



Observations

A Monthly Publication Of The
CHESTER COUNTY ASTRONOMICAL SOCIETY

Vol. 33, No. 5 **Three-Time** Winner of the Astronomical League's Mabel Sterns Award ☼ 2006, 2009 & 2016

May 2025

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Discovery at the Steven F. Udvar-Hazy Center



Image taken by CCAS Treasurer & ALCOR Don Knabb on a recent visit to the National Air and Space Museum's Steven F. Udvar-Hazy Center in Chantilly, Virginia.

Membership Renewals Due

05/2025	Blessing Cunningham Haas Kagel Mulhall Nigro O'Hara Ostaneck
06/2025	Crabb Curry Dautrich, Chris Dautrich, Cindy Dhargalkar Hanspal Harris Hebding Lindtner Mazziotta & Calobrisi O'Neill Scott Thomas
07/2025	Beidler Hunsinger McGuigan Morgan Piehl Ramadoss Rauenzahn

May 2025 Dates

- 2nd • First Quarter Moon, 11:40 p.m. EDT.
- 11th • Full Moon, the **Flower Moon**, 3:43 a.m. EDT.
- 16th • Mars passes 0.8° north of Regulus, midnight EDT.
- 18th • Last Quarter Moon, 3:19 p.m. EDT.
- 18th • The Moon passes 3° north of Saturn, midnight EDT.
- 18th • The Moon passes 2° north of Neptune, midnight EDT.
- 22nd • The Moon passes 7° north of Venus, 5 a.m. EDT.
- 22nd • The Moon passes 5° north of Uranus, midnight EDT.
- 25th • New Moon, 6:31 a.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.

- ☼ Saturday, May 3, 2025 - CCAS special observing event: West Goshen Park Star Party, 8 p.m. to 10 p.m. EDT. 1023 Fern Hill Road, West Chester, PA 19380.
- ☼ Monday, May 5, 2025 - CCAS special observing event: Solar Observation, 12:00 pm. to 1:00 p.m. EDT. Middletown Free Library Homeschool.
- ☼ Wednesday, May 14, 2025 - CCAS special observing event: Solar Observation, 10:30 am. to 1:30 p.m. at SRT Fricks Lock Trailhead, 500 Fricks Lock Rd, Pottstown, PA 19465 (Rain date May 15).

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

Spring Society Events

May 2025

2nd • West Chester University Planetarium Show: "Meteor Showers Bring May Flowers," in the Schmucker Science Building. Visit [WCU Public Planetarium Shows](http://www.wcu.edu/public-planetarium-shows) for more information and reservations.

3rd • West Goshen Park Star Party. 1023 Fern Hill Road, West Chester, PA 19380. 8 pm to 10 pm EDT.

5th • Solar Observation, 12:00 pm. to 1:00 p.m. EDT. Middletown Free Library Homeschool.

13th • CCAS Monthly Meeting, in person (as well as via Zoom) at West Chester University's Merion Science Center, Room 112. Guest Speaker: Dr. Julien de Wit, Dept. of Earth, Atmospheric and Planetary Sciences (EAPS), MIT, "Characterizing exoplanets with high-precision transit methods to measure biosignatures and assess potential habitability."

14th • Solar Observation, 10:30 am. to 1:30 p.m. SRT Fricks Lock Trailhead, 500 Fricks Lock Rd, Pottstown, PA 19465 (Rain date May 15).

20th • Open call for articles and photographs for the June 2025 edition of [Observations](http://www.ccas.us/observations).

26th • Deadline for newsletter submissions for the June 2025 edition of [Observations](http://www.ccas.us/observations).

30th • CCAS Monthly Observing Session, Myrick Conservancy Center, BRC. The observing session starts at sunset.

June 2025

19th-22nd • Cherry Springs Star Party. Presented by the Astronomical Society of Harrisburg, Harrisburg, PA. Cherry Springs State Park, Coudersport, PA. For more information, contact our Observing Chair, Mike Manigly.

20th • Open call for articles and photographs for the July 2025 edition of [Observations](http://www.ccas.us/observations).

20th • CCAS special observing event: Star Party with Chester County Parks and Coatesville Library, 8:30 p.m. to 10:30 p.m. EDT, at Hibernia Park. (Rain date: June 21st same time.) or more information, contact our Observing Chair, Mike Manigly.

20th • Friday Night Lights Star Party, 7:00-10:00 p.m. EDT, ChesLen Preserve, Coatesville, PA. This is a fundraiser for the Natural Lands Trust where music is provided. Several local astronomy clubs set up telescopes for the concert goes to view the night sky during the event. For more information, contact our Observing Chair, Mike Manigly.

20th • Solstice (northern summer/southern winter begins), 11 p.m. EDT.

21st • CCAS Special Observing Session "FamilyFest" at the American Helicopter Museum, West Chester, PA. from 10 a.m. - 3 p.m. EDT. For more information, contact our Observing Chair, Mike Manigly.

