



# Observations

A Monthly Publication Of The  
CHESTER COUNTY ASTRONOMICAL SOCIETY

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## Zodiacal Light Behind the Submillimeter Array



The Submillimeter Array of radio telescopes atop Mauna Kea, at night and lit by flash, with the Zodiacal Light in the background. By TripOfALifestyle.com - Own work, CC BY 4.0, <https://commons.wikimedia.org/w/index.php?curid=67573363>

## Membership Renewals Due

|         |                                                                                             |
|---------|---------------------------------------------------------------------------------------------|
| 03/2026 | Angelini, Jr.<br>DellaPenna<br>Fulton<br>Han Family<br>Narikimelli<br>Rainville<br>Sterrett |
| 04/2026 | Adem<br>Breckenridge<br>Dennis<br>McCabe<br>Miles<br>Miller<br>Rossomando<br>Tredinnick     |
| 05/2026 | Blessing<br>Cunningham<br>Kagel<br>Malkan<br>Mulhall<br>Nigro<br>O'Hara<br>Ostanke<br>Quinn |

## March 2026 Dates

- 3rd • Full Moon, the **Worm Moon** (6:37 a.m. EST).
- 3rd • Total lunar eclipse, 7 a.m. EST.
- 7th • Mercury is in inferior conjunction, 6 a.m. EST.
- 11th • Last Quarter Moon (5:38 a.m. EDT).
- 18th • New Moon (9:23 a.m. EDT).
- 20th • Equinox (northern spring/southern autumn begins), 11 a.m. EDT.
- 23rd • The Moon passes 5° north of Uranus, 4 a.m. EDT.
- 25th • Saturn is in conjunction with the Sun, 5 a.m. EDT.
- 25th • First Quarter Moon (3:17 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, March 20, 2026 - CCAS Monthly Observing Session, Myrick Conservancy Center, Brandywine Red Clay Alliance. The observing session starts at 7:00 p.m. EDT.
- ☼ Friday, March 27, 2026 - CCAS Observing Session with the WCU Mather Planetarium, 8:00 p.m. to 10:00 p.m. EDT.

For more information about future observing opportunities, contact our [Observing Chair](#), Don Miller.

## Winter/Spring Society Events

### March 2026

**5th** • STEM night at Greenwood Elementary School, Kennett Square, 6:00 to 8:00 PM EST.

**7th** • Coatesville Star Party, Hibernia County Park, Parking at pavilion #5 lot, 6:00 to 10:00 PM EST.

**8th** • Daylight Saving Time begins at 2:00 AM. Turn clocks forward one hour.

**10th** • CCAS Monthly Meeting in Room 112, Merion Science Center, WCU (as well as via Zoom). The meeting starts at 7:30 PM, EST. CCAS President Dave Hockenberry & Claire Lewis, Director of Development for the West Chester University Foundation, will present.

**17th** • Equilux in West Chester, PA. Equal night and day.

**18th** • Beginner Astronomy Class: Spaceship Earth – the Sun and Its Effects on the Earth. 7:00 to 8:00 PM EDT. Peirce Middle School, 1314 Burke Road, West Chester, PA 19380.

**20th** • Open call for articles and photographs for the April 2026 edition of [Observations](#).

**20th** • Equinox at 10:46 AM EDT. First day of spring in the northern hemisphere.

**20th** • West Chester University Planetarium Show: "The First Galaxies" 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.

**20th** • CCAS Monthly Observing Session, Myrick Conservancy Center, Brandywine Red Clay Alliance. The observing session starts at 7:00 p.m. EDT.

**25th** • Beginner Astronomy Class: Other Kids on the Block – the Planets. 7:00 to 8:00 PM EDT. Peirce Middle School, 1314 Burke Road, West Chester, PA 19380.

**26th** • Deadline for newsletter submissions for the April 2026 edition of [Observations](#).

### April 2026

**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."

**20th** • Open call for articles and photographs for the May 2026 edition of [Observations](#).

**26th** • Deadline for newsletter submissions for the May 2026 edition of [Observations](#).

## February 2026 Meeting Minutes

by *Bea Mazziotta*, CCAS Secretary

- The February meeting of the CCAS was held on Tuesday February 10, 2026, in person at WCU, and via Zoom and YouTube. Club president Dave Hockenberry welcomed attendees. He announced that a successful fundraising drive will enable CCAS to provide 3 more scholarships to WCU students. The awardees have yet to be announced.
- Don Miller, Observing Chair, reviewed upcoming club and outreach events, both solar and night sky. He again requested volunteers to assist at the outreach events, stressing the positive community outreach these events provide. He will send out a list for sign-ups.
- Don Knabb announced that enrollment is good for the beginner astronomy classes. These classes are taught by club members and are held at Pierce Middle School. They will be held weekly starting on 3/18 and concluding on 4/22. Club members are welcome to attend at no cost WITHOUT registering. Club members should reach out to Don if they want to attend.
- Go to [CCAS.us](#) for more information on all of the above.
- Bruce Ruggeri welcomed the evening's speaker Dr. Becka Phillipson, Assistant Professor in the Physics Department at Villanova. Dr. Phillipson is an astrophysicist who leverages statistics, nonlinear dynamics and machine learning to study the highly variable characteristics of exotic astrophysical objects like black holes and neutron stars. Her presentation was titled "Chaos in the Cosmos". What seems predictable in principle is often unpredictable in practice. Chaos theory attempts to help explain, and thus help us to better understand complex natural systems, such as weather. This can also lead to a better understanding of events happening far away from earth, such as outbursts in black holes and neutron stars.

## March 2026 CCAS Meeting Agenda

by *Bruce Ruggeri*, CCAS Program Chair

Our next meeting will be held on March 10, 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 speakers for the evening are CCAS President Dave Hockenberry & Claire Lewis, Director of Development for the West Chester University Foundation.

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](mailto:programs@ccas.us).

## March 2026 Monthly Meeting Featured Speakers

by Bruce Ruggeri, Program Chair

Our March monthly meeting is special in its content and purpose. The March CCAS meeting is Tuesday, March 10th, and begins informally at 7:00 p.m. EDT, with the meeting program commencing at 7:30 p.m. EDT.

We have two notable speakers at this meeting. CCAS President Dave Hockenberry will present and exemplify on the revolutionary advances in the technology and art of astrophotography in which he has been engaged for decades; and Claire Lewis from the WCU Foundation will speak about the details and structure of our proposed CCAS Scholarship Endowment that has been discussed at our last two meetings.

These presentations will commence at approximately 8:00 PM EDT. Our meetings are

held at West Chester University's (WCU) Merion Science Center, Room 112. The Science Center is located at 720 S. Church St. in West Chester.

Please make every effort to attend this important monthly CCAS meeting in person or to join us via Zoom. In addition to our two scheduled speakers, we will be presenting CCAS updates and observing highlights, and a schedule of near-term planned outreach events. Your participation and engagement in our monthly meetings are vital so please make every effort to attend!

Claire Lewis, WCU Foundation: *The proposed CCAS Scholarship Endowment Fund - Details and How it Would Operate*

Claire is the Director of Development for the West

Chester University Foundation working to support the College of the Sciences and Mathematics.

