodes *Conquering Nature* and *Mandate Controls* can be found over on our website at LightPollutionNews.com, or on any podcast outlets you listen from.

This month, you'll recall that Connecticut made headlines when Leo Smith sued the state for failing to comply with its own lighting laws. The Superior Court dismissed the case, claiming darkness wasn't a protected natural resource and that court administrators could reclassify decorative lights as essential. Essentially, the court said bureaucratic creativity trumped compliance with the law.

Texas faced a more devastating threat when former DHS Secretary, Kristi Noem, waived 28 environmental laws to fast track a border wall through Big Bend National Park. The justification claimed high illegal entry, but facts on the ground contradicted this. Border crossings dropped 74 percent between 2023 and 2025, and the park already employed camera networks and

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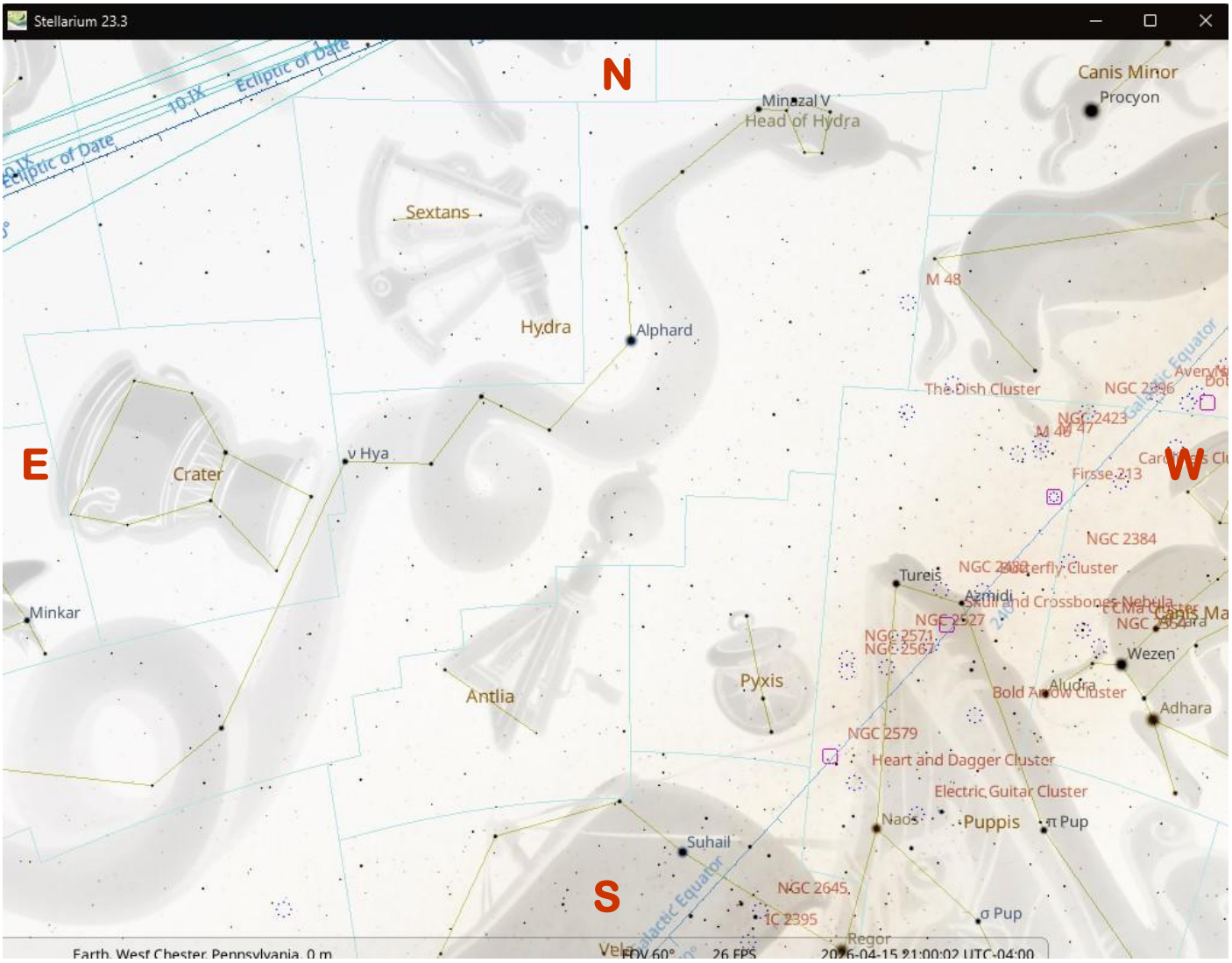
The Sky Over Chester County

April 15, 2026 at 9:00 p.m. ET

Note: This screen capture is taken from Stellarium, the free planetarium software available for download at www.stellarium.org.