25-29th • York County Spring Star Party. Susquehannock State Park, 1880 Park Dr, Drumore, PA 17518. For more information, contact our Observing Chair, Don Miller.

26th • Deadline for newsletter submissions for the July 2025 edition of [Observations](http://www.ccas.us/observations).

27th - CCAS Monthly Observing Session, Myrick Conservancy Center, BRC. The observing session starts at sunset.

April 2025 Meeting Minutes by Bea Mazziotta, CCAS Secretary

- The April 2025 meeting was held on April 8th at West Chester University and online via Zoom and YouTube.
- CCAS President Dave Hockenberry welcomed members and guests in Room 112 of West Chester University's (WCU) Merion Science Center.
- Observing Chair Don Miller reviewed the upcoming event and observing calendar.
 - The calendar and details are available at ccas.us.
 - He reviewed some of the highlights of the April night sky, noting that April is a good month for binocular observing with many lunar opportunities, as well as deep sky objects including Kemble's Cascade.
- The evening's guest speaker was Dr. Roger Kennedy, CCAS member and NASA Solar System Ambassador.
 - His outreach programs have engaged close to 200,000 adults and children.
 - His presentation was titled "Bringing Solar Sciences to the Public."
 - Recent eclipses and the Parker Solar Probe, which recently passed within 3.8 million miles of the sun and was deemed "an historic event in humanity's first mission to a star", have reignited public interest in solar activity.

May 2025 CCAS Meeting Agenda by Bruce Ruggeri, CCAS Program Chair

Our next meeting will be held on May 13, 2025, 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. Julien de Wit, Dept. of Earth, Atmospheric and Planetary Sciences (EAPS), MIT, "Characterizing exoplanets with high-precision transit methods to measure biosignatures and assess potential habitability."

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 beyond our 2024-2025 season. If you are interested in presenting, or know someone who would like to participate, please contact me at programs@ccas.us.

May 2025 CCAS Member Speaker Information

by Bruce Ruggeri, CCAS Program Chair

Our in-person and Zoom monthly CCAS meeting scheduled for Tuesday, May 13, 2025, will commence at 7:30 p.m. EDT. This will be our last monthly meeting until September.

If you are able to join us in person, 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.

Our guest speaker for the final meeting of the 2024-2025 year is Dr. Julien de Wit, Dept. of Earth, Atmospheric and Planetary Sciences (EAPS), MIT. A brief bio-



Dr. Julien de Wit

sketch of Dr. de Wit and a synopsis follow.

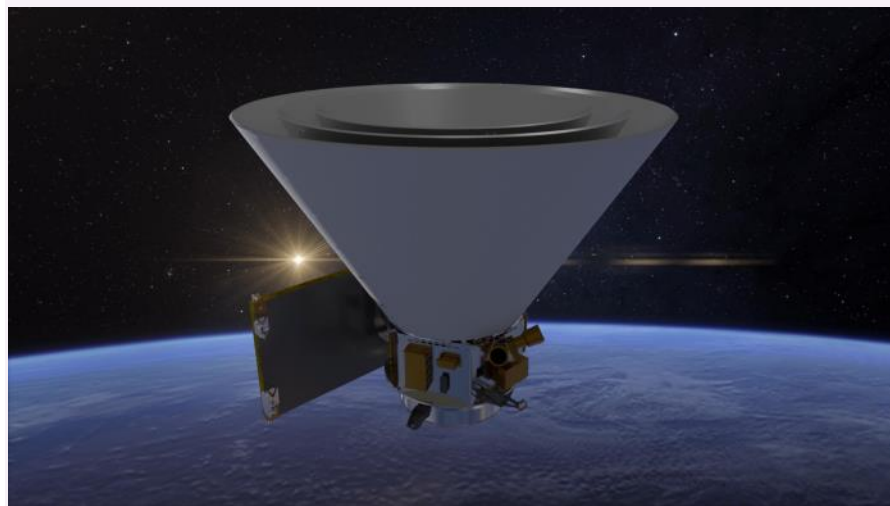
Title: *Searching for Extrasolar Life while Defending Earth-based Life.*

Synopsis: During this talk, Dr. de Wit will first introduce the basics of exoplanetary science, a key bottleneck associated with exoplanet habitability searches, and finally a paradigm shift allowing for such searches over the next 5 years utilizing novel analysis techniques to study exoplanet atmospheres. He will then present how our current searches for terrestrial exoplanet atmospheres are providing datasets that can also be mined to transform our understanding of the main asteroid belt as well as near-Earth objects, resulting in timely appli-

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SPHEREx Space Telescope Begins Capturing Entire Sky

courtesy NASA



Artist's concept of SPHEREx in Earth orbit. Credit: NASA/JPL-Caltech

Launched on March 11, NASA's SPHEREx space observatory has spent the last six weeks undergoing checkouts, calibrations, and other activities to ensure it is working as it should. Now it's mapping the entire sky—not just a large part

of it—to chart the positions of hundreds of millions of galaxies in 3D to answer some big questions about the universe.