The West Chester University Foundation is the nonprofit organization that accepts and manages private contributions made to support West Chester University. It invests and distributes funds to provide scholarships, enhance academic programs, improve campus facilities, and support innovative initiatives that benefit students and faculty. By connecting alumni, donors, and friends to the university's mission, the Foundation helps ensure long-term financial strength and expanded opportunities for the WCU community. Claire has a decade of experience in higher education advancement and helped the CCAS establish the

*(Continued on page 13)*

## A Strange Triangle of Light Appears in Late Winter Night Skies

by Stefanie Waldek, courtesy National Geographic

On clear late-winter nights, a dim light appears in the sky after twilight fades. It's not the aurora, nor a lingering sunset, nor the inner core of the Milky Way Galaxy. Known as the *zodiacal light*—sometimes called “false dusk” or “false dawn”—this ghostly pyramid-shaped glow is one of the solar system's most understated spectacles. As the spring equinox approaches, the alignment of Earth and the ecliptic makes the zodiacal light more visible—offering a rare chance to see the dusty plane of our solar system with the naked eye.

Visually, the zodiacal light appears as “a cone-shaped wedge of light rising from the sunset point in the evening or sunrise direction in the pre-dawn hours,” says Brian Skiff, a research scientist and astronomer at Lowell Observatory. It's a very diffuse glow that does resemble the earliest moments of



Zodiacal Light as seen from Cerro Pantanal. Image Courtesy ESO.

dawn and the last ones of dusk.

Physically, the zodiacal light is scattered sunlight reflecting off a cloud of interplanetary dust “roughly the size of cigarette smoke particles,” says Skiff. “It is some mixture of debris from comet tails and trails, as well as from collisions of asteroids.” This dust lies along the plane of the solar system, the same one in which the planets orbit the sun. That's why it's called “zodiacal”; the glow traces the ecliptic, or the path of the sun through the zodiac constellations from the perspective of Earth.

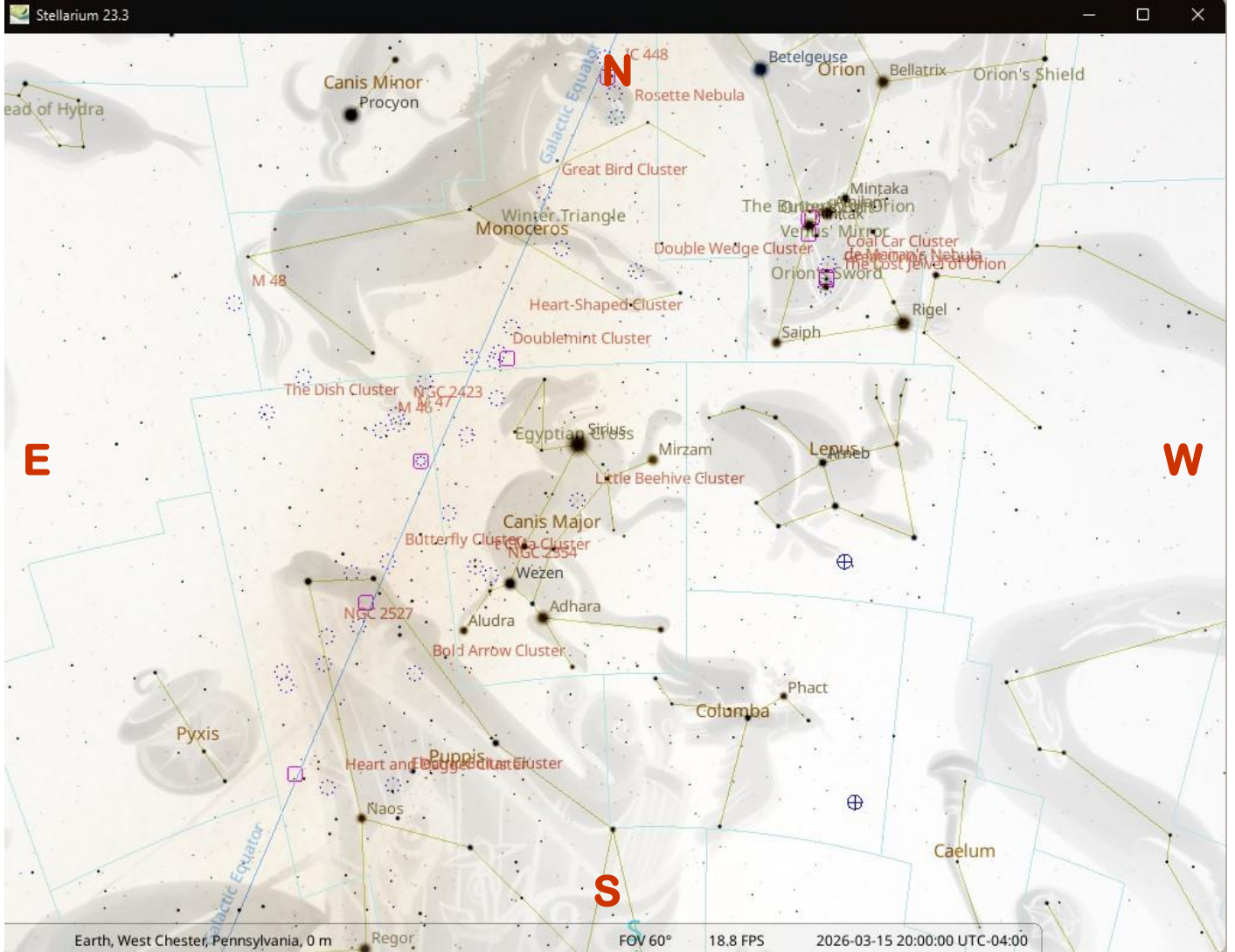
In 2021, scientists from NASA's Juno mission [published a paper](#) suggesting that some of the dust particles involved with the zodiacal light might actually be from Mars. En route to Jupiter, the Juno spacecraft unintentionally measured the density of interplane-

*(Continued on page 12)*

# The Sky Over Chester County

March 15, 2026 at 8:00 p.m. ET

Note: This screen capture is taken from Stellarium, the free planetarium software available for download at [www.stellarium.org](http://www.stellarium.org).