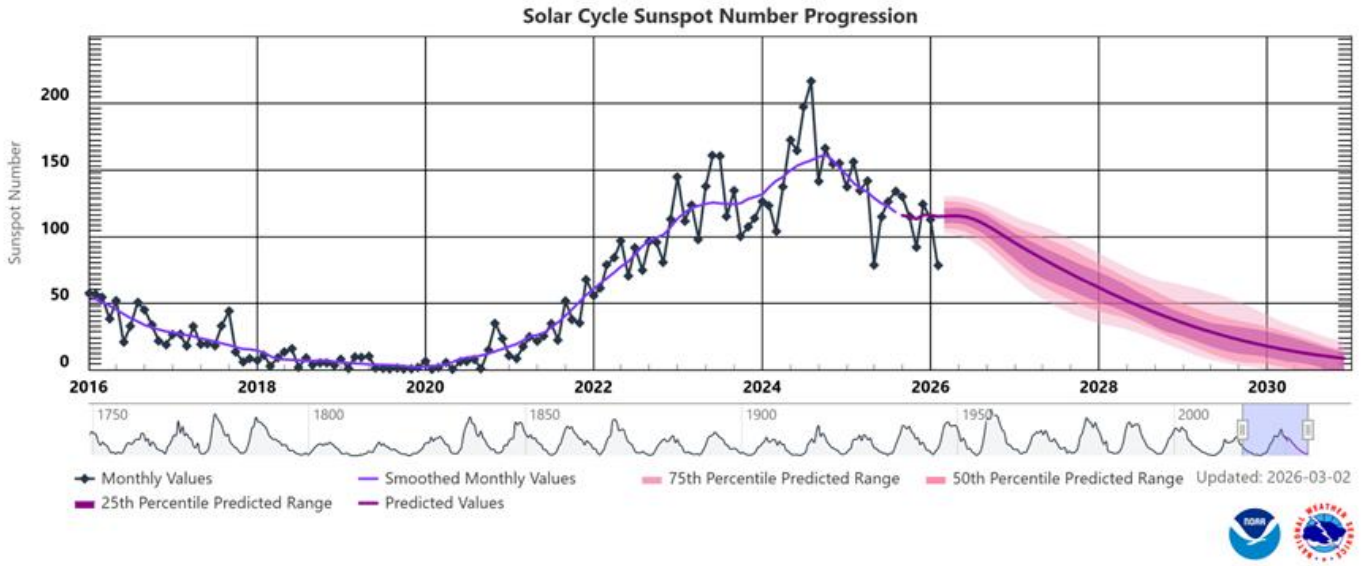


Date	Civil Twilight Begins	Sunrise	Sunset	Civil Twilight Ends	Length of Day
04/01/2026	6:19 a.m. EDT	6:46 a.m. EDT	7:26 p.m. EDT	7:54 p.m. EDT	12h 40m 24s
04/15/2026	5:56 a.m. EDT	6:24 a.m. EDT	7:40 p.m. EDT	8:09 p.m. EDT	13h 16m 21s
04/30/2026	5:34 a.m. EDT	6:03 a.m. EDT	7:56 p.m. EDT	8:25 p.m. EDT	13h 52m 23s

Moon Phases					
			Full Moon	04/01/2026	10:11 p.m. EDT
Last Quarter	04/10/2026	12:51 a.m. EDT	New Moon	04/17/2026	7:51 a.m. EDT
First Quarter	04/23/2026	10:31 p.m. EDT			

April 2026 Observing Highlights

by Don Miller, CCAS Observation Chair



Key Events this month:

This is the month for the Lyrids, a meteor shower for which the source body is comet Thatcher (c/1861 G1). This is a long-period comet with a period of 415.5 years. The last perihelion event for this comet was in 1861 so we have a few years remaining before it will return (only ~250 years to go). We do however have the dust trail that this comet has left in its path around the sun which the Earth passes through each April. This is one of the oldest know meteor showers with reports of its occurrence dating as far back as 2,700 years ago in China.

This is a medium strong meteor shower which typically does not leave trails but has been noted for fireballs. This shower has a narrow peak (±1-2 days) around the maximum which occurs on the 21-22 of April. These meteors move at about 30 miles/sec making this a slow moving shower which typically occurs when the Earth is catching up to the dust trail from behind. The moon will be in its waxing crescent phase on these nights and about 24% full. While it won't be a moonless night, you should see some of the brighter meteors and if a fireball occurs (you can report a fireball to the American Meteor Society at https://fireball.amsmeteors.org/members/imo/report_intro/). The moon sets around 1:15 a.m. EDT while the radiant for this meteor shower continues to get higher in the sky so that viewing a few hours before sunrise would be advantageous. Typical rate is 10-15/hour.

Discussion:

Finally the weather is improving in terms of temperature. Hopefully, it improves in terms of clear skies as it has already been challenging our recent observing events (cancelled). The above mentioned meteor shower should be a nice event this month. Jupiter continues to dominate the evening sky.

Sun:

The sun's activity is continuing on downward side of the solar maximum for this cycle, but it is still showing a lot of activity. The latest cycle curve is presented above. As the writing of this highlight, the sunspot number is 38. Minor geomagnetic storms and high-latitude auroras are still occurring.

Planets: (description below is for the 15th of the month at 8 p.m. EDT)

- Mercury: Not visible
- Venus: Visible, sets 9:42 p.m. EDT
- Mars: Not visible (rises one hour before the sun)
- Jupiter: Visible, sets 2:08 a.m. EDT
- Saturn: Not visible (rises 30 minutes before the sun)
- Uranus: Visible, sets 10:28 p.m. EDT
- Neptune: Visible, rises 9:15 p.m. EDT

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Through the Eyepiece: Jupiter, King of the Planets

by Don Knabb, CCAS Treasurer & ALCOR

If you step outside during April and look high in the western sky you will find Jupiter shining brightly. The king of the planets is in good viewing position as soon as the sky darkens to 11 pm. Jupiter is the third brightest object in the night sky other than the Moon and Venus. In April Jupiter shines at magnitude -2. Jupiter will be in the constellation Gemini through April, between the twins.

Jupiter is the fifth planet from the Sun and is the largest one in the solar system. It is a huge ball of hydrogen and helium without any solid continents like we have here on Earth. If Jupiter were hollow, more than one thousand Earths could fit inside. It also contains more matter than all the other planets combined. It is believed that beneath all that gas lays a small rocky core covered by metallic hydrogen (what a weird idea – metallic hydrogen).

What we see when we look at Jupiter through a telescope is a quilt of multicolored clouds with ever-changing dark and light bands. The most prominent area of interest on the surface of Jupiter is the Great Red Spot, a salmon-colored oval vortex that has been observed for centuries. The Great Red Spot is larger than our entire planet.

Jupiter has been known since prehistoric times as a bright "wandering star". In 1610 when Galileo first pointed a telescope at the sky, he discovered Jupiter's four large moons Io, Europa, Ganymede and Callisto (now known as the Galilean moons) and recorded their motions back and forth around Jupiter. This

Image made with Stellarium, the free planetarium software

was the first discovery of a center of motion not centered on the Earth. It was a major point in favor of Copernicus's heliocentric theory of the motions of the planets. Galileo's outspoken support of the Copernican theory got him in trouble with the Inquisition.

Today anyone can repeat Galileo's observations (without fear of retribution). Even the smallest telescope will reveal Jupiter's four largest satellites, three of which are larger than our own Moon. The motion of these satellites is fascinating to watch and under good conditions with at least a 60mm telescope you can sometimes see the shadow of a moon on Jupiter's surface. And at latest count, there are 101 known satellites in orbit around Jupiter!