On May 1, the spacecraft began regular science operations, which consist of taking about 3,600 images per day for the

next two years to provide new insights about the [origins of the universe](#), galaxies, and the ingredients for life in the Milky Way.

"Thanks to the hard work of teams across NASA, industry, and academia that built this mission, SPHEREx is operating just as we'd expected and will produce maps of the full sky unlike any we've had before," said Shawn Domagal-Goldman, acting director of the Astrophysics Division at NASA Headquarters in Washington.

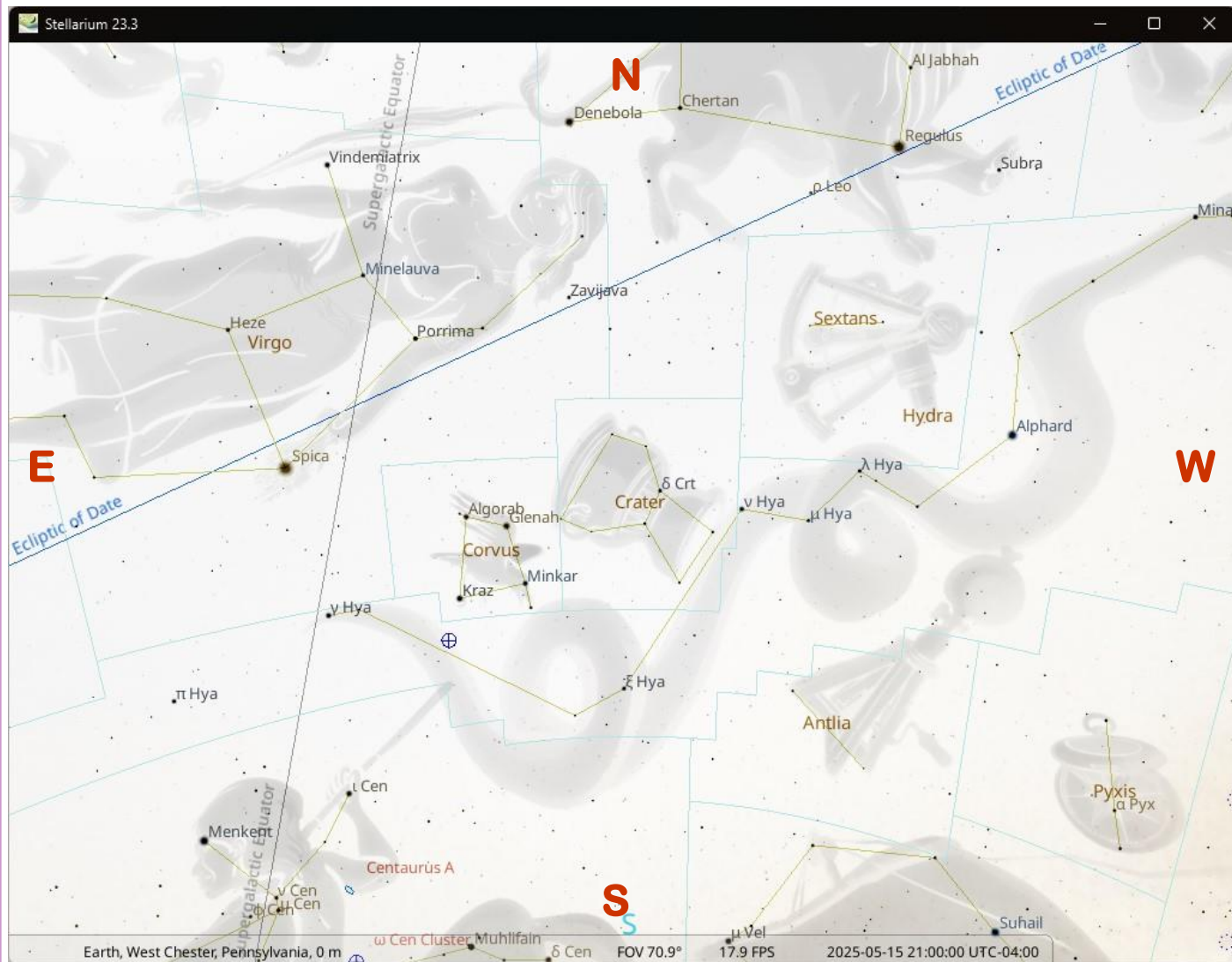
"This new observatory is adding to the suite of space-based astrophysics survey missions leading up to the launch of NASA's Nancy Grace Roman Space Telescope. Together with these other missions, SPHEREx