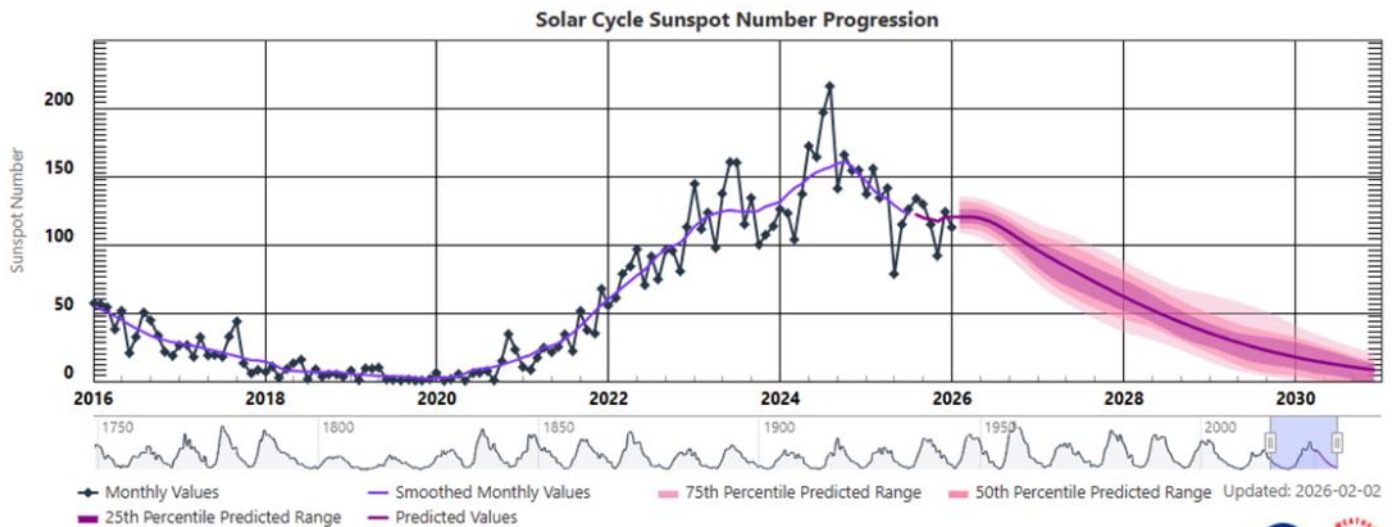


| Date       | Civil Twilight Begins | Sunrise       | Sunset        | Civil Twilight Ends | Length of Day |
|------------|-----------------------|---------------|---------------|---------------------|---------------|
| 03/01/2026 | 6:08 a.m. EST         | 6:35 a.m. EST | 5:54 p.m. EST | 6:21 p.m. EST       | 11h 18m 47s   |
| 03/15/2026 | 6:46 a.m. EDT         | 7:13 a.m. EDT | 7:09 p.m. EDT | 7:36 p.m. EDT       | 11h 55m 33s   |
| 03/31/2026 | 6:20 a.m. EDT         | 6:47 a.m. EDT | 7:25 p.m. EDT | 7:53 p.m. EDT       | 12h 37m 47s   |

| Moon Phases   |            |               |           |            |               |
|---------------|------------|---------------|-----------|------------|---------------|
| Last Quarter  | 03/11/2026 | 5:38 a.m. EDT | Full Moon | 03/03/2026 | 6:37 a.m. EST |
| First Quarter | 03/25/2026 | 3:17 p.m. EDT | New Moon  | 03/18/2026 | 9:23 p.m. EDT |

## March 2026 Observing Highlights

by Don Miller, CCAS Observation Chair



### Key Events this month:

While it might have already happened when you receive this summary, a total lunar eclipse will occur on the 3rd of March but in the wee hours of the morning, starting at 3:44 a.m. for us and only reaches maximum as the sun rises at 6:29 a.m.

### Discussion:

The weather will hopefully be warmer this month. See the writeup below about enjoying the zodiacal light during this time around the spring equinox.

### 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 below. As the writing of this highlight, the sunspot number is 34. Minor geomagnetic storms and high-latitude auroras are still occurring.

### Moon:

Full on the 3rd; last quarter on the 11th and new on the 19th and 1st quarter on the 25th. The name of the full moon this month is the "[worm moon](#)." It was thought that this name referred to the warming weather and the emergence of earthworms but in the 1760's Captain Jonathan Carver used this term to refer to the emergence of beetle larvae from thawing tree bark. So, pick your origin story but the sense is the same, something new emerging.

NASA's Artemis program which had planned on launching the Artemis II mission this month has been delayed due to a helium flow issue in one of

its propulsion stages. The earliest launch date at this time will now be April 1st (just one day before the full moon that month).

### Planets:

*Mercury:* Not visible early in the month when it is at its inferior conjunction. It will become visible later in the month.

*Venus:* Moving into the evening sky.

*Mars:* Not visible.

*Jupiter:* Visible during the evening through a bit after midnight.

*Saturn:* Very low in the western sky after sunset as it moved to conjunction with the sun on the 25th.

*Uranus:* Visible in the western sky but this window for viewing is closing.

*Neptune:* At solar conjunction on the 22nd and non-observable.

### Select Night Sky Objects and Events:

This is the time of year when it is optimal to view the zodiacal light in the western sky. It is sometimes called the "false dusk" as it can be viewed about an hour or so after sunset. This light can be differentiated from sunset as it is not reddish but rather pinkish. At the spring equinox time (which occurs on the 20th), we can view the light scattered off of the interplanetary dust that fills our solar system.

(Continued on page 7)

## Through the Eyepiece: M 109, the Vacuum Cleaner Galaxy

by Don Knabb, CCAS Treasurer & ALCOR

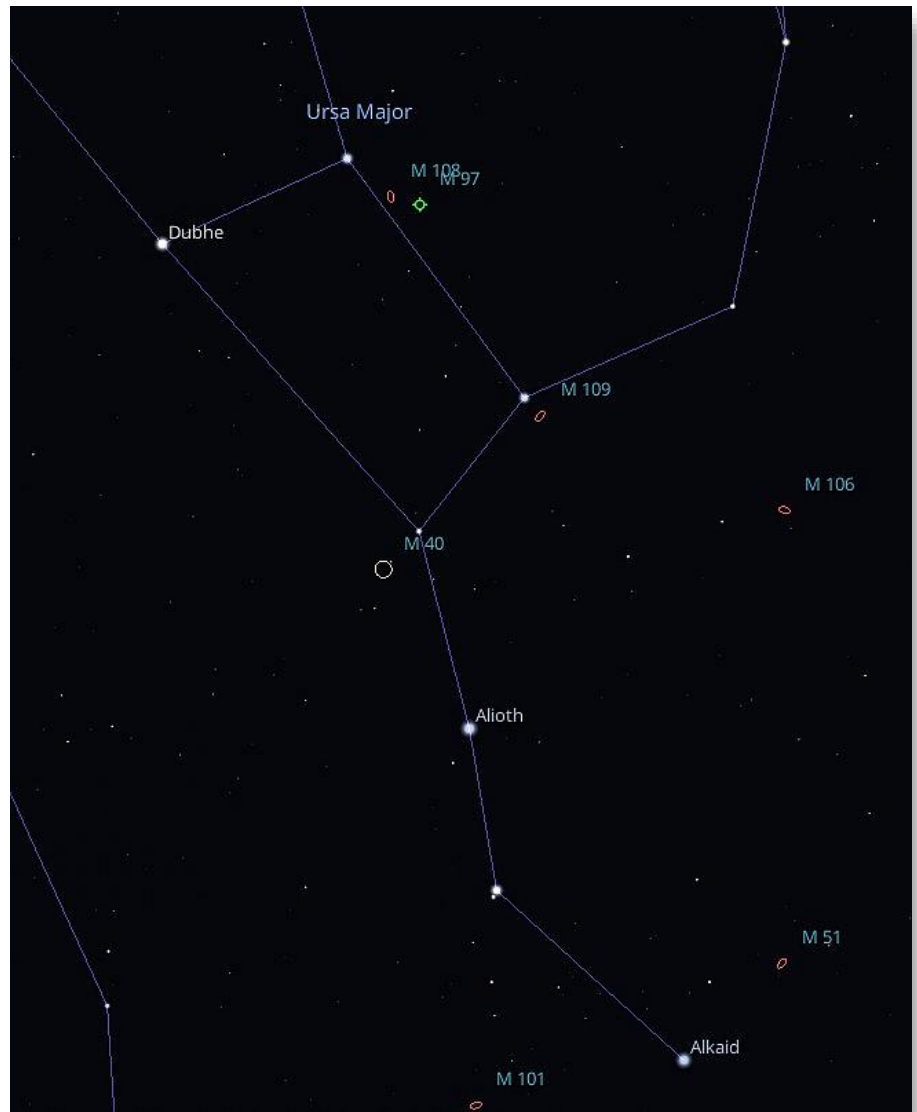
During the deep winter I am always encouraged by the sight of Leo the Lion jumping out of the eastern horizon late in the evening. But to see Leo clearly one must stay up quite late. What Leo means to me is that galaxy time is approaching, and that means warmer weather is on its way.