Jupiter radiates more energy into space than it receives from the Sun. The interior of Jupiter is hot, around 20,000 degrees C. The heat is generated by the slow gravitational compression of the planet. Jupiter does NOT produce energy by nuclear fu-

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Observing (Cont'd)

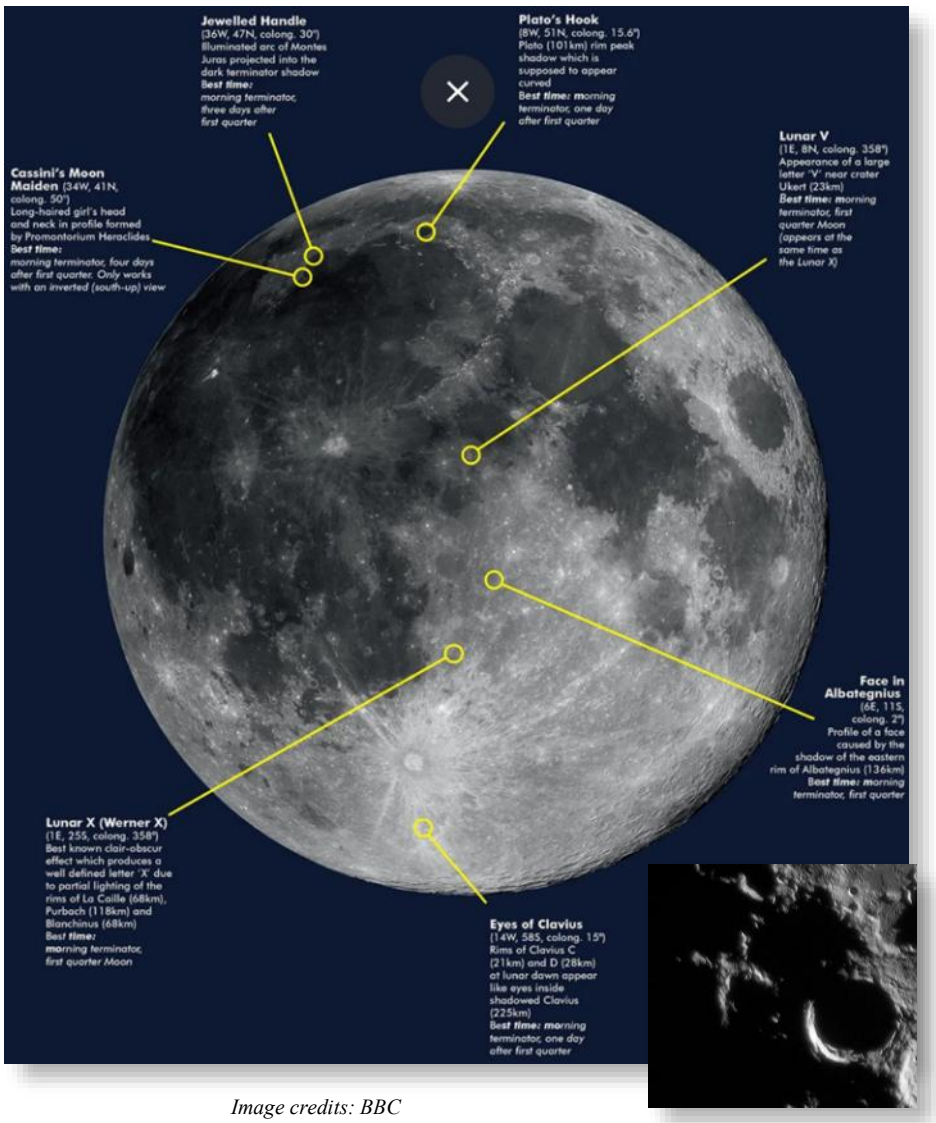

Image credits: BBC

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Moon:

- Full Moon: 2 April.
- Last Quarter: 10 April.
- New: 17 April.
- First Quarter: 24 April.

We talked a few months ago about clair-obscur features to look for on the moon. Here's a list of several top ones and dates this month so get out there with your telescope and see if you can find them. The image above will help you locate them.

- Plato's Hook: 25 April
- Lunar V: 24 April
- Lunar X: 24 April

Select Night Sky Objects and Events:

NASA has a program to challenge amateur astronomers called Hubble's Night Sky Challenge (https://science.nasa.gov/mission/hubble/science/explore-the-night-sky/hubbles-night-sky-challenge-april/). This challenge involves finding a number of month-specific objects which are rated from easy to hard. Many of these are Messier objects but Caldwell objects are also included. For this month, a few examples:

- M65, spiral galaxy
- M66, spiral galaxy
- M81, spiral galaxy (Bode's galaxy)
- M82, Cigar galaxy (irregular)
- C59, planetary nebula (Ghost of Jupiter)

Eyepiece (Cont'd)

(Continued from page 6)

sion as in the Sun; it is much too small and its interior is too cool to ignite nuclear reactions. Jupiter is just about as large in diameter as a gas planet can be. If more material were to be added, it would be compressed by gravity such that the overall radius would increase only slightly. A star can be larger only because of its internal (nuclear) heat source. But Jupiter would have to be at least 80 times more massive to become a star.

Jupiter has rings like Saturn's, but they are much fainter and smaller. They were totally unexpected and were only discovered when two of the Voyager 1 scientists insisted that after traveling 1 billion km it was at least worth a quick look to see if any rings might be present. Everyone else thought that the chance of finding anything was zero, but there they were.

Jupiter and science fiction: Yes, Jupiter was a movie star! In the movie *2010: The Year We Make Contact*, the follow up to *2001: A Space Odyssey*, we follow a group of American and Russian astronauts as they travel to Jupiter to investigate the mysterious monolith. As the movie

