



Observations

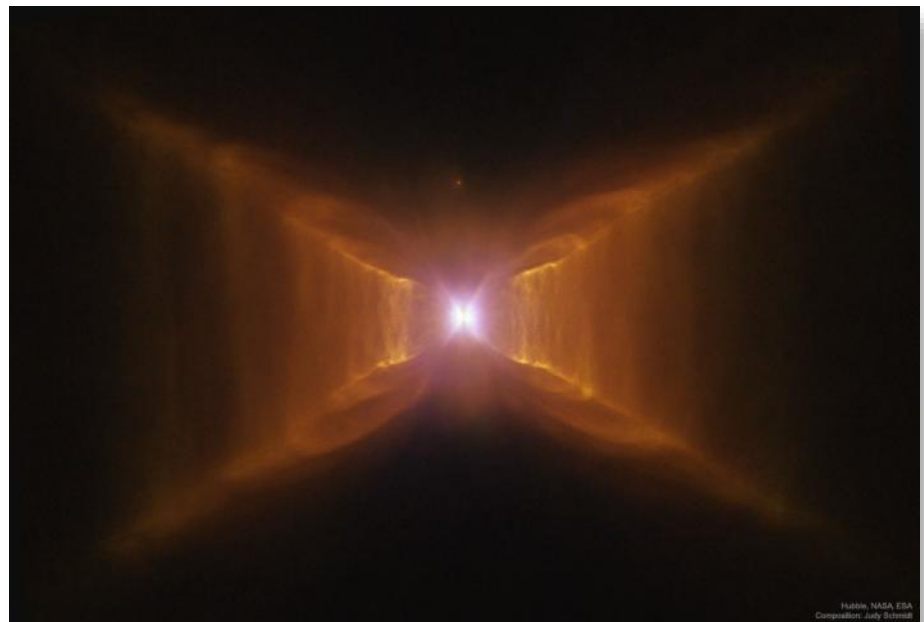
A Monthly Publication Of The
CHESTER COUNTY ASTRONOMICAL SOCIETY

Vol. 34, No. 1 **Three-Time Winner of the Astronomical League's Mabel Sterns Award** ☼ 2006, 2009 & 2016 January 2026

In This Issue

CCAS Winter Events.....	2
November 2025 Meeting Minutes	2
January 2026 Meeting Agenda	2
January 2026 Meeting Speaker BioSketch.....	3
The Sky Over Chester County: January 2026	4
January 2026 Observing Highlights	5
Through the Eyepiece: M42, the Orion Nebula	7
Navigating the Mid-January Night Sky	8
Light Pollution in the News.....	9
Astronomers May Have Detected a Superkilonova	10
Observing Through the Moon Glow.....	11
Classic La Para.....	13
CCAS Directions: Brandywine Red Clay Alliance	13
Membership Renewals	14
New Member Welcome.....	14
CCAS Directions: WCU Map	14
Treasurer's Report.....	14
CCAS Information Directory	15-16

The Red Rectangle Nebula from Hubble



The Red Rectangle Nebula lies about 2,300 light years away towards the constellation of the Unicorn (Monoceros). At the nebula's center is an aging binary star system that powers the nebula but does not explain its colors.
Image Credit: [NASA, ESA, Hubble](#); Processing & License: [Judy Schmidt](#)

Membership Renewals Due

01/2026	Johnson Jose Kellerman Kennedy Kovacs McElwee Moynihan Schier
02/2026	Buki Murphy Ruggeri Sutton Tronel Varada
03/2026	Angelini, Jr. DellaPenna Fulton Han Family Narikimelli Rainville Sterrett

January 2026 Dates

- 2nd-3rd** • [Quadrantid Meteor Shower](#) peaks.
- 3rd** • The Earth is at perihelion (91.4 million miles from the Sun), 12 p.m. EST.
- 4th** • Super Full Moon, the [Wolf Moon](#), (5:02 a.m. EST).
- 10th** • Jupiter is at opposition, 4 a.m. EST.
- 10th** • Last Quarter Moon, 10:48 a.m. EST.
- 18th** • New Moon, 2:51 p.m. EST.
- 23rd** • Pluto is in conjunction with the Sun, 5 a.m. EST.
- 25th** • First Quarter Moon, 11:47 p.m. EST.
- 30th** • The Moon passes 4° north of Jupiter, 9 p.m. EST



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.

- ☼ Thursday, March 5, 2026 - STEM night at Greenwood Elementary School, Kennett Square, 6:00 to 8:00 PM EST.
- ☼ Saturday, March 7, 2026 - Coatesville Star Party, Hibernia County Park, Parking at pavilion #5 lot, 6:00 to 10:00 PM EST.

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

Winter Society Events

January 2026

9th • West Chester University Planetarium Show: "Birth of Planet Earth," in the Schmucker Science Building. The show starts at 7:00 PM EST. For more information and reservations, visit the [WCU Public Planetarium Shows](http://www.wcu.edu/public-planetarium-shows) webpage.

13th • CCAS Monthly Meeting in Room 112, Merion Science Center, WCU (as well as via Zoom). The meeting starts at 7:30 PM, EST. Guest Speaker: Dr. Naoko Kurahashi-Neilson, Dept of Physics, Drexel University, "Advances in Neutrino Astronomy and a New View of the Milky Way Galaxy from the Ice Cube Observatory."

20th • Open call for articles and photographs for the February 2026 edition of [Observations](http://www.ccas.us/observations).

26th • Deadline for newsletter submissions for the February 2026 edition of [Observations](http://www.ccas.us/observations).

February 2026

13th • CCAS Monthly Meeting in Room 112, Merion Science Center, WCU (as well as via Zoom). The meeting starts at 7:30 PM, EST. CCAS Member Speaker: John Conrad, NASA Solar System Ambassador, "Cosmic Wrecks-Collisions Near and Far."

20th • Open call for articles and photographs for the March 2026 edition of [Observations](http://www.ccas.us/observations).

26th • Deadline for newsletter submissions for the March 2026 edition of [Observations](http://www.ccas.us/observations).

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.

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

20th • Open call for articles and photographs for the April 2026 edition of [Observations](http://www.ccas.us/observations).

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

26th • Deadline for newsletter submissions for the April 2026 edition of [Observations](http://www.ccas.us/observations).