But we don't need to wait until April to see galaxies. One that is easily found and observed during March is M109, also called the Vacuum Cleaner Galaxy. Why is it called the Vacuum Cleaner Galaxy? This name was proposed by Devon J. Moore, who writes: "The name I've suggested was the Vacuum Cleaner Galaxy for a few reasons. The first it being a cyclonic looking galaxy, so I named it after a cyclonic vacuum cleaner. The second is... well... I like vacuum cleaners... go figure."

M109, also known as NGC 3992, is found just below the Big Dipper's bowl in the northern constellation Ursa Major, the Great Bear. It is just to the left of the star named Phad, the bottom-rear star of the Big Dipper.

But just because it is easy to find it doesn't mean it is easy to see! Although it is considered rather large, the outer spiral arms are quite faint and only the bright central bar and nucleus region show well to smaller telescopes. Messier 109 will require dark, clear skies and at least mid-sized aperture to begin seeing details.

In telescopic views, its striking central bar gives the galaxy the appearance of the Greek letter "theta",  $\theta$ , a common mathematical symbol representing an angle.



Sky map created using Stellarium, the free planetarium software

M109 is the brightest galaxy in the M109 Group, a large group of galaxies that may contain over 50 galaxies.

Messier 109 was discovered by Pierre Méchain in 1781. In 1783 Charles Messier catalogued it as his 109th object. William Herschel found this galaxy independently on April 12, 1789, and cataloged it as H IV.61. He incorrectly misclassified it as a planetary nebula. He writes: "Considerably bright. Irregularly formed. Extended meridional-

ly [along the Meridian, i.e. North-South]. Little brighter Nucleus. With faint branches 7 or 8' long, and 5 or 6' broad." His son John would also go on to add it to his catalog on February 17, 1831, when he writes: "Bright; Large; very suddenly brighter to the Middle; round; 3' diameter. Fine object."

Between the 1920s through the 1950s, it was considered that Messier objects over 103 were

(Continued on page 11)

## Do You Live Under a Spectacular Night Sky?

by Bill McGeeney, Host of Light Pollution News Podcast

Some light pollution updates for you this month. All can be found via my podcast, Light Pollution News ([LightPollutionNews.com](http://LightPollutionNews.com)). This month, I welcomed Mont-Megantic's Remi Boucher, a talented astrophotographer, Jeremy Evans, and one of the architects of multiple California lighting ordinances, Dashiell Leeds.

In the news, Maine's new responsible lighting law faced immediate pushback from a Colorado opinion columnist who claimed it bans Christmas lights. Nope, it doesn't. And then he claimed that the law requires essentially lighting to be turned off

after 10 p.m. Nope, again. Non-essential public lighting is to be dimmed or extinguished after 10 p.m., with security exemptions. And...did you know that you can see a spectacular night sky from nearly anywhere, sorry bud, but you got that one wrong too! To top it off, the columnist also cited a \$370 million annual U.S. telescope sales. I'm curious to what you think about this one. Some low level research websites estimated global telescope markets closer to \$285 million (that's global, not U.S.).

This is the line of attack folks who wish to muddy the message on responsible lighting policies

are beginning to take. In December, a UK outlet ran an article that was nearly a complete misrepresentation of the new Palo Alto ordinance, and, along side of that, a local journalist claimed voluntary Dark Sky designated sites were fundraising activities designated to sustain Dark Sky International...no, they are simply that...voluntary programs.

Elsewhere, the Sphere venue announced its heralded expansion to National Harbor, Maryland. The original Las Vegas location posted a \$230 million operating loss in 2025. However, most of that sat in depreciation. So when we remove depreciation, the venue actually posts a roughly \$100 million good guy. The new Maryland venue will seat 6,000, roughly half of its Vegas counterpart. And, of course, it will bring its 24x7 nonstop LED exterior to the D.C. metro area.

In ecology, did you know that even creatures without eyes are shaped by light and darkness? Caribbean reef-building corals coordinate their circadian rhythms without eyes. Over 4,000 genes ramp up activity at dawn for protein production and cellular repair.

New research compared LED office lighting against broader-spectrum incandescent. Twenty-two participants who received 60-watt incandescent desk lamps improved their color contrast sensitivity by roughly 25% after two weeks. Improvements persisted for at least six weeks after removal.

## Observing (Cont'd)

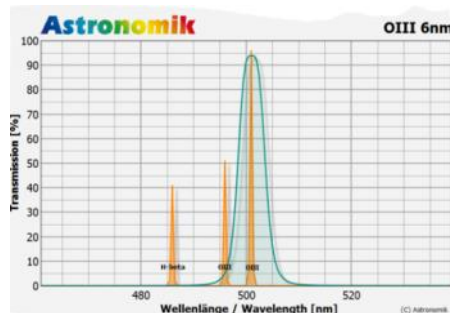
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The Rosette Nebula is highlighted in this month's *Sky & Telescope* and for good reason. It contains a wonder of star forming regions and is one of the best emission nebulae that can be viewed in our sky. It is located near the Orion nebula (as you'll recall, one of my all-time favorite targets). You will definitely benefit from using an OIII

filter to view this object. What this filter does is greatly reduce the interference from light pollution and other stray sources by only letting through light that is around the wavelength emitted by doubly ionized oxygen molecules, 496 and 501 nm. (See graph below.) The low density in the molecular clouds around regions like this nebula allow these "forbidden green lines" to be emitted. This filter is not expensive and worth the investment for viewing emission nebula as well as planetary nebula.