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The Sky Over Chester County

May 15, 2025 at 9:00 p.m. ET

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

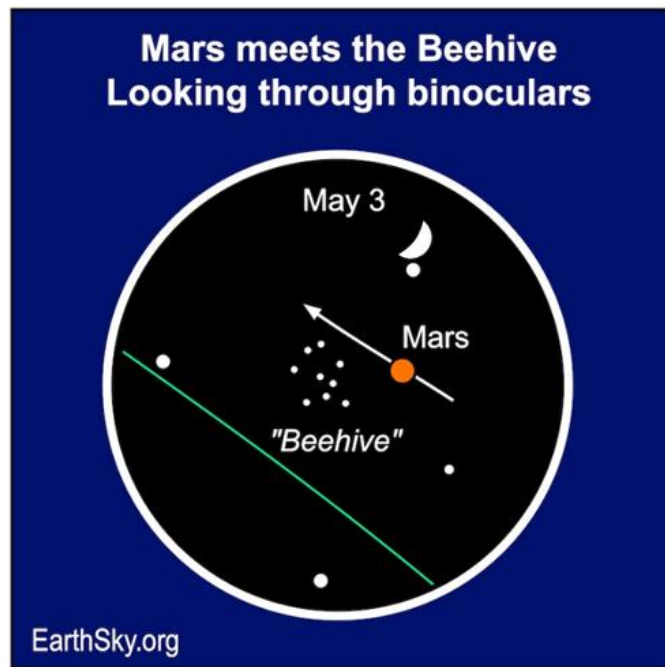


Date	Civil Twilight Begins	Sunrise	Sunset	Civil Twilight Ends	Length of Day
05/01/2025	5:32 a.m. EDT	6:02 a.m. EDT	7:57 p.m. EDT	8:26 p.m. EDT	13h 55m 11s
05/15/2025	5:16 a.m. EDT	5:47 a.m. EDT	8:11 p.m. EDT	8:41 p.m. EDT	14h 24m 03s
05/31/2025	5:04 a.m. EDT	5:36 a.m. EDT	8:24 p.m. EDT	8:56 p.m. EDT	14h 48m 29s

Moon Phases					
First Quarter	05/04/2025	9:51 a.m. EDT	Full Moon	05/12/2025	12:55 p.m. EDT
Last Quarter	05/20/2025	7:28 a.m. EDT	New Moon	05/26/2025	11:02 p.m. EDT

May 2025 Observing Highlights

by Don Miller, CCAS Observing Chair



Mars Meets the Beehive Cluster. Image credit: EarthSky.org

Key Event this month: This month's meteor shower is the Eta Aquariids. This shower is the result of the dust stream from a famous comet, Halley. The shower will peak over the mornings of the 5th and 6th. These meteors are very fast movers and frequently leave persistent trains. The first-quarter moon will be setting around 3 a.m., but with the sky starting to lighten around 4 a.m. due to the coming dawn, you have to be ready for this one. Here's hoping for a clear sky and good luck to you all.

Discussion: The warm weather has finally arrived. Now all that we need is some clear skies.

Sun: The sun is continuing its streak of zero spotless days with 137 spot number as of this writing (22 April).

Moon: First quarter on the 4th; full on the 12th; last quarter on the 20th and new on the 27th. The full moon this month is called the "flower" moon for obvious reasons which also happens to be a micro-moon (it is at its apogee).

Planets: Venus and Saturn are viewable in the early morning sky, with Venus outshining Saturn by almost 6 magnitudes! Venus will

be at it greatest elongation on the 31st.

A very infrequent event will be occurring twice this month on Saturn. You'll recall that I mentioned previously that right now we're viewing Saturn's rings nearly edge-on. This alignment, which only happens every 15 years, allows us to view the shadow transit of Saturn's largest moon, Titan, which also orbits the planet in the same plane as the rings. May 15th at 9:49 UTC (5:49 a.m. EDT) and May 31st at 9:05 UTC (5:09 a.m. EDT) will be when the transit begins. Both dates will have the sun rising near the same time, so move quickly.

Mars will have a conjunction with the moon early in the month and come close to the beehive cluster. See the image at left.

Jupiter's current apparition will be ending next month so early May will be your best chance for good telescopic views of this giant planet. Start looking for this planet right after sunset when it is highest in the sky.

Uranus will be in solar conjunction this month.

Select Night Sky Objects and Events: Algol is at minimum on the 14th at 1:39 a.m., 16th at 10:28 p.m.

There are two nicely placed deep-sky objects that I'll focus on this month. Both are Messier objects.

In mid-month, **M5** will be nicely placed in the constellation of Serpens. This is a very old globular cluster at approximately 12-13 billion years at a distance of 25,000 light-years from Earth. Most of the stars are naturally old, red dwarfs but some "blue stragglers" have been located which are thought to be the result of stellar collisions in the cramped interior of this cluster.



Algol in Perseus in May 2025

At the end of the month, **M4** is a wonderful globular that is the closest globular to the Earth, 6-7,000 light-years near Antares. This is the first globular cluster where individual stars were imaged. Images from the Hubble space telescope have shown that the motion of the central stars suggest that a long sought-after intermediate mass black hole (about 800 solar masses) is in its center.