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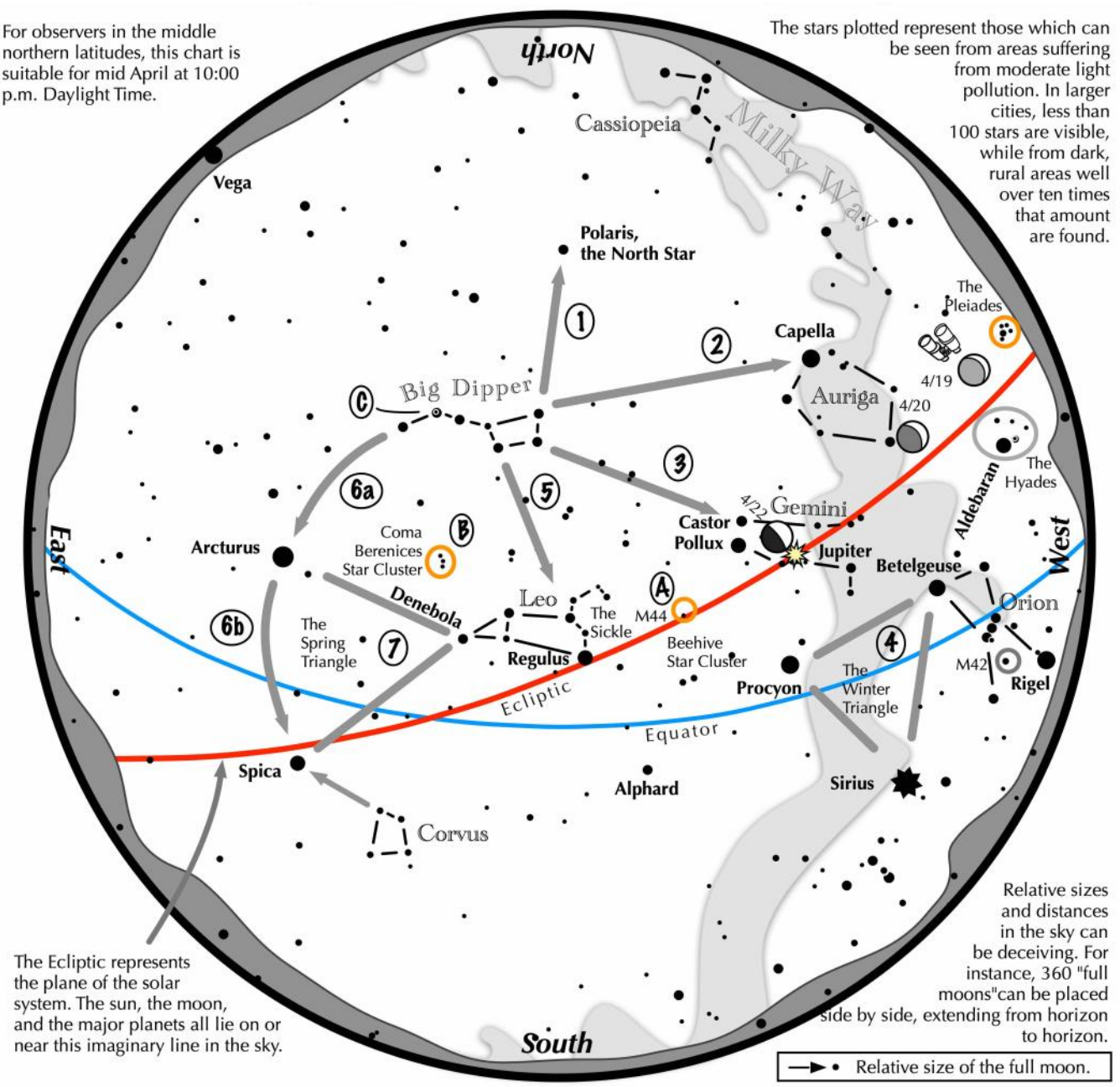
Navigating the mid-April Night Sky

courtesy of the Astronomical League



Navigating the April night sky: Simply start with what you know or with what you can easily find.

1. Extend an imaginary line north from the two stars at the tip of the Big Dipper's bowl. It passes Polaris, the North Star.
2. Draw another imaginary line west across the top two stars of the Dipper's bowl. It strikes Capella low in the northwest.
3. Through the two diagonal stars of the Dipper's bowl, draw a line pointing to the twin stars of Castor and Pollux in Gemini.
4. Look in the west-southwest for the bright Winter Triangle stars of Sirius, Procyon, and Betelgeuse.
5. Directly below the Dipper's bowl reclines the constellation Leo with its primary star, Regulus.
6. Follow the arc of the Dipper's handle. It first intersects Arcturus, then continues to Spica.
7. Arcturus, Spica, and Denebola form the Spring Triangle, a large equilateral triangle.

Binocular Highlights

A: M44, a star cluster barely visible to the naked eye, lies to the southeast of Pollux.
B: Look nearly overhead for the loose star cluster of Coma Berenices.
C: In the Big Dipper's handle shines Mizar next to a dimmer star, Alcor.

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The Largest Survey of Exoplanet Spins Confirms a Long-held Prediction

by Matthew Williams, Universe Today

The gas giant exoplanet (left) and a more massive brown dwarf companion (right) in the HR 8799 system. Credit: W.M. Keck Observatory

For some time, astronomers have theorized that there is a connection between planetary mass and rotation. In the solar system, Jupiter and Saturn both rotate rapidly, completing a rotation in roughly ten hours, while accounting for a significant fraction of the solar system's rotational energy. Using the W.M. Keck Observatory on Maunakea, Hawai'i, a team of astronomers tested this predicted relationship by studying 32 gas giants and brown dwarfs in distant star systems—6 giant planets larger than Jupiter and 25 brown dwarf companions.

The high-resolution spectroscopy they obtained with the Keck Planet Imager and Characterizer (KPIC) instrument showed that gas giant planets spin faster than their more massive counterparts when mass, size, and age are taken into account. They also consulted historical data on companions with spin measurements to create a curated sample of 43 stellar/substellar companions and giant planets, and 54 free-floating brown dwarfs and planetary-mass objects.

The team was led by researchers from the Center for Interdisciplinary Exploration and Research in Astrophysics (CIERA) at Northwestern University, the Center for Astrophysics and Space Sciences (CASS) at UC San Diego, the Division of Geological & Planetary Sciences (GPS) at Caltech, the W. M. Keck Observatory, the Steward Observatory, the James C. Wyant College of Optical Sciences, NASA's Jet Propulsion Laboratory, and multiple universities. The study describing their findings is published in *The Astronomical Journal*.

Many of the planets observed in this study orbit their stars at a distance of tens to hundreds of Astronomical Units (AUs), the distance between Earth and the sun. Astronomers are still debating how such distant worlds form, whether it's a gradual process within a circumstellar disk or a gravitational collapse similar to that of stars. To investigate, the team used the KPIC to isolate light from these rotating planets, which broadens the spectra of atmospheric features.

By analyzing these features, scientists can determine how rapidly a planet is spinning. Lead author Dino Chih-Chun Hsu, a researcher at the CIERA at Northwestern University, in a W.M. Keck Observatory, said, "Spin is a fossil record of how a planet formed. By measuring how quickly these worlds rotate, we can start to piece together the physical processes that shaped them tens to hundreds of millions of years ago. With KPIC, we can detect these tiny signals that reveal a planet's rotation around other nearby stars. Our results suggest that both the planet's mass and the ratio between the planet's mass and its star's mass influence how fast the planet ultimately spins. That helps us narrow down the physics of how these systems form."