Image courtesy Sky & Telescope



Many companies make this type of filter

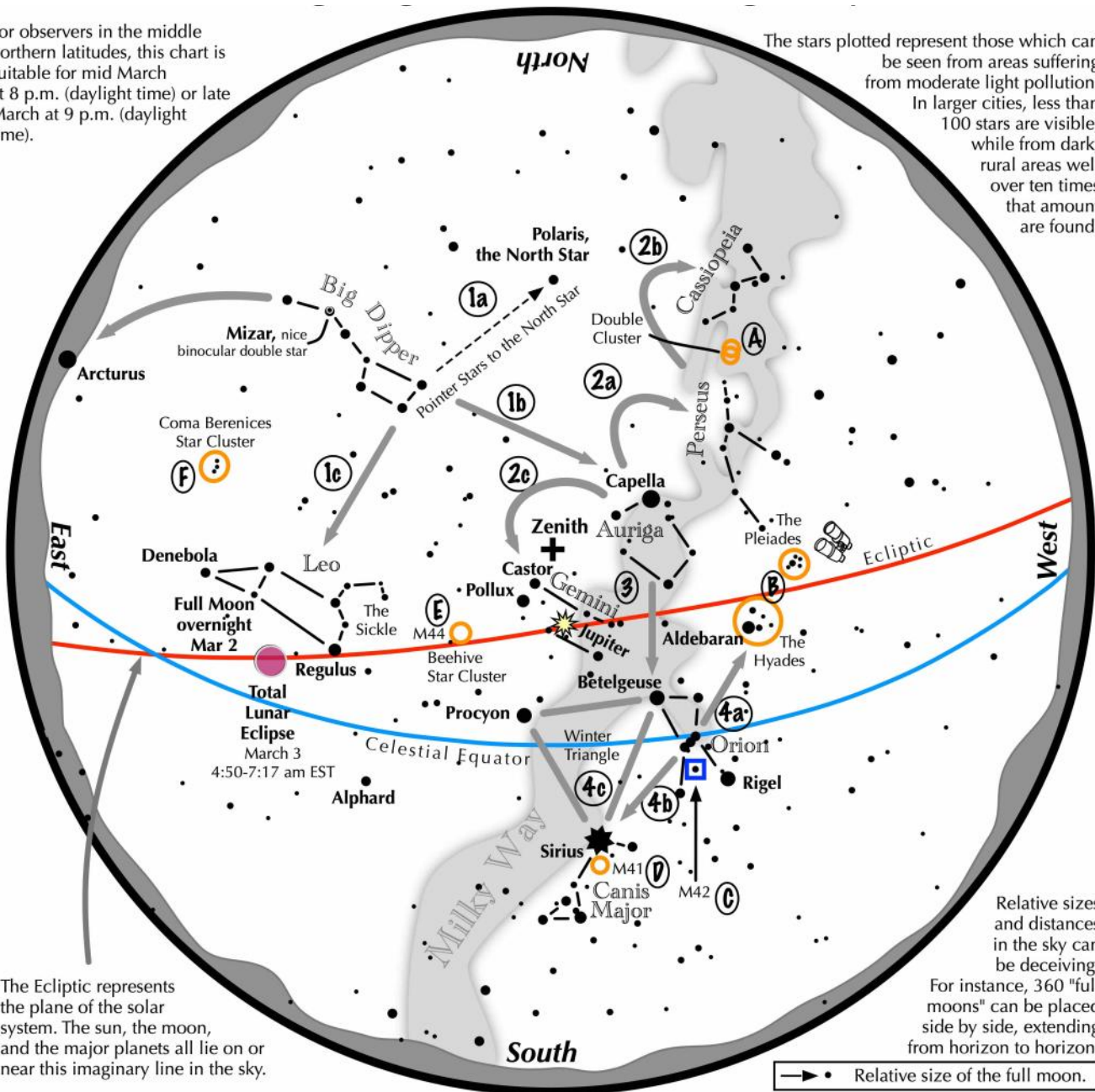
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# Navigating the mid-March Night Sky

*courtesy of the Astronomical League*

For observers in the middle northern latitudes, this chart is suitable for mid March at 8 p.m. (daylight time) or late March at 9 p.m. (daylight time).

The stars plotted represent those which can be seen from areas suffering from moderate light pollution. In larger cities, less than 100 stars are visible, while from dark, rural areas well over ten times that amount are found.



The Ecliptic represents the plane of the solar system. The sun, the moon, and the major planets all lie on or near this imaginary line in the sky.

Relative sizes and distances in the sky can be deceiving. For instance, 360 "full moons" can be placed side by side, extending from horizon to horizon.

→ • Relative size of the full moon.

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

- 1 Above the northeast horizon rises the Big Dipper. Draw a line from its two end bowl stars upwards to the North Star. Its top bowl stars point west to Capella in Auriga, nearly overhead. Leo reclines below the Dipper's bowl.
- 2 From Capella jump northwestward along the Milky Way to Perseus, then to the "W" of Cassiopeia. Next jump southeastward from Capella to the twin stars of Castor and Pollux in Gemini.
- 3 Directly south of Capella stands the constellation of Orion with its three Belt Stars, its bright red star Betelgeuse, and its bright blue-white star Rigel.
- 4 Use Orion's three Belt stars to point northwest to the red star Aldebaran and the Hyades star cluster, then to the Pleiades star cluster. Travel southeast from the Belt stars to the brightest star in the night sky, Sirius. It is a member of the Winter Triangle.

### Binocular Highlights

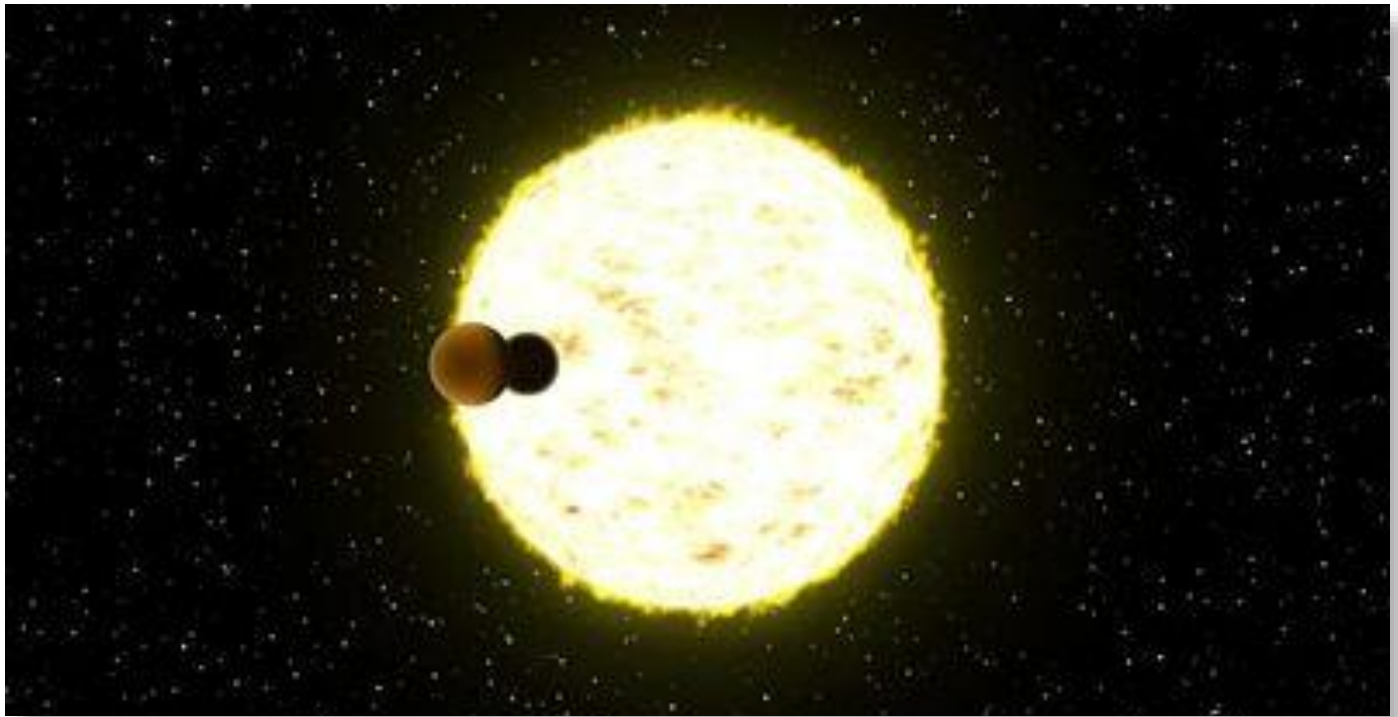
**A:** Between the "W" of Cassiopeia and Perseus lies the Double Cluster. **B:** Examine the stars of the Pleiades and Hyades, two naked eye star clusters. **C:** M42 in Orion is a star forming nebula. **D:** Look south of Sirius for the star cluster M41. **E:** M44, a star cluster barely visible to the naked eye, lies to the southeast of Pollux. **F:** Look high in the east for the loose star cluster of Coma Berenices.



Astronomical League [www.astroleague.org](http://www.astroleague.org); duplication is allowed and encouraged for all free distribution.