Through the Eyepiece: Melotte 111, the Coma Berenices Cluster of Stars

by Don Knabb, CCAS Treasurer & ALCOR

As we sit under dark skies during May, we often search the sky for galaxies around the constellations Leo, Virgo and Coma Berenices. The Leo Cluster is a galaxy cluster in the constellation Leo. Along with the Coma Cluster, it is one of the two major clusters comprising the Coma Supercluster. The Virgo Cluster is a cluster of galaxies whose center is in the constellation Virgo. If you have very dark skies and a large telescope you can see these faint fuzz balls of deep space. This region of the sky holds the north galactic pole.

Here we have a window into the depths of the universe, unobscured by the Milky Way.

But this article is about another Coma Cluster. This is the Coma Berenices Cluster of stars. It is much easier to see and is a naked eye object in a dark sky location and is a nice sight in binoculars in Chester County skies. Around 9 or 10 at night during May one need only lean back in your lounge chair and look due south and about halfway from the horizon to the zenith. If you see a fuzzy spot a bit behind and

above Leo's tail, you have found the Coma Cluster of stars!

The Coma Cluster of stars is also known as Melotte 111 after its entry in the catalogue of deep sky objects by the astronomer P. J. Melotte. This cluster is in the constellation Coma Berenices.

The Coma Cluster is a small but nearby star cluster in our galaxy with a common proper motion, making it a true physical cluster, not just a visual alignment of widely distant stars. At one time it was considered to

(Continued on page 7)



Credit: Alberto Pisabarro - <https://www.astronomy.com/science/the-coma-star-cluster/> https://en.wikipedia.org/wiki/Coma_Star_Cluster#/media/File:ASY-MB0124-Coma-Star-Cluster.jpg Creative Commons file

Through the Eyepiece (Cont'd)



Sky map using Stellarium, the free planetarium software: <http://stellarium.org/>

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represent Leo's tail. The open cluster is 288 light-years away, roughly twice as distant as the Hyades, and covers an area of more than 5 degrees on the sky. That's the size of 10 full Moons! The cluster is approximately 450 million years old.

Photos don't do the Coma Cluster justice but below is a picture that comes close. Melotte 111 is too large for a telescope. It is a wonderful naked eye object or use low powered binoculars to see this large cluster. Some of its stars are visible to the naked eye but it needs binoculars to reveal its true potential. There is also some background nebulosity and larger telescopes will also show that many of the "stars" visible to binoculars as small fuzzy patches are really galaxies.

This is a star cluster similar in nature to the Pleiades and Hyades but is further away and slightly fainter. The Coma star

cluster is currently neither approaching nor receding from us. This makes it one of the nearest open star clusters, only the Ursa Major Cluster and the Hyades are closer.

The cluster was never cataloged as a Messier or NGC object, even though it's very visible. At least 37 stars have been identified as members of this cluster. Its brightest stars are 50 times brighter than our sun and its faintest are one-third the sun's brightness.

The diagram above will help you find the Coma Cluster. If you can't see it naked eye from your observing location, use binoculars and scan east from Leo's tail.

Information credits:

- http://en.wikipedia.org/wiki/Coma_Berenices
- <http://www.seds.org/messier/xtra/ngc/mel111.html>
- http://en.wikipedia.org/wiki/Mel_111

Speaker Bio (Cont'd)

(Continued from page 3)

cations for possible planetary defense efforts.

Bio sketch: Dr. de Wit's primary interest and expertise lie in the field of data science where Math and Science are brought together to make sense of newly accessible pieces of Reality. In 2017 he was part of an international team that announced the discovery of seven temperate rocky planets orbiting the ultra-cool dwarf star TRAPPIST-1. Dr. de Wit initiated the atmospheric exploration of the TRAPPIST-1 exoplanetary system with Hubble and then spearheaded the expansion of the necessary ground-based telescope network into the northern hemisphere with the installation of MIT's Artemis at the Teide Observatory (Tenerife, Spain).

Beyond initiating the era of terrestrial exoplanet atmospheric surveys, Dr. de Wit developed and applied new analysis techniques to map exoplanet atmospheres, to study the radiative and tidal planet-star interactions in eccentric planetary systems, to constrain the atmospheric properties and mass of exoplanets from transmission spectroscopy, and reveal the smallest main-belt asteroids to inform our understanding of meteorites and enhance our planetary-defense capabilities.

Dr. de Wit joined the Earth, Atmospheric, and Planetary Science (EAPS) faculty at MIT in 2018 and is a member of the Disruptive Planets group. He holds a bachelor's degree in physics and mechanics (2008)

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May's Night Sky Notes: How Do We Find Exoplanets?

by Dave Prosper; Updated by Kat Troche

This article is distributed by the NASA Night Sky Network, a coalition of hundreds of astronomy clubs across the US dedicated to astronomy outreach.

Visit nightsky.jpl.nasa.gov to find local clubs, events, stargazing info and more.