This complex relationship is illustrated by one planet and one brown dwarf in particular. In the system HR 8799, there is a gas giant roughly seven times the mass of Jupiter that spins six times more rapidly than a brown dwarf companion in

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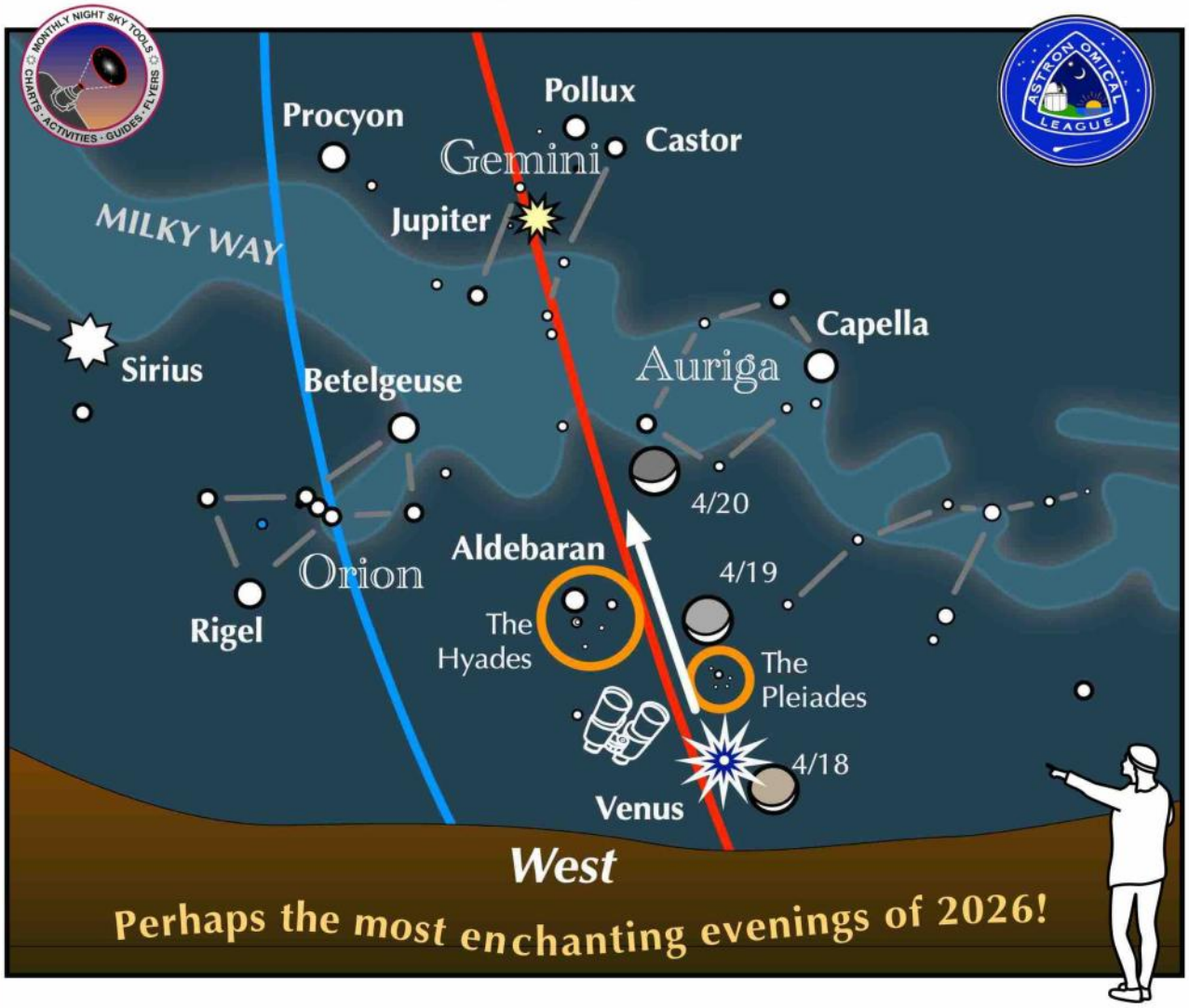
Binocular Challenge for April 2026
courtesy of the Astronomical League

If you can see only one celestial event this April, see this one.



Enhance the scene – use binoculars!

On April 18, 19, & 20, look low in the west-northwest 60 minutes after sunset.

- On the first evening, the crescent moon, glowing full with earthshine, floats near brilliant Venus, while on the second evening, it moves just above the delicate Pleiades star cluster, and to the right of the bright star Aldebaran and the intriguing Hyades star cluster.
- On the third evening, the slightly thicker, but more pronounced crescent moon hangs above the Pleiades and the Hyades.
- Above it all, bright Jupiter plows through Gemini, shining near Castor and Pollux.

www.astroleague.org

Eyepiece (Cont'd)

Image credit: NASA/JPL

(Continued from page 7)

closes, the aliens who built the monolith replicate millions of monoliths on Jupiter to increase its mass to the point that it collapses under its own gravity and bursts into nuclear fusion and becomes a second star in our sky. The new star was created to supply energy to a newly formed intelligent life form on Jupiter's moon Europa.

Another excellent science fiction movie about exploration of the Jupiter system is *Europa Report*, which came out in 2013. This is the story of a mission to investigate the suggestion from probes that a hidden ocean and single-celled life exist on Europa. Although not a blockbuster, this movie is like *The Martian* in that it attempts to present a realistic space flight based on extrapolation of existing technology.

So do not miss the show that Jupiter is putting on this spring. Jupiter will be a highlight of all our upcoming star parties!

Information credits:

- Dickinson, Terence 2006. *Nightwatch: a practical guide to viewing the universe.* Buffalo, NY. Firefly Books
- https://en.wikipedia.org/wiki/Jupiter
- https://science.nasa.gov/jupiter/jupiter-facts/

Exoplanet Survey (Cont'd)

(Continued from page 9)

the same system that is 24 times the mass of Jupiter. This can be explained by interactions between the planet's magnetic field in its infancy and the circumplanetary disk that caused it to lose rotational speed.

Basically, the spin of the more massive companion was slowed because it had a much stronger magnetic field. Understanding this relationship between size, mass, and spin is also helping scientists learn more about the history of our solar system. Said Hsu:

"The way that angular momentum is distributed among planets influences the overall architecture of a planetary system. Even Earth's rotation and magnetic field ultimately connect to how that spin budget was divided when the solar system formed. KPIC is the first instrument of its kind, opening an entirely new way to study exoplanets. It allowed us to measure properties like spin that were previously almost impossible to detect."

The research team plans to expand its studies by examining the spins of free-floating planets (FFPs), also known as "rogue planets." They also hope to investigate the composition of these planets' atmospheres. This will be assisted by next-generation instrumentation, such as the Keck Observatory's upcoming HISPEC (High-resolution Infrared Spectrograph for Exoplanet Characterization), which will become operational in 2027. As Hsu explained, HISPEC will extend these measurements to even smaller and more distant worlds.