November 2025 Meeting Minutes

by Bea Mazziotta, CCAS Secretary

- The November meeting of the CCAS was held on Tuesday November 11, 2025 in person at WCU, and via Zoom and YouTube. Club president Dave Hockenberry welcomed attendees.
- Dave noted that the annual CCAS holiday party will be held at Victory Brewing Company in Downingtown on December 9th. Go to ccas.us for more information.
- Don Knabb reviewed upcoming club events. He also invited members to watch the Astronomical League's live stream on November 14th featuring Alan Dyer.
- Don discussed objects for viewing in the November and December night skies including Saturn and the New Moon, as well as the [Leonid](#) and [Geminid meteor showers](#).
- John Conrad, club member and NASA Solar System Ambassador, was the evenings guest speaker.
 - He presented his program, "Cosmic Wrecks", a discussion of how objects come to collide in space.
 - Merging galaxies, gravitational forces and stars in dense environments orbiting at high speeds can result in space collisions. And within our own galaxy, we can see the results of Asteroids impacts on planets and moons.
 - Earth has experienced asteroid collisions, one of which is said to have resulted in the extinction of 85% of species alive at the time.

January 2026 CCAS Meeting Agenda

by Bruce Ruggeri, CCAS Program Chair

Our next meeting will be held on January 13, 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. Naoko Kurahashi-Neilson, Dept of Physics, Drexel University. Her presentation is titled, "Advances in Neutrino Astronomy and a New View of the Milky Way Galaxy from the Ice Cube Observatory."

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.

January 2026 Monthly Meeting Guest Speaker

by Bruce Ruggeri, Program Chair

I am pleased to announce the in-person and Zoom January 2026 CCAS meeting for Tuesday, January 13th beginning informally at 7:00 p.m. EST, with the meeting program commencing at 7:30pm. The meeting is held in West Chester University's (WCU) Merion Science Center, Room 112. The building is located at 720 S. Church St. in West Chester.

Our guest speaker is Dr. Naoko Kurahashi-Neilson, an astrophysicist and neutrino astronomer at Drexel University. See below for her BioSketch and a brief synopsis of her presentation.

Title: Seeing the Universe from the South Pole – New Insights in Neutrino Astronomy

Synopsis: The Universe has been studied using light since the dawn of astronomy, when starlight captured the human eye. The IceCube Neutrino



Dr. Naoko Kurahashi-Neilson

Observatory, located at the geographic South Pole on the continent of Antarctica, observes the Universe in a different and unique way: in high-energy neutrinos. Dr. Kurahashi-



Dr. Kurahashi-Neilson at the South Pole

Neilson's presentation will cover the why and how of "neutrino astronomy" and the exciting science emerging at the boundaries of astronomy, high energy physics, and particle physics.

BioSketch: Dr. Naoko Kurahashi-Neilson is an astrophysicist and neutrino astronomer at Drexel University. After receiving her BS degree at University of California, Berkeley and PhD at Stanford University, she moved to the University of Wisconsin for post-doctoral studies and to gain an appreciation for Midwest winters and domestic cheese!

She then moved to Drexel in 2014 where she is (since 2024) a professor in the Department of Physics.

Dr. Kurahashi-Neilson's research centers on high-energy neutrinos, high-energy particle astrophysics and particle physics and the development of better techniques for localizing the sources of these neutrinos. Her efforts are mainly involved in the IceCube South Pole Neutrino Observatory. She also contributes to the Pacific Ocean Neutrino Observatory, an ocean neutrino telescope.

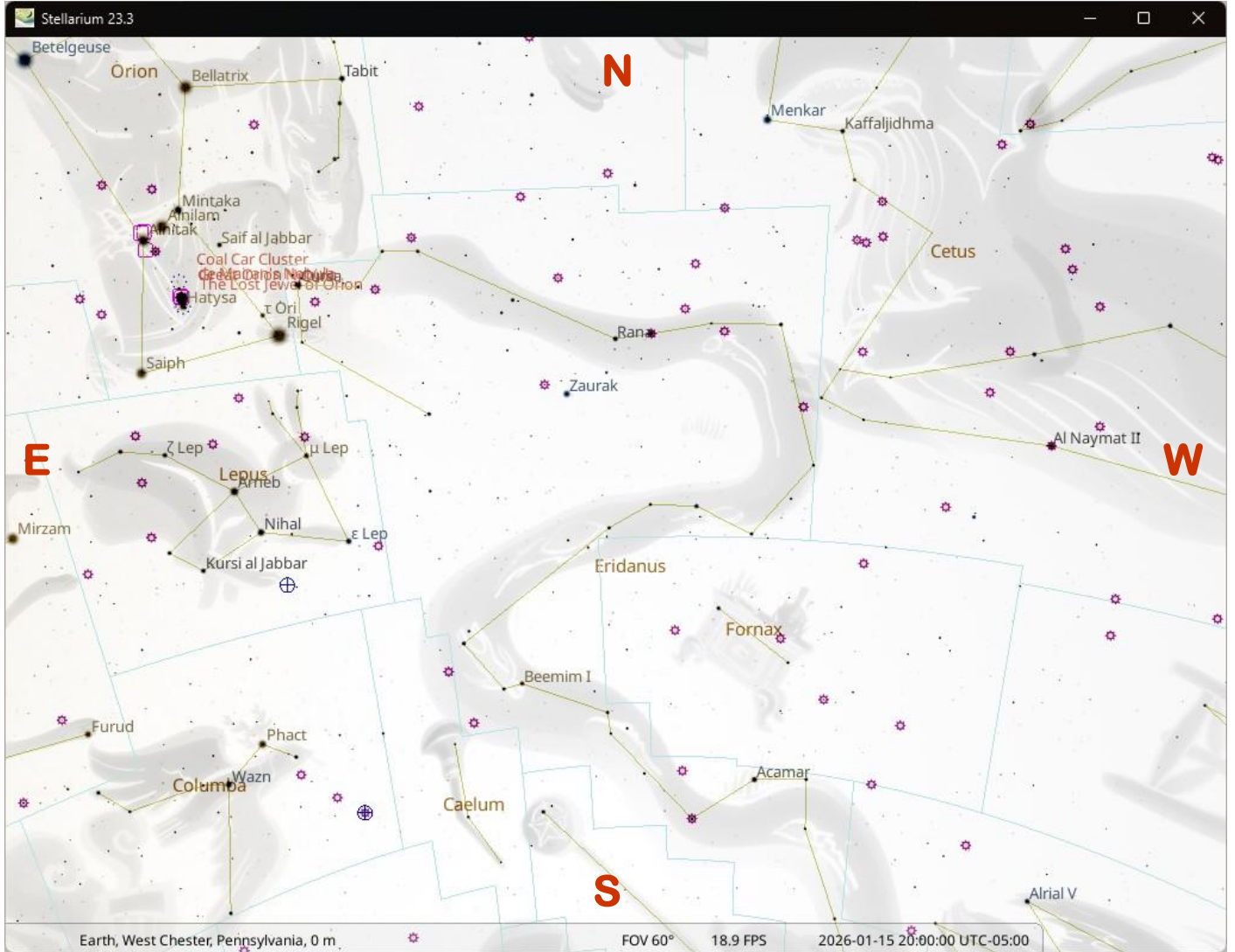
Dr. Kurahashi-Neilson earned her PhD by listening acoustically to extremely high-energy neutrinos in the Bahamian ocean. Her research group at Drexel University works to resolve high-energy neutrino sources, leading to the discovery that some of these neutrinos were galactic rather than extra-galactic in nature,

(Continued on page 14)

The Sky Over Chester County

January 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.