## Astronomers Think We're Going to Miss a Pair Of Eclipsing Exoplanets

by Dr. Alfredo Carpineti, courtesy IFLScience.com



*An eclipse on a whole other system, and we are going to miss it! Image Credit: NASA's Jet Propulsion Laboratory modified by IFLScience.*

An incredible space event might be happening in the heavens, and it is likely that we are going to miss it. The Kepler-89 system is so far the only other place in the universe where we have seen a planetary alignment, where two exoplanets end up eclipsing each other as they pass in front of their star. This means that four celestial bodies – Earth, the star Kepler-89 A, and two of its four planets, Kepler-89Ad and Kepler-89Ae – will all be on a single line. The team that saw it the first time thinks it's about to happen again.

The alignment of three or more celestial bodies is known as a syzygy— at least in the Solar System, it is. This is exactly what happens when there is a solar eclipse like the one that happened the week of February 23rd (sorry, [unless you're a penquin](#), it's unlikely you'll see it). [Observations in 2010](#) saw the

outermost planet in Kepler-89A eclipsing the second outermost world in the first known planet-planet eclipse seen outside our Solar System.

“Kepler-89 (also known as KOI-94) was the first planetary system in which an “overlapping double transit event” was observed. We refer to this phenomenon as a planet-planet eclipse, although it is also sometimes called an exosyzygy,” [Teruyuki Hirano](#) at the Astrobiology Center and National Astronomical Observatory of Japan told *IFLScience*. Hirano and his team were the first to find evidence of this event. “To date, no other exoplanetary system has been reported to exhibit a similar phenomenon.”

Back in 2013, the researchers [estimated](#) that this alignment would repeat again around this year. There are uncertainties about the actual motion of the

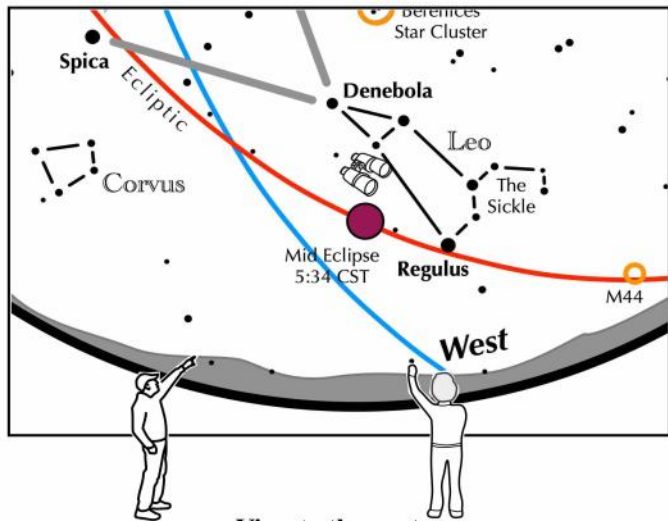
planets, so while an April 1st date has been touted as a probable one, it is uncertain when exactly it's going to happen.

“It would depend on many factors, including the true planet masses, dynamical interactions among planets, and presence/absence of outer (additional) planets in the system. Our latest calculation still suggests that there is a good chance of the event happening this April,” Hirano told *IFLScience*.

There is a snag in all of this, unfortunately. Currently, there is no facility planning to observe the event in April. Due to the position of the star, moderately close to the Sun in the Sky, the European Space Agency's CHEOPS wouldn't be able to look at the system because of it. The team also applied for time on Hubble, but that was also unsuccessful.

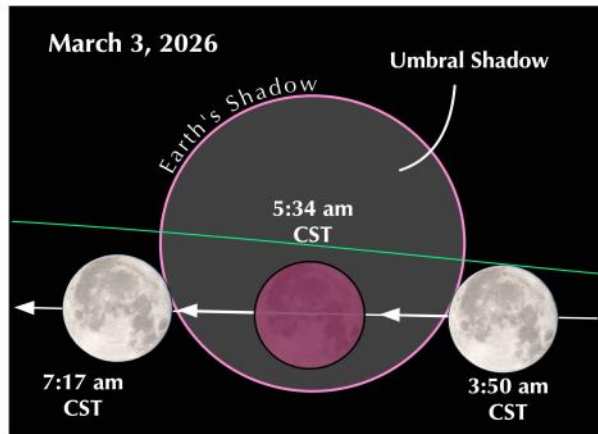
*(Continued on page 10)*

**If you can observe only one celestial event in the morning this March, see this one.**



**View to the west on March 3 at 5 am CST**

**Eclipse times**  
 Partial eclipse begins: 3:50 a.m. CST  
 Total eclipse begins: 5:04  
 Mid eclipse: 5:34  
 Total eclipse ends: 6:03  
 Partial eclipse ends: 7:17



**The Moon slides through a total eclipse**

In the hours before dawn on March 3, the brilliant full moon slides into Earth's shadow.

- Even though the partial umbral eclipse begins at 3:50 a.m. CDT, darkening might not be noticed for another 5 minutes.
- When totality is reached, the full moon's brilliance is gone, allowing the stars to appear. Can you see that the moon lies east of Regulus and below Leo?
- At mid eclipse, what color is the moon? How red is it?
- During the partial phases, can you notice that the shadow's edge is not straight, but curved?

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**Exoplanets (Cont'd)**

(Continued from page 9)

“We don’t know if any other space telescope can observe the target on April 1st this year, but we at least don't have access to such facilities,” Hirano explained. “So, unfortunately, we will most likely be unable to observe the event in April (the star is best observable in summer, so no ground-based telescope can capture the whole event).”

It is disappointing that it doesn’t look feasible to study this event, at least this time around. The two worlds take many years to be in the right place where we can see them.

The importance of this event is not about its uniqueness; there is a lot to learn about the architecture of distant planetary systems.

“Planet–planet eclipses are noteworthy not only because of their rarity, but also because they provide a unique opportunity to directly measure the mutual inclination between the orbital planes of two transiting planets, a quantity that is otherwise difficult to constrain,” Hirano told *IFLScience*.

The system was originally discovered by NASA’s Kepler almost two decades ago. Things have changed significantly since

then. Thanks to JWST, NASA's planet-hunter TESS, and **CHEOPS**, the first mission to study nearby stars with known exoplanets, we are learning so much more about exoplanets. Maybe soon Kepler-89 might not be the only system with a pair of eclipsing planets.

“Exoplanet research has advanced dramatically over the past couple of decades, and I expect this progress to continue into the next decade. For example, a new dedicated transit survey mission, **PLATO**, led by the

(Continued on page 11)

## Eyepiece (Cont'd)



Photo By KPNO/NOIRLab/NSF/AURA/George Hatfield and Flynn Haase - M109, CC BY 4.0, [https://commons.wikimedia.org/wiki/File:M109\\_\(noao-m109hatfield\).jpg](https://commons.wikimedia.org/wiki/File:M109_(noao-m109hatfield).jpg)

(Continued from page 6)

not official, but in later years the additions became more widely accepted. David H. Levy mentions the modern 110 object catalog while Sir Patrick Moore gave the original to 104 but has M105-M109 listed as an addendum. By the late 1970s all 110 objects were commonly used among astronomers as they still are today.

It is also by far the most distant object in the Messier Catalog, followed by M91.

So, there is no need to wait for “galaxy season” to seek out these distant “island universes”. With the Big Dipper as your guide M109 is an excellent tar-

get as a preview of the many galaxies to see later in spring.