Said Jason Wang, an Assistant Professor at Northwestern University and co-author of the study:

"We took the lessons learned from KPIC, and put them into HIS-

(Continued on page 12)

Light Pollution News (Cont'd)

(Continued from page 3)

checkpoints. The wall jeopardized Big Bend's Dark Sky designation and fragmented wildlife corridors. The park generated 64 million dollars to surrounding economies in 2024 partly because of its dark sky status. Eventually, the Department of Homeland Security removed the Smart Wall designation, though wall construction is expected to begin for the nearby Big Bend Ranch State Park. It's unclear what impact that will have on Big Bend's night sky, though it is expected to be noticeable.

New Zealand's new planning bill threatened Kaikoura's International Dark Sky sanctuary status. The community implemented responsible lighting with 3000K fixtures and motion sensors, but new legislation threatened to eliminate those protections by allowing Wellington to overrule local governance on development related items.

Headlight research contradicted complaints. The Insurance Institute of Highway Safety found bright headlights prevented accidents. The UK Department of Transportation reported downward accident trends between 2014 and 2023. Meanwhile, car manufacturers are creating new problems with in-cabin accent lighting that ruin night vision. Porsche, being an exception here, designed interior glow, not by direct light, but by casting light away from the occupants.

Belgium removed 75 streetlights from a national park after auditing determined they served no purpose. Nicolas Goethals, who leads the Dark Network initiative, advocated for darkness as the default nighttime mode.

Chile staved off disaster when AES Andes halted renewable power plant plans near the Atacama Desert Observatory. Astronomers organized effective advocacy by framing development concerns.

Des Moines residents successfully opposed lighting the historic Waveland Golf Course. The Drake Observatory sat nearby, and residents packed meetings voicing concerns never before solicited. The city eventually rescinded plans.

On the streetlights front, Spokane decided to let the free market reign! The city distributed motion sensor solar lighting to residents through federal funding, creating such demand that it generated a backlog. Shenzhen, China modified streetlights to balance driver safety with migrating bird protection.

In research a meta-analysis linked nighttime light exposure to 31 percent increased diabetes risk, with interior lighting posing 66 percent elevated risk. Studies showed artificial light delayed wildflower blooming up to ten days, disrupted coral reef fish reproduction, and altered beetle larvae behavior. Nocturnal pollinators faced disorientation from artificial light that damaged vision and complicated flower finding.

Finally, we use light for a myriad of purposes. Down in Florida, a Winter Pride celebration projected rainbow lasers visible 60 miles away until 3 a.m.! Not quite sure that's the best of use of light, but this next one seems more reasonable. Istanbul's Mahya tradition of light-spelled religious messages faces a generational challenge as the 400 year old practice may disappear as a master craftsmen sets sights on giving up the practice. The Mahya practice involves stringing lights (now Edison bulbs) between minarets to spell out words.

Exoplanet Survey (Cont'd)

(Continued from page 11)

PEC, which will have better sensitivity, higher spectral resolution, and wider wavelength coverage. With HISPEC we will be able to drastically increase the number of planets that we can measure spins of, and in particular, we can study planets closer to our own Jupiter in nature to see if our own Jupiter is typical."

"We're just beginning to explore what planetary spin can tell us," said Hsu. "With future instruments and larger telescopes, we'll be able to measure spins for even more worlds and connect rotation, chemistry, and formation history across entire planetary systems."

Publication details:

- Chih-Chun Hsu et al, Distinct Rotational Evolution of Giant Planets and Brown Dwarf Companions, *The Astronomical Journal* (2026). DOI: 10.3847/1538-3881/ae434b

[Editor's Note: Read the original article online at Phys.org.]

April Speaker (Cont'd)

(Continued from page 3)

(M2020) Mission, he supports tactical robotic operations. Previously, he developed M2020's autonomous driving algorithm and also led the landing site traversability analysis for the landing selection, developed the enhanced autonomous driving capability, and supported tactical uplink and downlink operations of the rover.

His research interest is centered around the application of robotic autonomy to space exploration, with an emphasis on machine learning applications to perception, data interpretation, and risk-aware decision-making.

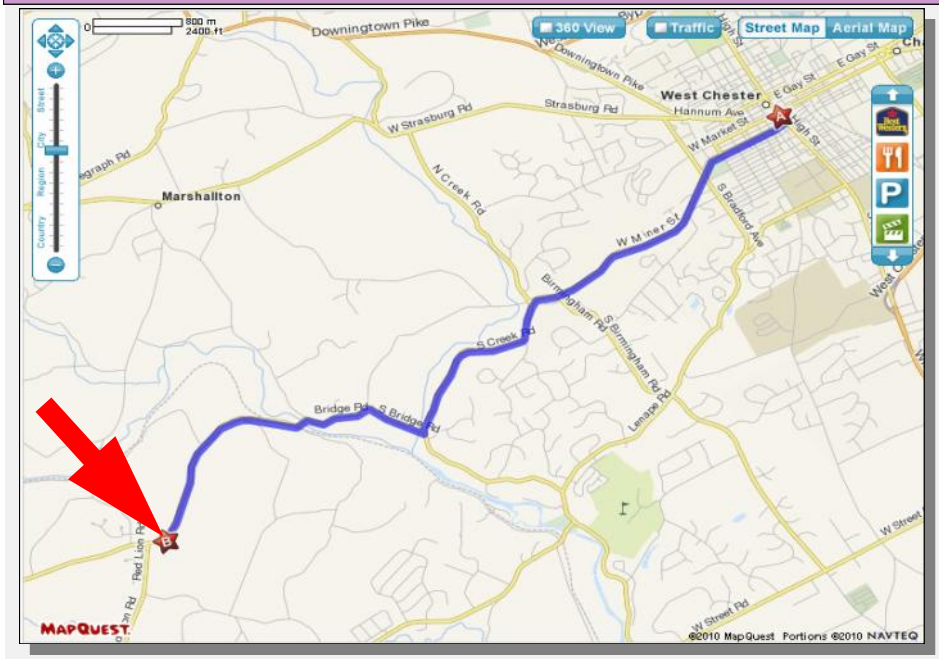
He received JPL's Software of the Year Award in 2021 for the machine learning-based terrain

(Continued on page 14)

Classic La Para

by Nicholas La Para

CCAS Directions



Brandywine Red Clay Alliance
1760 Unionville Wawaset Rd
West Chester, PA 19382
(610) 793-1090
http://brandywinewatershed.org/

BRC was founded in 1945 and is committed to promoting and protecting the natural resources of the Brandywine Valley through educational programs and demonstrations for all ages.

Brandywine Red Clay Alliance

The monthly observing sessions (held February through November) are held at the Myrick Conservation Center of the Brandywine Red Clay Alliance.