Date	Civil Twilight Begins	Sunrise	Sunset	Civil Twilight Ends	Length of Day
01/01/2026	6:53 a.m. EST	7:24 a.m. EST	4:48 p.m. EST	5:18 p.m. EST	09h 23m 56s
01/15/2026	6:52 a.m. EST	7:22 a.m. EST	5:01 p.m. EST	5:31 p.m. EST	09h 39m 38s
01/31/2026	6:42 a.m. EST	7:11 a.m. EST	5:20 p.m. EST	5:49 p.m. EST	10h 08m 55s

Moon Phases					
Last Quarter	01/10/2026	10:48 a.m. EST	Full Moon	01/03/2026	5:02 a.m. EST
First Quarter	01/25/2026	11:47 a.m. EST	New Moon	01/18/2026	2:51 p.m. EST

January 2026 Observing Highlights
by Don Knabb, CCAS Treasurer & ALCOR

1	Sirius reaches its highest point in the sky
2-3	Quadrantid meteor shower peaks
3	Supermoon, Full <u>Wolf Moon</u>, 5:02 a.m. EST
9-10	Jupiter at opposition
10	Last Quarter Moon, 10:48 p.m. EST
18	New Moon, 2:51 p.m. EST
20	Comet C/2024 E1 (Wierchos) reaches perihelion
22-23	Moon nears Saturn and Neptune
25	First Quarter Moon, 11:47 a.m. EST
27	Moon meets Pleiades
30-31	Moon-Jupiter conjunction

The best sights this month: Jupiter takes center stage during January, so set up your telescope and enjoy the view of the king of the planets and the four Galilean moons that dance around the planet. Then zoom into M42, the Orion Nebula, and enjoy the view of the brightest nebula in the sky.

Mercury: Mercury passes behind the Sun on January 21st, so it is not visible during January.

Venus: Our sister planet also passes behind the Sun during January, on January 6th, so it is not visible this month.

Mars: And Mars makes it three in a row, since it passes behind the Sun on January 9th, so it is not visible during January.

Jupiter: The king of the planets reaches opposition on January 10th, so it is visible all night. Share the view of Jupiter with your friends and neighbors for a sight they won't soon forget!

Saturn: Saturn sets before midnight, so for the best view of the ringed planet set up your telescope just as darkness falls.

Uranus and Neptune: If you view Saturn in binoculars then Neptune will be in the same field of

view. Better yet, use a telescope to see Saturn then star hop to Neptune using your favorite astronomy app. Uranus will be near the Pleiades through January, so it will be easy to find below and to the right of the Seven Sisters.

The Moon: Full moon occurs on January 3rd. According to Native Americans, the full Moon of January is the Full Wolf Moon. Amid the cold and deep snows of midwinter, the wolf packs howled hungrily outside Indian villages, so it was named the Full Wolf Moon. Sometimes it was also referred to as the Old Moon, or the Moon after Yule. Some called it the Full Snow Moon, but most tribes applied that name to the next full Moon. Native Canadians called this the Child Moon.

On January 25th the Lunar Straight Wall, Rupes Recta, is visible. You'll need a telescope to see this lunar feature.

Constellations: Auriga, Taurus, Orion and Gemini are the highlights of the January skies. But the nights are so long that you can see many "summer" constellations setting early in the evening and many "spring" constellations rising if you stay up late. Dress warmly and sit in your lounge chair and see how many constellations you can record toward the Constellation Hunter club.

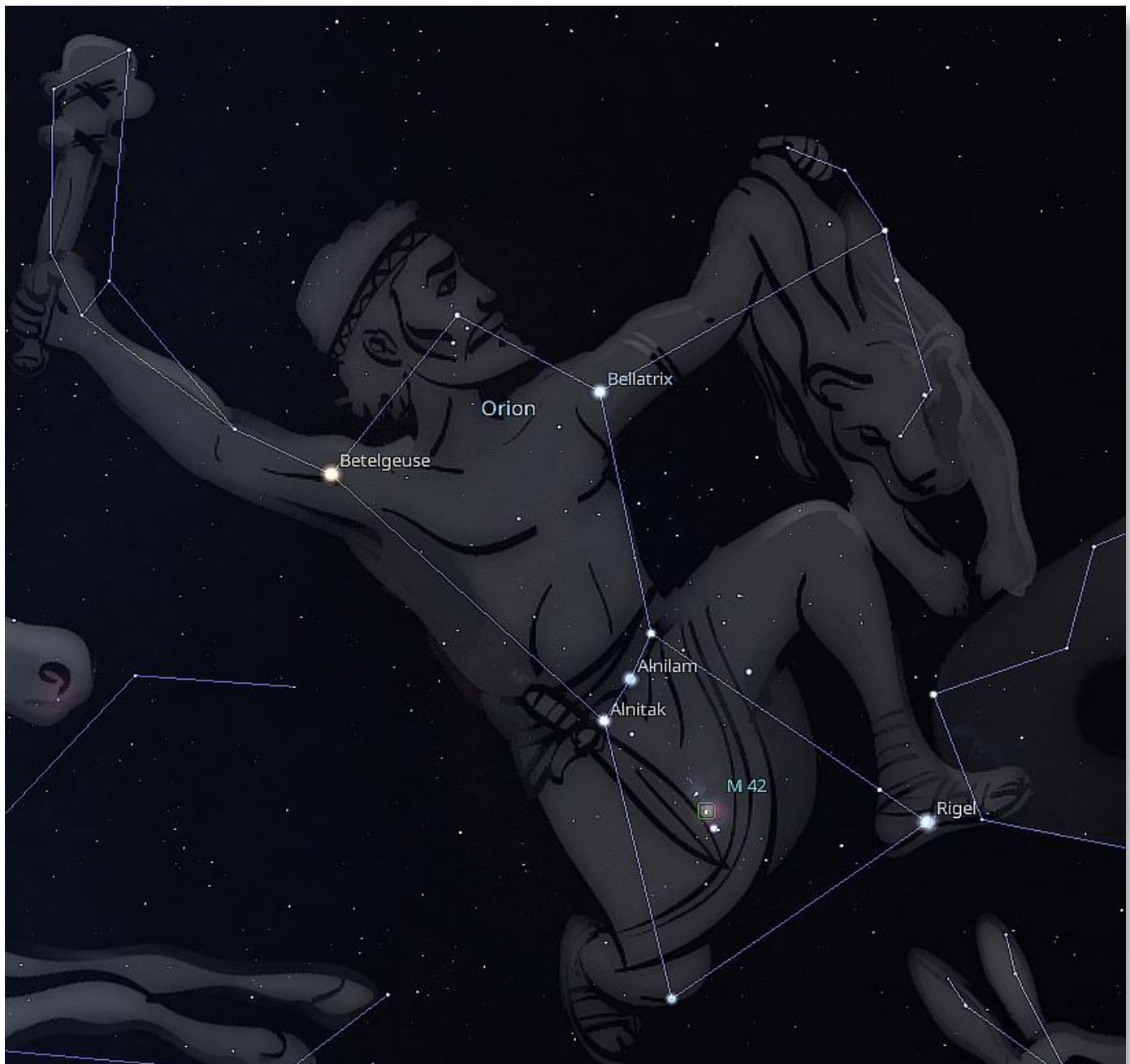
Messier/deep sky: During the winter months we are looking away from the center of the Milky Way, so the sky is not as full of deep sky wonders as during the summer. But the sky is clear and there are still many beautiful objects for us to enjoy. Don't miss the trio of clusters in Auriga, M36, M37 and M38. Not far away is another nice cluster, M35, at the feet of the twins of Gemini. And below and behind Orion is Canis Major with the cluster M41, the Little Beehive, not far from the brightest star in the night sky, Sirius. And don't miss M42, the Orion Nebula. Set up your telescope and just stare at this, the brightest nebula in the sky