Astronomers have been trying to discover evidence that worlds exist around stars other than our Sun since the 19th century. By the mid-1990s, technology finally caught up with the desire for discovery and led to the first discovery of a planet orbiting another sun-like star, [Pegasi 51b](#). Why did it take so long to discover these distant worlds, and what techniques do astronomers use to find them?

The Transit Method

One of the most famous exoplanet detection methods is the **transit method**, used by [Kepler](#) and other observatories. When a planet crosses in front of its host star, the light from the star dips slightly in brightness. Scientists can confirm a planet orbits its host star by repeatedly detecting these incredibly tiny



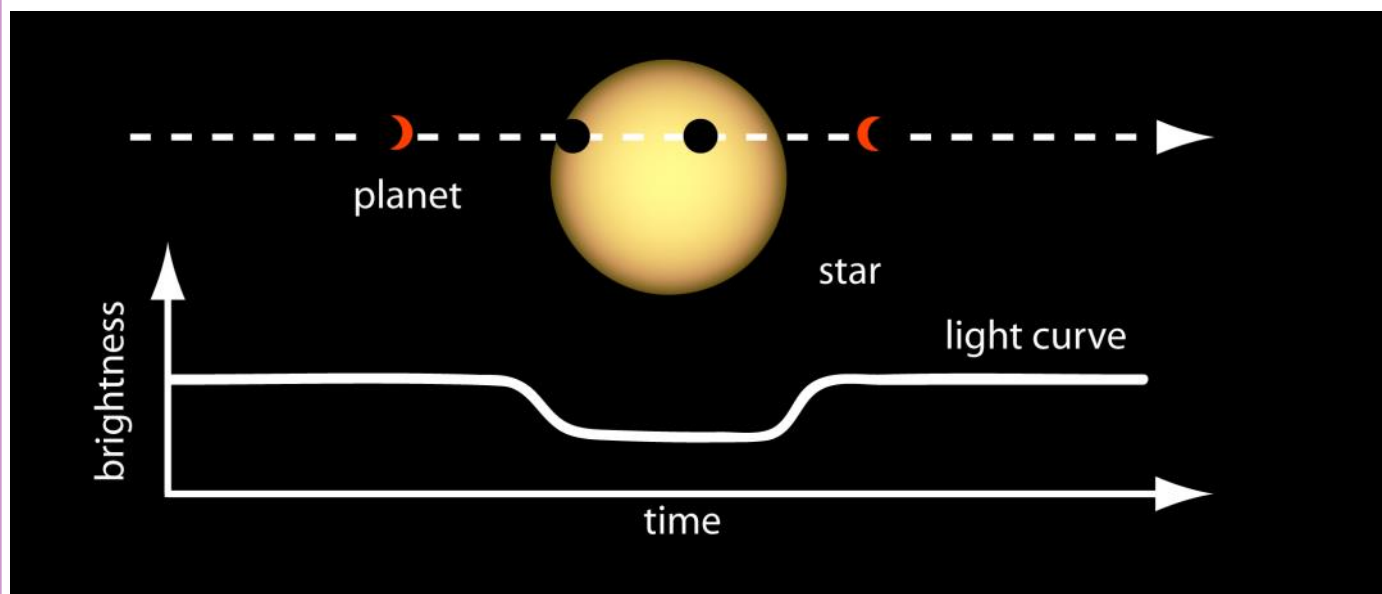
dips in brightness using sensitive instruments. If you can imagine trying to detect the dip in light from a massive searchlight when an ant crosses in front of it, at a distance of tens of miles away, you can begin to see how difficult it can be to spot a planet from light-years away! Another drawback to the transit method is that the distant solar system must be at a favorable angle to our point of view here on Earth – if the distant system's angle is just slightly askew, there will be no transits. Even in our solar system, transits are very rare. For

example, there were two transits of Venus visible across our Sun from Earth in this century. But the next time Venus transits the Sun as seen from Earth will be in the year 2117 – more than a century from now, even though Venus will have completed nearly 150 orbits around the Sun by then!