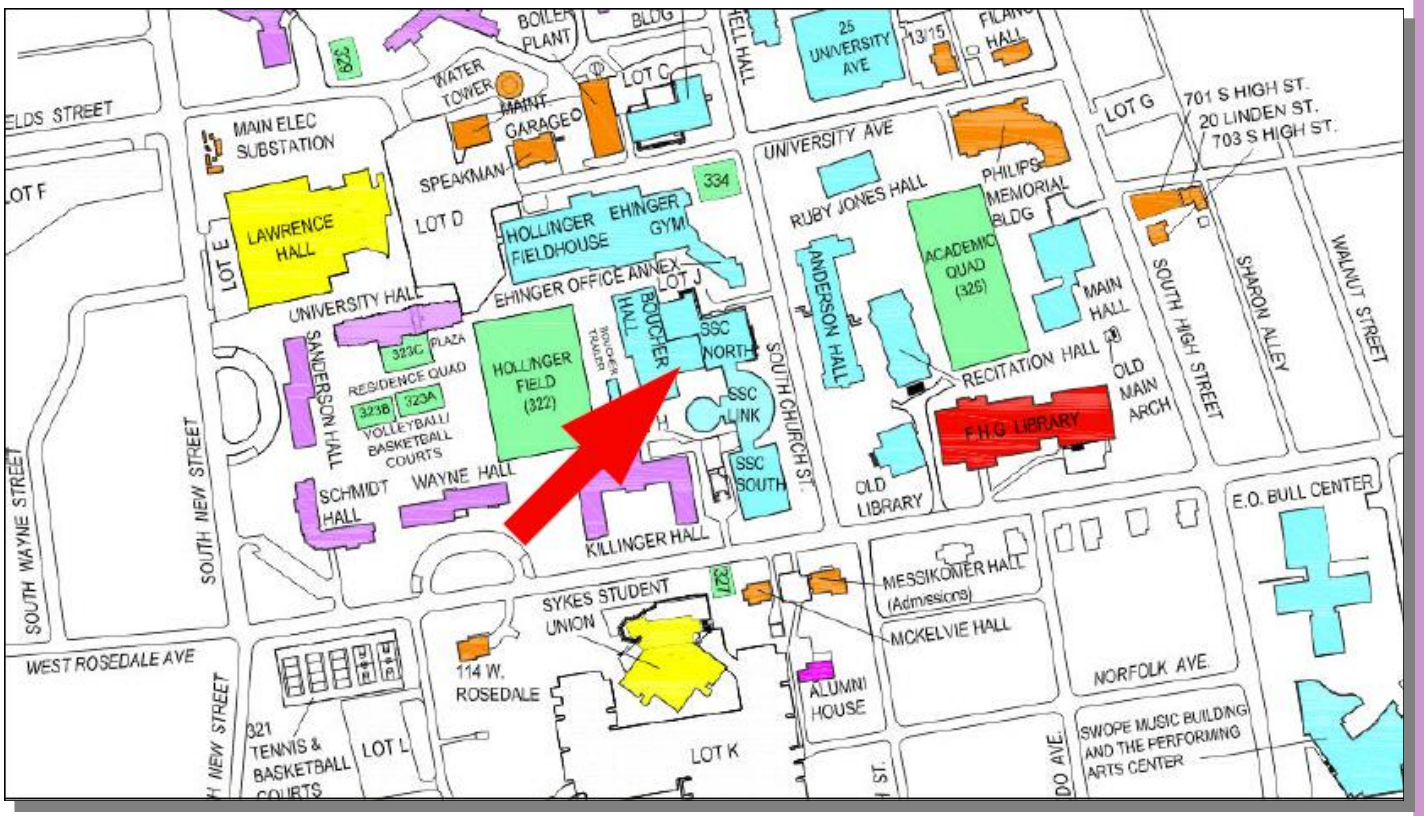
To get to the Myrick Conservation Center from West Chester, go south on High Street in West Chester past the Courthouse. At the next traffic light, turn right on Miner Street, which is also PA Rt. 842. Follow Rt. 842 for about 6 miles. To get to the observing site at the BRC property, turn left off Route 842 into the parking lot by the office: look for the signs to the office along Route 842. From that parking lot, go left through the gate and drive up the farm lane about 800 feet to the top of the hill. The observing area is on the right.

If you arrive after dark, *please turn off your headlights and just use parking lights* as you come up the hill (so you don't ruin other observers' night vision).

CCAS Directions

West Chester University Campus

The monthly meetings (September through May) are held in Room 112 in Merion Science Center (formerly the Boucher Building), attached to the Schmucker Science Center. The Schmucker Science Center is located at the corner of S. Church St & W. Rosedale Ave. Parking is generally available across Rosedale in the Sykes Student Union parking lot (Lot K).



April Speaker (Cont'd)

(Continued from page 13)

classifier, which was used for the M2020 landing selection and ground operation. Previously, Dr. Ono also contributed to the development of autonomous sampling site selection for the proposed future Europa Lander mission.

Before joining JPL in 2013, he was an assistant professor at Keio University in Japan. He graduated from MIT with MS (2007) and PhD (2012) in Aeronautics and Astronautics.

CCAS Membership Information and Society Financials

Treasurer's Report
by Don Knabb

March 2026 Financial Summary

Beginning Balance	$2147
Deposits	$175
Disbursements	-$0
Ending Balance	$2322

New Member Welcome!

Welcome to new CCAS members Larry McClain from West Chester, PA, Mary Whittam from West Chester, PA, and Nicholas Bunio from Downingtown, PA.

We're glad you decided to join us under the stars! Clear skies to you!

Membership Renewals

You can renew your CCAS membership by writing a check payable to "Chester County Astronomical Society" and sending it to our Treasurer:

Don Knabb
988 Meadowview Lane
West Chester PA 19382

The current dues amounts are listed in the *CCAS Information Directory*. Consult the table of contents for the directory's page number in this month's edition of the newsletter.

CCAS Information Directory

Join the Fight for Dark Skies!

You can help fight light pollution, conserve energy, and save the night sky for everyone to use and enjoy. Join the nonprofit International Dark-Sky Association (IDA) today. Individual memberships start at $35.00 for one year. Send to:

International Dark-Sky Association
5049 E Broadway Blvd, #105
Tucson, AZ 85711

Phone: **520-293-3198**
Fax: **520-293-3192**
E-mail: **ida@darksky.org**

For more information, including links to helpful information sheets, visit the IDA web site at:

http://www.darksky.org

Dark-Sky Website for PA

The Pennsylvania Outdoor Lighting Council has lots of good information on safe, efficient outdoor security lights at their web site:

http://www.POLCouncil.org

Find out about Lyme Disease!