Comets: There are no bright comets in the January sky.

Meteor showers: The Quadrantid meteor shower peaks on the night of January 3rd/4th. The Full Moon will interfere with this year's Quadrantid shower, but it is worth looking before dawn. I have seen some amazing outbursts from this shower!

Through the Eyepiece: M42, the Orion Nebula

by Don Knabb, CCAS Treasurer & ALCOR



Sky map created using Stellarium, the free planetarium software

If you recently received any new equipment for observing the night sky you will want to get out under the cold and clear January sky to give them a try. One of the first objects to gaze at should be the Orion Nebula, also known as Messier 42, M42, or NGC 1976.

The Orion Nebula is situated south of Orion's Belt. It is located approximately 1,270 light years away and is estimated to be 24 light years across. Older texts frequently referred to the Orion Nebula as the Great Nebula in Orion or the Great Orion Nebula. Yet older astrological

texts refer to it as *Ensis*, the Latin word for "sword".

The Orion Nebula is one of the most interesting objects in the sky. To the naked eye, it looks like a star in the sword of the constellation Orion, but with

(Continued on page 7)

Eyepiece (Cont'd)



Image credit: Don Knabb, Seestair S50

(Continued from page 6)

binoculars or a telescope, you can see that it is a large glowing cloud of material. This is believed to be a huge star for-

mation region. The bright part of the nebula is the glow of many luminous, newborn stars shining on the surrounding gas cloud from which they formed.

The stars that are being born in the Orion Nebula are part of an open cluster. When all the stars have formed, what will remain is a clump of a few hundred to a thousand stars which are all roughly the same age. These stellar siblings are dominated by a few very massive, very bright stars called the Trapezium.

The Trapezium is made up of just a few stars, but it outshines all the rest of them combined. Astronomers believe that most of the glow from the gas in the nebula comes from light from the stars of the Trapezium. Maybe in a few hundred million years, there will be planets like the Earth forming around some of the new stars in the cluster.

With naked eyes under dark skies, I can just see the glow of the Orion Nebula, but with binoculars the nebulosity really comes through. With a telescope you can zoom in to see the Trapezium. They are a beautiful collection of jewels in the eyepiece. Using a 12-inch Dobsonian with a binoviewer provides a view of the nebula that is absolutely amazing. It is the most incredible view of any night sky object that I have ever experienced.

Information credits:

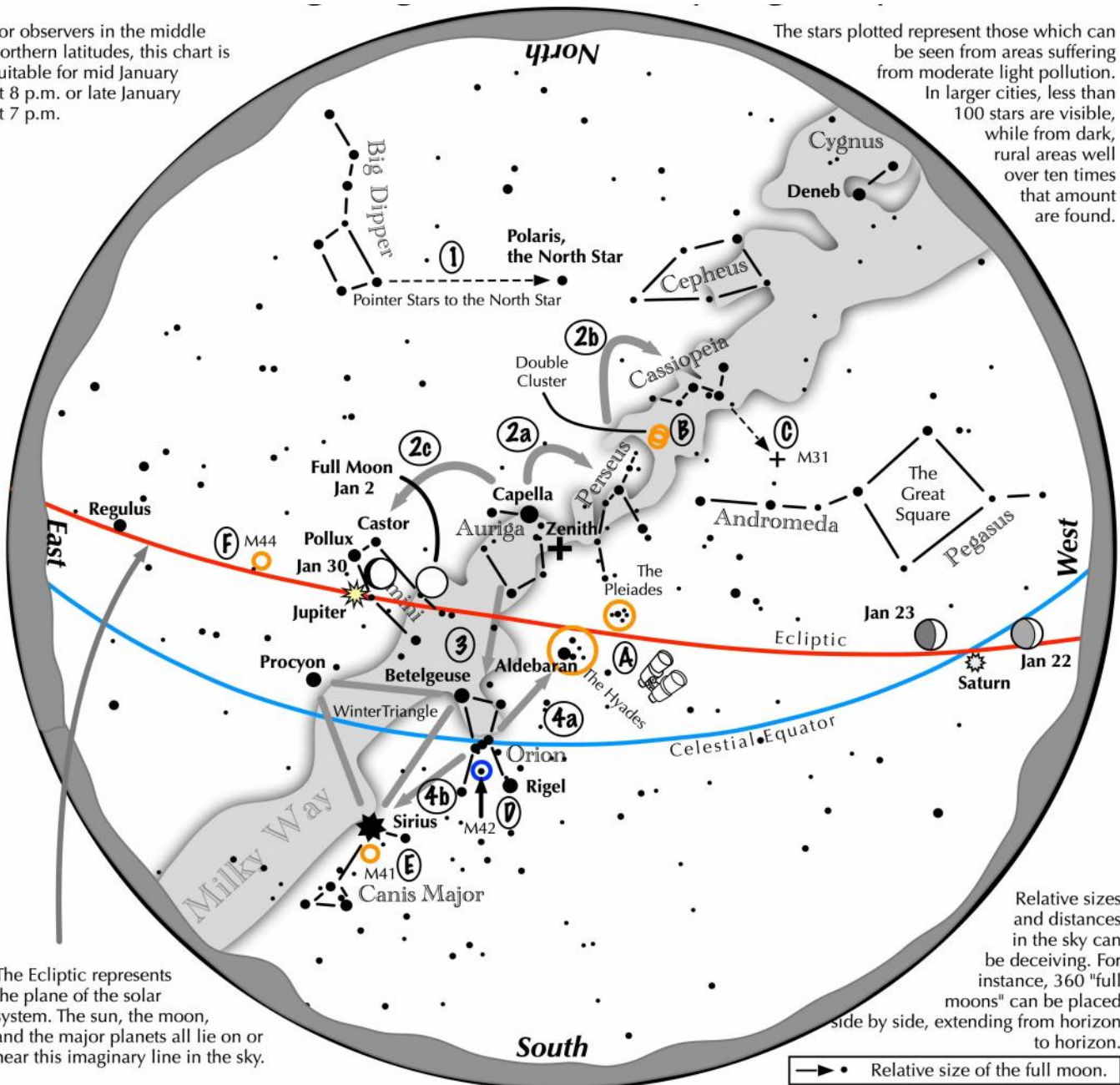
- Pasachoff, Jay M. 2000. *A Field Guide to the Stars and Planets*. New York, NY. Houghton Mifflin.
- <http://www.astro.wisc.edu/~dolan/constellations/messier/m42.html>
- http://en.wikipedia.org/wiki/Orion_Nebula
- Dickinson, Terence 2006. *Nightwatch: a practical guide to viewing the universe*. Buffalo, NY. Firefly Books
- Sky map: https://commons.wikimedia.org/wiki/File:Orion_IAU.svg