Information credits:

- Pasachoff, Jay M. 2000. *A Field Guide to the Stars and Planets*. New York, NY. Houghton Mifflin.
- Dickinson, Terence 2006. *Nightwatch: a practical guide to viewing the universe*. Buffalo, NY. Firefly Books
- <http://apod.nasa.gov/apod/ap130523.html>
- [https://en.wikipedia.org/wiki/Messier\\_109](https://en.wikipedia.org/wiki/Messier_109)
- <http://www.universetoday.com/50202/messier-109/>
- <http://messier.seds.org/m/m109.html>
- [https://commons.wikimedia.org/wiki/File:M109\\_\(noao-m109hatfield\).jpg](https://commons.wikimedia.org/wiki/File:M109_(noao-m109hatfield).jpg)

## Exoplanets (Cont'd)

(Continued from page 10)

European Space Agency, is scheduled for launch next year and is expected to discover relatively long-period, low-mass planets, including Earth-like planets in or near the habitable zone,” Hirano told *IFLScience*.

The original paper that modeled the planets' behavior doesn't go as far as calculating future exosyzygy. Still, if this one is missed, the team will go and work out the next, and let's hope things will be more favorable then.

[Editor's Note: Read the [original article](#) online at [IFLScience.com](http://IFLScience.com).]

## Spectacular Night Sky (Cont'd)

*(Continued from page 7)*

A global study across 174 countries found that each one-unit increase in light intensity correlated with 2.29 additional anxiety cases per 100,000 people. Effects were strongest in women and most pronounced in younger individuals, particularly aged 5 to 19. And a UK Biobank study looked at 346,163 people over 14 years of data and found higher outdoor light exposure was associated with a 31% greater risk of ulcerative colitis compared to the lowest outdoor light exposure group.

Over in satellites, Starlink conducted approximately 300,000 collision-avoidance maneuvers in one year due to near-misses with Chinese satellites. SpaceX, also, received FCC approval to deploy 7,500 additional satellites, bringing their constellation toward 15,000 low Earth orbit satellites. And China is consider-

ing two new constellations totaling 200,000 satellites.

We had some archeoastronomy this month. Stanford researchers discovered one of the earliest known star maps hidden beneath overwritten text in a medieval parchment from the 9th or 10th century. The hidden chart included the constellation Aquarius with its original classical phrasing. As parchment is reused over the centuries, this star chart dated back to the 3<sup>rd</sup> century.

Sky Cave Dark Retreats in southern Oregon rents out fully light and sound isolated rooms, should you wish to experience the joys of solitary confinement in Guantanamo Bay. This is what's called 'total darkness tourism.' Strange, right? The fact that people need to pay to experience genuine darkness says something about what we're missing.

And before I wrap this up, I want to recognize past guest Dani Robertson on her Environment Champion Award nomination from Wales. Now, none of you reading this live in the UK, or probably even have direct connections to Wales. But, Dani is a Dark Sky Ranger in Eryri National Park. Dani actually lives in the park...perhaps living the dream, wouldn't you say? That's the kind of recognition you love to see. (Dani also has a couple of books but one was most notable – [All Through the Night](#)).

Should you feel inclined, why not take a listen to the March episodes below:

Look at Me Lighting! <https://lightpollutionnews.com/podcast/look-at-me-lighting/>

Create Your Own Meaning: <https://lightpollutionnews.com/podcast/create-your-own-meaning/>

## Zodiacal Light (Cont'd)

*(Continued from page 3)*

tary dust in our inner solar system, finding the dust cloud's densest region between Earth's orbit and the Asteroid Belt, where Mars orbits. While Mars has frequent dust storms, scientists aren't sure how Martian dust could have escaped the planet's gravity to form an interplanetary cloud.

The zodiacal light is best spotted in the weeks surrounding the spring and autumnal equinoxes, when the alignment of the ecliptic provides the best viewing conditions. "The ecliptic is tilted nearly vertically to the horizon, so the band suffers the least effects from any interfering glow closer to the horizon," Skiff says. "The band is also well away from the Milky Way, so the natural sky background is darkest."

In late winter, the zodiacal light is visible in the evening in the Northern Hemisphere (false dusk) and in the pre-dawn morning in the Southern Hemisphere (false dawn). In early autumn, the timing switches between the hemispheres.

While the zodiacal light is best seen at lower latitudes, its visibility extends to the mid-latitudes near the equinoxes.

To see the zodiacal light this season, head somewhere with truly dark skies—far from any light pollution—and a clear, unobstructed western horizon. Time your viewing for about 90 minutes to two hours after sunset and look west. The zodiacal light will appear to form a V shape with the Milky Way.

"For the morning apparition in autumn, look toward the east," says Skiff. At this time of year, it is better to do so 90 minutes to two hours before sunrise.

"In this case, the Milky Way will be nearly overhead, stretching from northwest to southeast, the two bands forming a huge X-shaped pattern of light in the sky," says Skiff.

How can you tell the difference between the Milky Way and the zodiacal light? "The Milky Way starclouds have a clumpy or mottled and grainy texture, whereas the 'zodi' is very smooth and diffuse," says Skiff. "Remarkably, the Milky Way is not as bright as the zodiacal light. Even thin clouds or moonlight will wash it out."

*[Editor's Note: Read the [original article online](#) at NatGeo.com (subscription required)]*

## March Speakers (Cont'd)

(Continued from page 3)

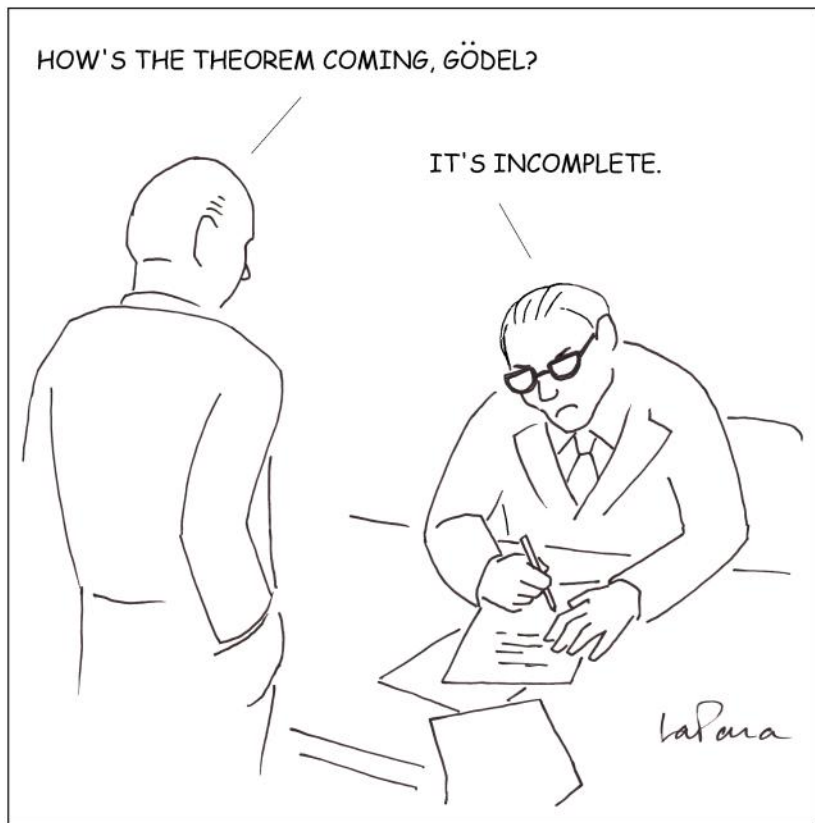
current Scholarship Fund. She will provide background information on the Foundation's proposed CCAS Endowment Fund, and explain and address questions about the process and mechanics of growing this endowment fund and its ultimate impact in supporting the educational mission of the CCAS in the years ahead.