Anyone who spends much time outdoors, whether you're stargazing, or gardening, or whatever, needs to know about Lyme Disease and how to prevent it. You can learn about it at:

http://www.lymebasics.org

Take the time to learn about this health threat and how to protect yourself and your family. It is truly "time well spent"!

Good Outdoor Lighting Websites

One of the biggest problems we face in trying to reduce light pollution from poorly designed light fixtures is easy access to good ones. When you convince someone, a neighbor or even yourself, to replace bad fixtures, where do you go for good lighting fixtures? Check out these sites and pass this information on to others. Help reclaim the stars! And save energy at the same time!

Light pollution from poor quality outdoor lighting wastes billions of dollars and vast quantities of valuable natural resources annually. It also robs us of our heritage of star-filled skies. Starry Night Lights is committed to fighting light pollution. The company offers the widest selection of ordinance compliant, night sky friendly and neighbor friendly outdoor lighting for your home or business. Starry Night Lights is located in Phoenix, Arizona.

Phone: **520-280-3846**

http://www.starrynightlights.com

★ ★ ★ ★ ★

Lighthouse Outdoor Lighting is a dedicated lifetime corporate member of the International Dark-Sky Association. Lighthouse's products are designed to reduce or eliminate the negative effects outdoor lighting can have while still providing the light you need at night.

211 North Walnut St.
1st Floor
West Chester, PA 19380

Phone: **484-291-1084** or **800-737-4068**

https://www.lighthouse-lights.com/landscape-lighting-design/pa-west-chester/

Local Astronomy-Related Stores

Listing retail sites in this newsletter does not imply endorsement of any kind by our organization. This information is provided only as a service to our members and the general public.

High Point Scientific is a retailer of telescopes, binoculars, eyepieces and telescope accessories from Meade, Celestron, Televue, Orion, StellarMate, Takahashi, and many more. They also have an extensive blog of advice and education for amateur astronomers.

High Point Scientific
442 Route 206
Montague NJ, 07827

Phone: **800-266-9590**

https://www.highpointscientific.com/

★ ★ ★ ★ ★

Located in Manayunk, Spectrum Scientifics educates and entertains customers with an array of telescopes, microscopes, binoculars, science toys, magnets, labware, scales, science instruments, chemistry sets, and much more.

4403 Main Street
Philadelphia, PA 19127

Phone: **267-297-0423**
Fax: **215-965-1524**

Hours:
Monday thru Friday: 9AM to 5PM

http://www.spectrum-scientifics.com

CCAS Information Directory

CCAS Lending Telescopes

Contact Don Knabb to make arrangements to borrow one of the Society's lending telescopes. CCAS members can borrow a lending telescope for a month at a time; longer if no one else wants to borrow it after you. Don's phone number is 610-436-5702.

Contributing to *Observations*

Contributions of articles and images relating to astronomy and space exploration are always welcome. If you have a computer, and an Internet connection, you can attach the file to an e-mail message and send it to: **newsletter@ccas.us** to:

Dr. John C. Hepler
21 Medinah Drive
Reading, PA 19607

The deadline for submissions to the monthly newsletter is the 26th of each month. Articles and images should be original or the author/artist must be given credit. Articles should be in MS Word format with 12 point Times New Roman Font with single row spacing and one-inch margins on all four sides. Images should be in JPG or PNG file format. The submission window opens on the 20th of each month.

CCAS Newsletters via E-mail

You can receive the monthly newsletter (in full color!) via e-mail. All you need is a PC or Mac with an Internet e-mail connection. To get more information about how this works, send an e-mail request to Dr. John Hepler, the newsletter editor, at: **newsletter@ccas.us**.

CCAS Website

Dr. John Hepler is the Society's Webmaster. You can check out our Website at:

http://www.ccas.us

Dr. Hepler welcomes any additions to the site by Society members. The contributions can be of any astronomy subject or object, or can be related to space exploration. The only requirement is that it is your own work—no copyrighted material! Give your contributions to Dr. Hepler at (484) 883-5033 or e-mail to webmaster@ccas.us

CCAS Purpose

The Chester County Astronomical Society was formed in September 1993, with the cooperation of West Chester University, as a non-profit organization dedicated to the education and enjoyment of astronomy for the general public. The Society holds meetings (with speakers) and observing sessions once a month. Anyone who is interested in astronomy or would like to learn about astronomy is welcome to attend meetings and become a member of the Society. The Society also provides telescopes and expertise for "nights out" for school, scout, and other civic groups.

CCAS Executive Committee

For further information on membership or society activities you may call:

President:	Dave Hockenberry 610-558-4248
Vice President:	Pete Kellerman 610-873-0162
ALCor & Treasurer:	Don Knabb 610-436-5702
Observing:	Don Miller 610-247-8712
Secretary:	Beatrice Mazziotta 610-933-2128
Program:	Bruce Ruggeri 610-256-4929
Education:	Don Knabb 610-436-5702
	Dennis O'Leary 610-701-8042
Webmaster & Newsletter:	John Hepler 484-883-0533

CCAS Membership Information

The 2023 membership rates are as follows:

REGULAR MEMBER……$30/year
SENIOR MEMBER…….$15/year
STUDENT MEMBER……..$ 5/year
JUNIOR MEMBER……..$ 5/year
FAMILY MEMBER…….$40/year

Membership Renewals

Check the Membership Renewals on the front of each issue of *Observations* to see if it is time to renew. If you need to renew, you can mail your check, made out to "Chester County Astronomical Society," to:

Don Knabb
988 Meadowview Lane
West Chester PA 19382-2178

Phone: **610-436-5702**
e-mail: **treasurer@ccas.us**

*Sky & Tele*scope Magazine

The club membership subscription cost for *Sky and Telescope* magazine has increased to **$45.75**. This is still a good saving from the regular rate of **$57.75**.

There is no need to go through the CCAS treasurer for subscriptions or renewals. Just go to the Sky and Telescope website and select "Magazine", then under the FAQs you can subscribe at the club rate.

https://skyandtelescope.org/subscribe/

If you have **any** questions call Don Knabb at 610-436-5702.

Astronomy Magazine Group Rates

Subscriptions to this excellent periodical are available through the CCAS at a reduced price of **$34.00** which is much less than the individual subscription price of **$42.95** (or $60.00 for two years).

There is no need to go through the CCAS treasurer for subscriptions or renewals. Just call customer service at 877-246-4835 and request the club rate for your new subscription or renewal.