Navigating the mid-January Night Sky

courtesy of the Astronomical League

For observers in the middle northern latitudes, this chart is suitable for mid January at 8 p.m. or late January at 7 p.m.

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 winter 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.
- 2 Face south. Overhead twinkles the bright star Capella in Auriga. Jump northwestward along the Milky Way first to Perseus, then to the "W" of Cassiopeia. Next Jump southeastward from Capella to the twin stars Castor and Pollux of 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 to the red star Aldebaran, then to the Hyades, and the Pleiades star clusters. Travel southeast from the Belt stars to the brightest star in the night sky, Sirius.

Binocular Highlights

A: Examine the stars of the Pleiades and Hyades, two naked eye star clusters. **B:** Between the "W" of Cassiopeia and Perseus lies the Double Cluster. **C:** The three westernmost stars of Cassiopeia's "W" point south to M31, the Andromeda Galaxy, a "fuzzy" oval. **D:** M42 in Orion is a star forming nebula. **E:** Look south of Sirius for the star cluster M41. **F:** M44, a star cluster barely visible to the naked eye, lies to the southeast of Pollux.



Astronomical League www.astroleague.org; duplication is allowed and encouraged for all free distribution.

Light Pollution in the News via Light Pollution News Podcast

by Bill McGeeney, Host of Light Pollution News Podcast

As we close out 2025, the FCC comment is entering into an open comment period for a new policy that is looking to radically revamp their approval system. The new rule 'Space Modernization for the 21st Century' could have dramatic impacts on the future of the burgeoning space economy. The main changes include creating a new faster approval process for space projects meeting the, ironically named, 'bright-line' criteria and limiting open comment periods to one to two weeks. At least there's truth in advertising here. This policy appears in line with a business first positioning to ensure US dominance in the space sector. However, there are costs...

Take Reflect Orbital, for instance, because apparently humanity's war on darkness never takes a holiday. In my first episode for December, Myth Busted, guests Dr. Amardeep Dugar, astrotourism business owner, Stéphane Picard, and author Dani Robertson explored Reflect Orbital's increasingly bonkers space mirror plan, which has ballooned from a modest 57 satellites to a staggering 4,000 orbital mirrors, each half the size of a football field. *Because why settle for destroying the night sky a little when you can do it spectacularly?*

Critics estimate that these mirrors would create light twice as bright as the full moon, requiring over 1,000 satellite handoffs per hour to function. One critic dubbed this "Silicon Valley Space Syndrome," an egnog mix including venture capital funding, slick branding, and an utter disregard for physics.

Meanwhile, Google and Nvidia backed startup, Starcloud announced plans for space based data centers, with Starcloud shooting for a 2030 space station sized facility sporting solar panels that would stretch 2.5 miles across! As one exasperated commenter put it: "It's like people are hellbent on destroying the night sky!"

Stepping away from our upper atmosphere for a second, a tidbit on the health front. New research revealed that kids exposed to more than 3 lux after bedtime began puberty an average of four months earlier.

In the policy world, there was the strange case of the Fort Lauderdale streetlight battle, whereby the Melrose Park neighborhood fought a \$1.3 million lighting installation project that would cost \$431,000 annually in perpetuity. That was until the 'Vote Yes' crowd mobilized neighbors. One resident claimed that five people were holding 10,000 residents "hostage" by opposing streetlights. Peak lighting drama, no doubt. Verdict after three tries, fourth time is a charm. Street lights are coming to Melrose Park!

Municipal dark sky ordinances showed some rare comic relief, as well. Raritan Township, New Jersey hilariously passed, then immediately chickened out, on its anti-light trespass ordinance after residents complained about bears and coyotes eating their dogs. Spoiler alert: outdoor lighting does absolutely nothing to deter either species, but putting your trashcan away surely does.

In automotive news, it turns out that those soul-piercing LED headlights might not actually be causing crashes (though they're still annoying...er blinding as all hell). An Insurance Institute for Highway Safety study found headlight glare accounts for only 0.1-0.2% of nighttime accidents, with good old-fashioned solar glare being the real villain. However, AAA reports that fancy pedestrian detection systems achieve 95% success in daylight but faceplant at night when people wear dark clothing, so maybe don't celebrate modern car technology just yet.

The ecology news, as always, was predictably grim. UK weather radar shows nocturnal insects declining while daytime bugs are doing just swell. Also, Britain has apparently lost one-third of its earthworm population over the past 25 years, with blue-spectrum lighting coming under research scrutiny. But here's your dose of hope: a 12-year-old Canadian dark sky advocate, Siddharth Patel, is out there doing the work, conducting light measurements and school presentations. His take? "Light pollution is not hard to fix. We just have to do it." When a twelve-year-old gets it but we're still arguing about whether bears are scared of flood lights, you know we've got our priorities straight.

Interested in learning more? Listen to both episodes 'Myth Busted' and 'Dark Turns' from Light Pollution News by swinging on over to LightPollutionNews.com or subscribing via your favorite podcast service or Youtube.

Astronomers May Have Detected a First-of-its-kind Superkilonova

by Brooks Mendenhall, Astronomy.com

After detecting a strange combination of signals in the summer of 2025, astronomers believe they may have captured the first evidence of a unique phenomenon previously theorized, but never observed: a superkilonova.