The Wobble Method

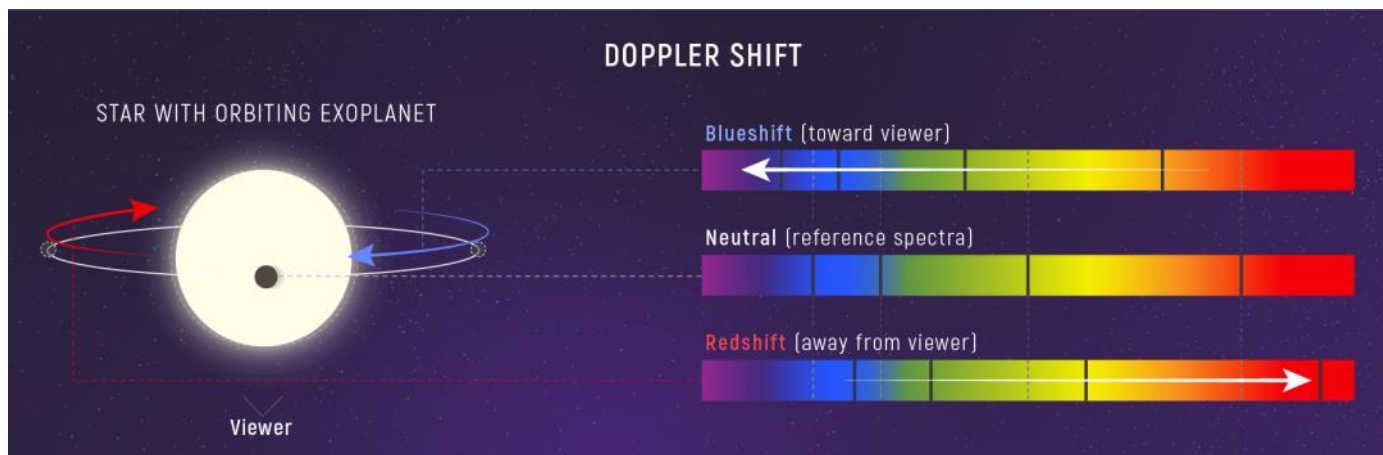
Spotting the Doppler shift of a star's spectra was used to find Pegasi 51b, the first planet detected around a Sun-like star. This technique is called the **radial velocity or "wobble" method**. Astronomers split up the visible light emitted by a star into a rainbow. These spectra, and gaps between the normally smooth bands of light, help determine the elements that make up the star. However, if there is a planet orbiting the star, it causes the star to wobble ever so slightly back and forth. This will, in turn, cause the lines

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A planet passing in front of its parent star creates a drop in the star's apparent brightness, called a transit. Exoplanet Watch participants can look for transits in data from ground-based telescopes, helping scientists refine measurements of the length of a planet's orbit around its star. Credit: NASA's Ames Research Center

Night Sky Notes (Cont'd)



As a planet orbits a star, the star wobbles. This causes a change in the appearance of the star's spectrum called Doppler shift. Because the change in wavelength is directly related to relative speed, astronomers can use Doppler shift to calculate exactly how fast an object is moving toward or away from us. Astronomers can also track the Doppler shift of a star over time to estimate the mass of the planet orbiting it. Credit: NASA, ESA, CSA, Leah Hustak (STScI)

(Continued from page 8)

within the spectra to shift ever so slightly towards the blue and red ends of the spectrum as the star

wobbles slightly away and towards us. This is caused by the blue and red shifts of the planet's light. By carefully meas-

uring the amount of shift in the star's spectra, astronomers can determine the size of the object pulling on the host star and if the companion is indeed a planet. By tracking the variation in this periodic shift of the spectra, they can also determine the time it takes the planet to orbit its parent star.

Direct Imaging

Finally, exoplanets can be revealed by **directly imaging** them, such as this image of four planets found orbiting the star HR 8799! Space telescopes use instruments called **coronagraphs** to block the bright light from the host star and capture the dim light from planets. The Hubble Space Telescope has captured images of giant planets orbiting a few nearby systems, and the James Webb Space Telescope has only improved on these observations by uncovering more details, such as the colors and spectra of exoplanet atmospheres, temperatures, detecting potential exomoons, and even scanning at-