Dave Hockenberry, President of CCAS: *A Journey through Advances in Amateur Astrophotography*

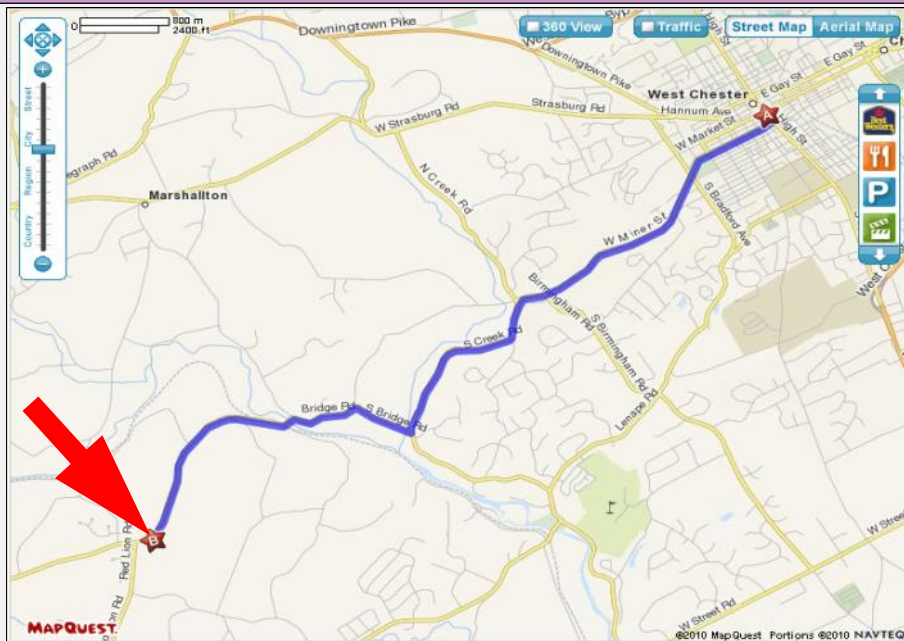
In addition to serving as CCAS President and being an experienced amateur astronomer, Dave has spent decades in mastering the art and specialized techniques of astrophotography, painstakingly collecting,

(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.

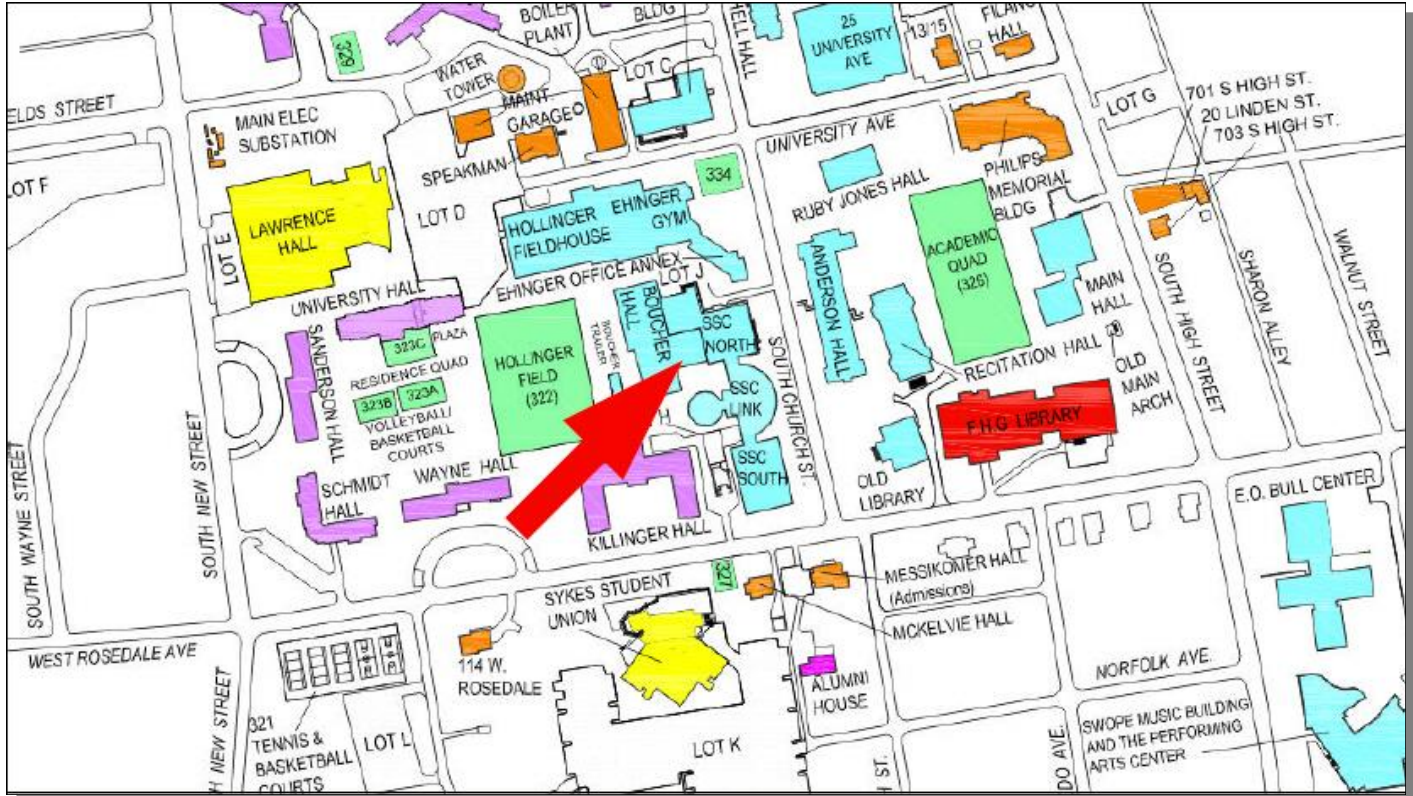
To get to the Myrick Conservation Center from West Chester, go south on High Street in West Chester past the Courthouse. At the next traffic light, turn right on Miner Street, which is also PA Rt. 842. Follow Rt. 842 for about 6 miles. To get to the observing site at the BRC property, turn left off Route 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).



### March Speakers (Cont'd)

(Continued from page 13)

integrating, and processing photons from the night sky to generate spectacular celestial images rivaling those seen in professional astronomy journals and periodicals.

Dave will describe the revolutionary advances in astrophotography and "smart" telescopes that have made this highly specialized field of astronomy more accessible and even more spectacular to those interested in capturing and imaging the beauty of the Cosmos. This presentation promises to be both informative and a stunning visual experience!

### CCAS Membership Information and Society Financials

#### Treasurer's Report by Don Knabb

##### Feb. 2026 Financial Summary

|                   |        |
|-------------------|--------|
| Beginning Balance | \$1952 |
| Deposits          | \$195  |
| Disbursements     | -\$0   |
| Ending Balance    | \$2147 |

#### 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.

**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](mailto: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

Lighthouse Outdoor Lighting is a dedicated lifetime corporate member of the [International Dark-Sky Association](http://www.darksky.org). 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 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](mailto: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](mailto: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](mailto: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](mailto:treasurer@ccas.us)

## Sky & Telescope 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.