Supernovae are a commonly observed astrophysical phenomenon — a giant explosion at the end of a star's life cycle. They occur when a supermassive star runs out of fuel and its core collapses, or when a white dwarf in a binary system steals enough material from its companion to trigger a thermonuclear blast. When these massive stars explode, they can leave behind an ultra-dense core known as a neutron star — a stellar leftover so compact that a single teaspoon of its material would weigh a billion tons.

A less commonly seen event is the kilonova. Only one kilonova — the historic GW170817 event of 2017 — has ever been observed. These violent collisions occur when two neutron stars (those supernova leftovers) or a neutron star and a black hole merge, sending gravitational waves rippling through the universe and creating heavy elements like gold and platinum, which screen blue light, resulting in a distinct red glow.

A new [study](#) published in *The Astrophysical Journal Letters* presents the case for a strange, never-before-seen hybrid: a combination supernova-kilonova, aptly named a superkilonova. The research, led by Mansi Kasliwal, professor of astronomy and director of Caltech's Palomar Observatory,

suggests that a massive star collapsed in a supernova that birthed two neutron stars, which then immediately spiraled together and merged in a kilonova.

"We do not know with certainty that we found a superkilonova, but the event nevertheless is eye-opening," Kasliwal said in a [press release](#).

The discovery began on August 18, 2025, when the LIGO and Virgo gravitational-wave detectors registered a signal, designated S250818k, from a source 1.3 billion light-years away. The LIGO-Virgo-KAGRA collaboration (the international team that runs the gravitational wave detectors) sent out a notice to the scientific community: They had detected gravitational waves originating from what appeared to be the merging of two neutron stars, at least one of which was unusually small.

The data indicated the merging objects had a combined mass of approximately 0.87 solar masses

(one solar mass is the mass of our Sun). The paper states that there is a 99 percent chance that one of the neutron stars was less than one solar mass. Standard stellar evolution dictates that neutron stars — the ultra-dense remains of collapsed massive stars — should not be lighter than roughly 1.2 solar masses. Finding objects this small suggests an entirely different formation pathway than the one currently understood by science. One theory presented in the paper is that such objects could form in neutron-rich environments like those created by the collapse of a rapidly spinning star.

Immediately after the announcement, telescopes and instruments around the world began looking in the direction of S250818k. Only a few hours passed when scientists at the Zwicky Transit Facility (ZTF) at Palomar Observatory identified a

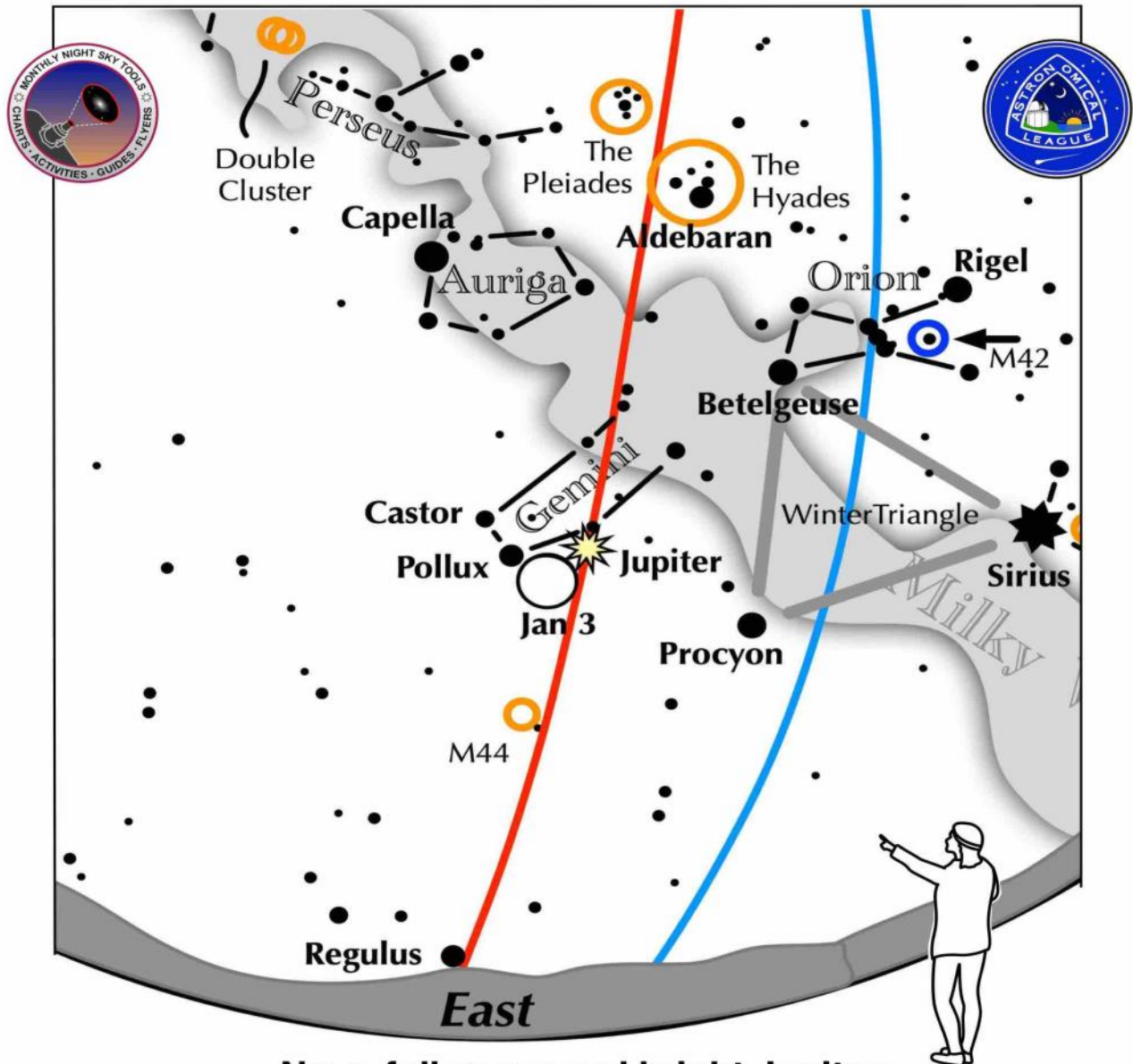
(Continued on page 12)



The three stages of a theoretical superkilonova are imagined in this artist's concept. A rapidly spinning massive star's collapse creates two small neutron stars (one of which has less mass than our Sun), which immediately inspiral and merge, generating a heavy metal-rich kilonova.

Credit: Caltech/K. Miller and R. Hurt (IPAC)

An observing activity for this January 3.



Near–full moon and bright Jupiter: What can you see in the moon glow?

- In the evening of January 3, look for Jupiter to the upper right of the moon.
- How well can you see -2.7 magnitude Jupiter just 4° away from the moon? Look at stars further from the moon.
 - Can you spot these luminaries?
 - 1.1 mag. Pollux, 3° away followed by 1.6 mag. Castor 7° away,
 - 0.4 magnitude Procyon 20° away,
 - 1.7 mag. Alnilam, Orion's middle Belt Star, 40° away,
 - and the much dimmer Pleiades, 55° away.

www.astroleague.org

Superkilonova (Cont'd)

(Continued from page 10)

rapidly fading red object, designated AT2025ulz, coming from roughly the same location as the gravitational wave's origin.

For the first 72 hours, the transient behaved exactly like a kilonova: the ruby-red glow indicated the presence of heavy elements like gold and platinum. Astronomers believed they were witnessing the second-ever kilonova, and for good reason. A kilonova would have triggered a gravitational wave detection just like S250818k and would glow red just like AT2025ulz.

However, on the fourth day, the object's behavior changed unexpectedly. Instead of fading, AT2025ulz began to brighten and shift toward the blue end of the spectrum. Follow-up spectroscopy from the W. M. Keck Observatory in Hawai'i revealed the clear signatures of hydrogen and helium — the diagnostic markers of a Type IIb “stripped-envelope” supernova.

A stripped-envelope supernova occurs when a massive star sheds its outer hydrogen-rich shell before exploding, typically through stellar winds or, in the case of a Type IIb, by losing material to a nearby companion star in a binary system. In a Type IIb explosion, a tiny fraction of hydrogen remains, creating a short-lived signal before the helium-rich interior dominates the light.

“At first, for about three days, the eruption looked just like the first kilonova in 2017. Everybody was intensely trying to observe and analyze it, but then it started to look more like a supernova, and some astronomers lost

interest. Not us,” Kasliwal said in the press release.

At this point, many astronomers dismissed AT2025ulz as a standard supernova, arguing the link to the gravitational wave signal was a mere coincidence. Because supernovae do not typically generate detectable gravitational waves, a plain Type IIb event would have no physical connection to S250818k.

Even the authors admit they “cannot statistically rule out chance coincidence.” However, they believe another explanation is possible. The spatial and temporal overlap was strange enough to warrant a deeper investigation. “We undertake due diligence analysis to explore the possible association between [AT2025ulz] and S250818k,” the authors state.

To explain the coincidence of the neutron star merger and an explosion, the researchers propose a hypothesis involving the collapse of a rapidly spinning massive star — the exact sort of environment that could create a subsolar mass neutron star. In this scenario, the star's core does not collapse into a single neutron star as expected. Instead, the intense rotational forces cause the core to split into two tiny, subsolar mass neutron stars.

According to the study, these newly formed baby neutron stars would spiral together and crash almost immediately after their birth, emitting gravitational waves and producing heavy elements. Because this occurs within the immediate aftermath of the star's collapse, the resulting kilonova is obscured by the

much larger supernova explosion, creating a hybrid event.

The term superkilonova was not invented for this event, but the researchers propose a broadening of its definition. Originally, the term was coined to describe a theoretical model where a massive, rapidly spinning star collapses directly into a black hole. In that original theory, the super referred to the overwhelming volume of heavy metals produced by the massive disk of material around the new black hole, potentially churning out several solar masses of gold and platinum.

In this new report, Kasliwal and team suggest expanding the term to include any core-collapse supernova that hides a kilonova-like event inside its blast. This new definition focuses on the hybrid nature of the event: a supernova that births a pair of neutron stars that then crash into each other to create a secondary kilonova signal.

The research team stresses that while their superkilonova model fits the data, the case is not yet closed. The event's distance and the complexity of the overlapping signals make it difficult to definitively rule out a chance coincidence between two unrelated events.

However, the implications are significant. If superkilonovae are real, they provide a mechanism for the creation of low-mass neutron stars and explain how some of the universe's heaviest elements are forged.

“Future kilonovae events may

(Continued on page 13)

Superkilonova (Cont'd)

(Continued from page 12)

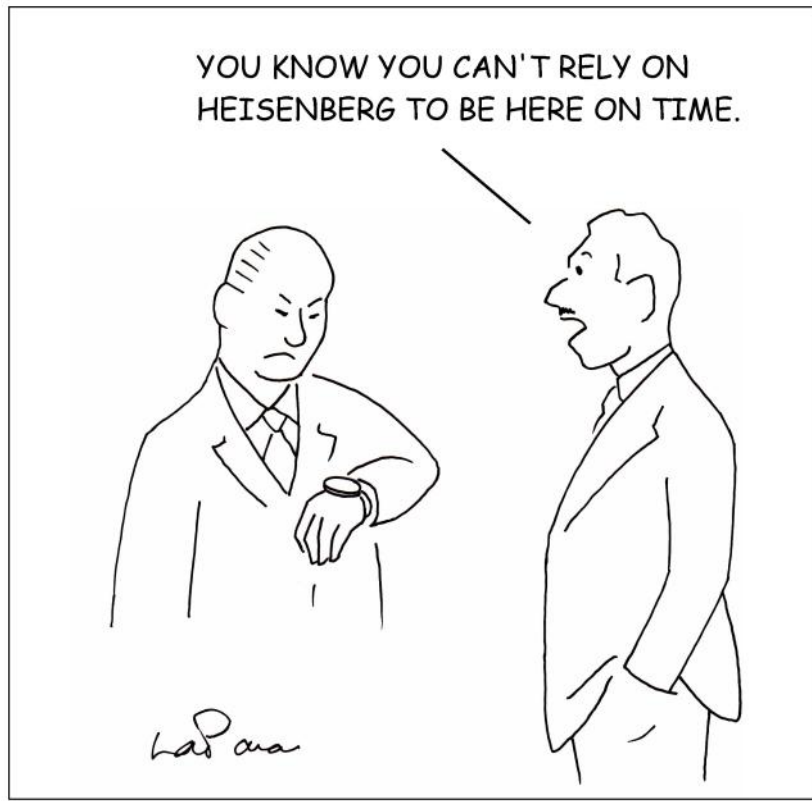
not look like GW170817 and may be mistaken for supernovae,” Kasliwal noted. The team looks toward upcoming missions, including NASA’s Nancy Roman Space Telescope and the UVEX satellite, to catch more of these unique events in action.

“Establishing a firmer association between S250818k and AT2025ulz requires more detailed theoretical modeling and sensitive late-time observations,” the authors state in the study. “Future detections of subsolar neutron star mergers would conclusively resolve this tantalizing multimessenger association.”

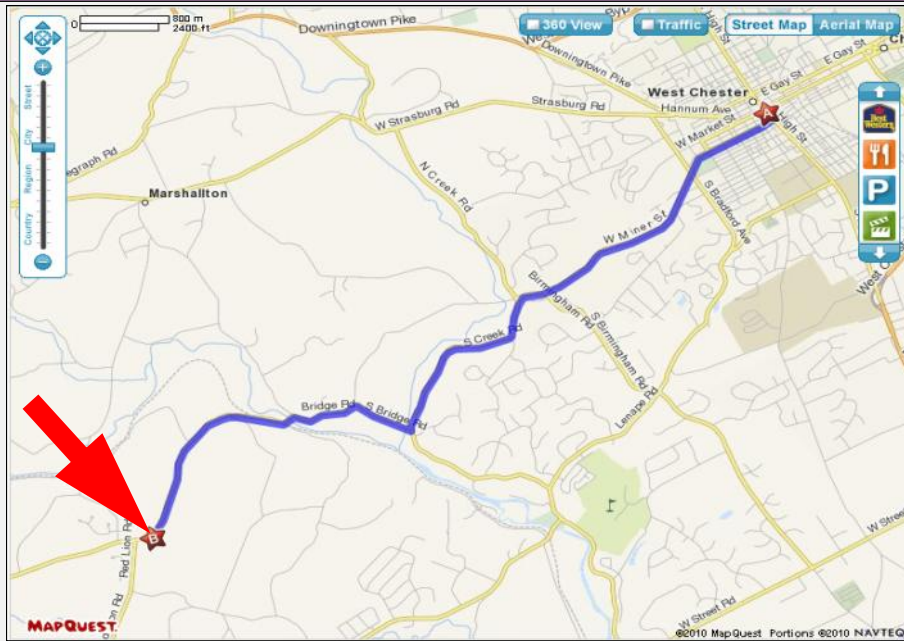
[Editor’s Note: Read the full article online at Astronomy.com]

Classic La Para

by Nicholas La Para



CCAS Directions



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).

Brandywine Red Clay Alliance

1760 Unionville Wawaset Rd
West Chester, PA 19382
(610) 793-1090

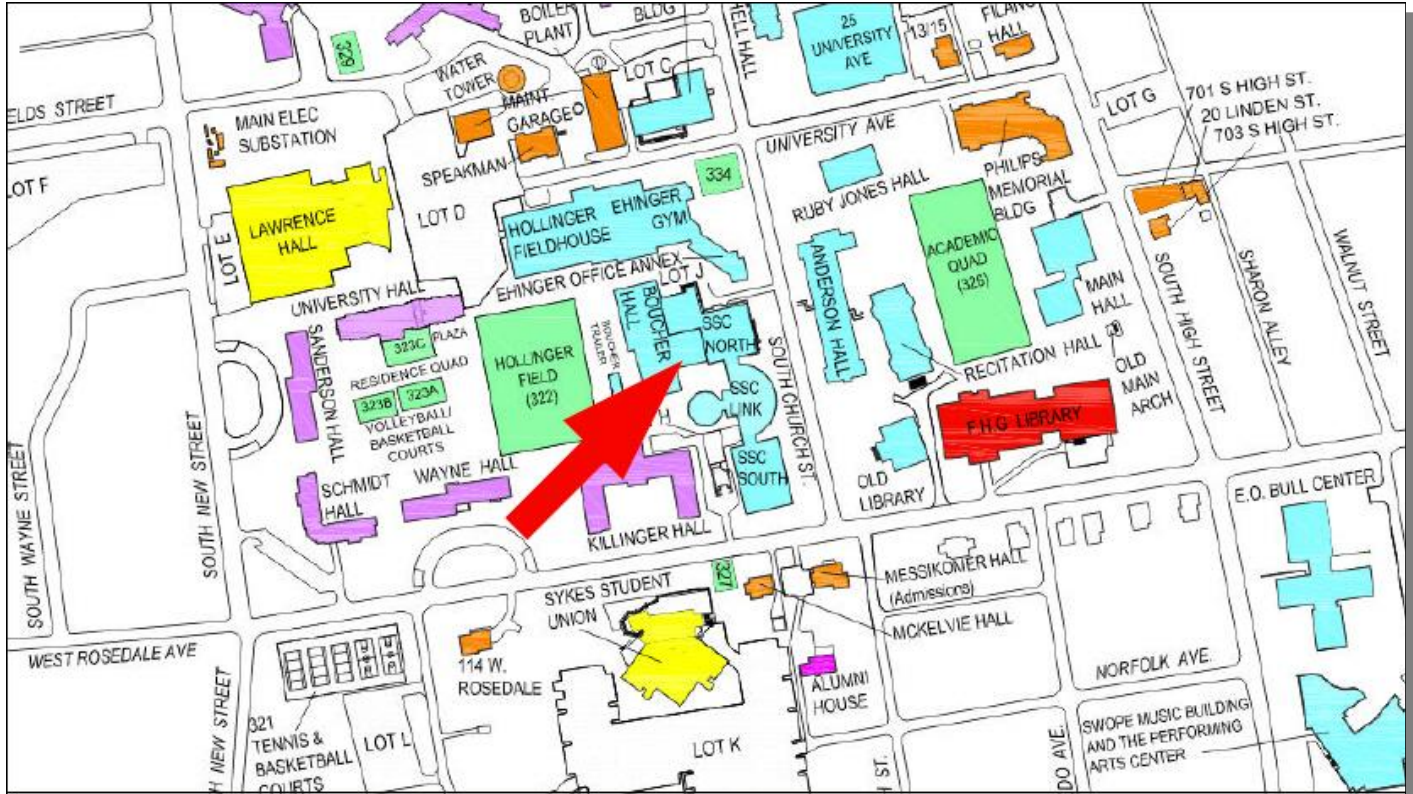
<http://brandywinewatershed.org/>

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.

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).



Guest Speaker (Cont'd)

(Continued from page 3)

findings which inspired her to produce the first neutrino-based map of the Milky Way galaxy.

As a result, Dr. Kurahashi-Neilson was named a Fellow of the American Physical Society (APS) in 2024, "for outstanding contributions and leadership in experimental neutrino physics to produce the first neutrino map of the Milky Way, and for strong service to improve the culture for women in physics, including the development of an active community of mid-career women in large physics collaborations."

CCAS Membership Information and Society Financials

Treasurer's Report by Don Knabb

Dec. 2025 Financial Summary

Beginning Balance	\$2475
Deposits	\$130
Disbursements	-\$863
Ending Balance	\$1742

New Member Welcome!

Welcome to new CCAS members Matthew H. Ward from West Chester, PA, Thomas Myruski from Coatesville, and Frank Angelini, Jr., from Berwyn, 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

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 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 & 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.