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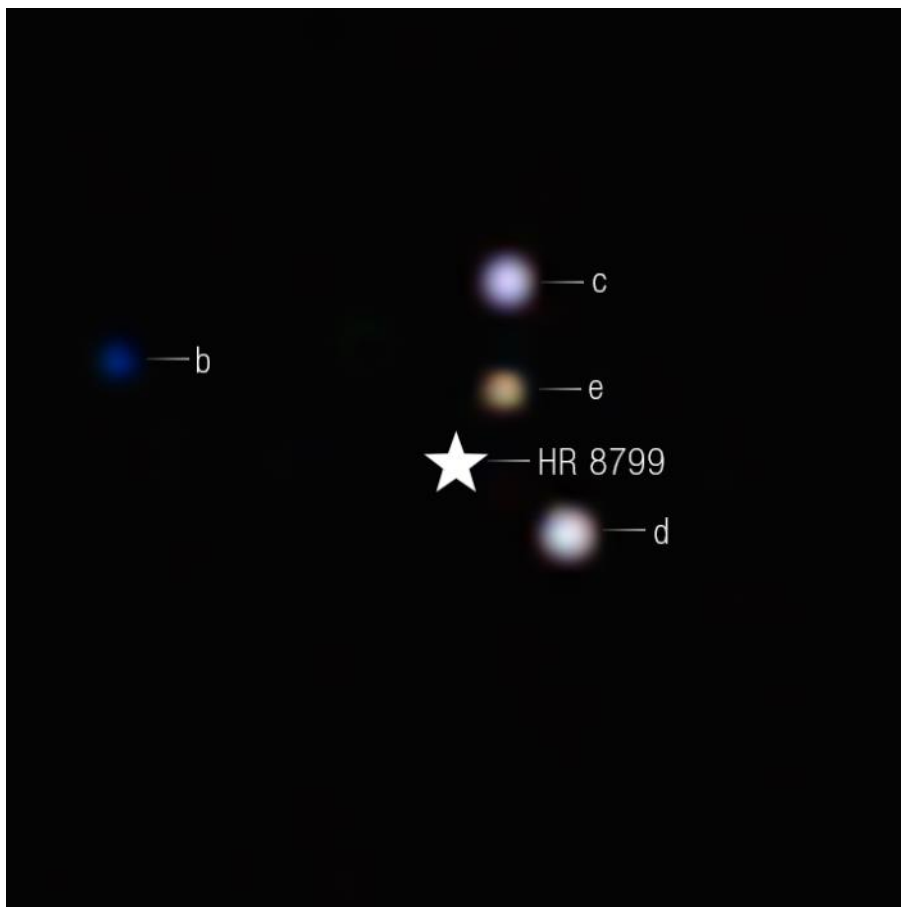
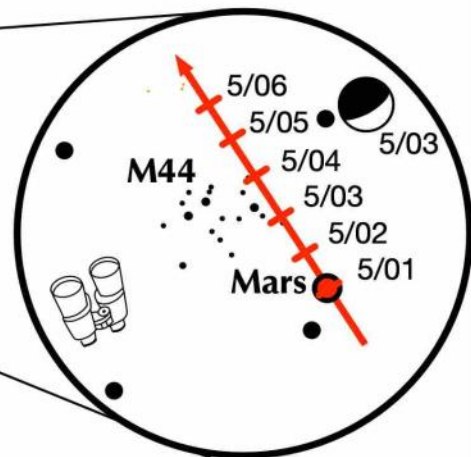
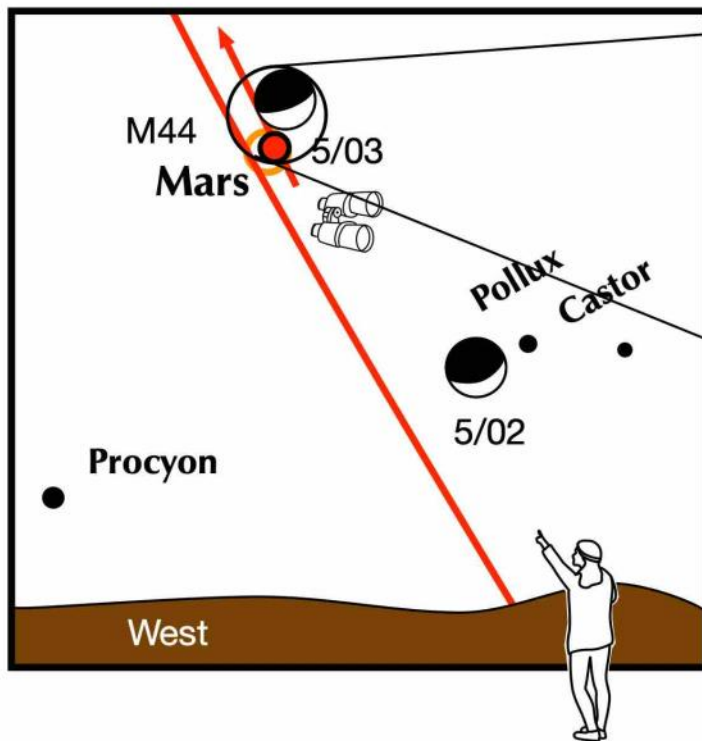


Image taken by the James Webb Space Telescope of four exoplanets orbiting HR 8799. Credit: NASA, ESA, CSA, STScI, Laurent Pueyo (STScI), William Balmer (JHU), Marshall Perrin (STScI)



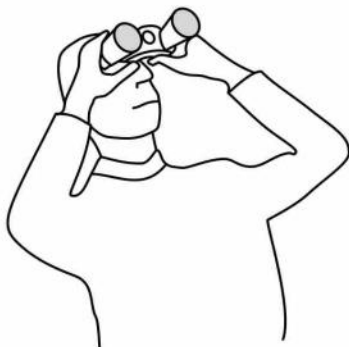
**If you can see only one celestial event
this month, see this one.**



**View through
10x50 binoculars**

Beginning on May 1, look to the west-northwest 90 minutes after sunset.

- The twin stars of Gemini, Castor and Pollux, will be found forming a horizontal bar low above the horizon.
- On the following evening, the crescent moon moves near Pollux, almost forming a straight line with it and Castor.



- Red Mars slides toward M44, aka the Beehive Star cluster. Use binoculars to find Mars inching closer to the many stellar bees.
- On May 3, the thick crescent moon joins Mars sitting to the upper left of the red planet and above the bees.
- Over the next few evenings, the Red Planet moves past M44, leaving it on May 5.

SPHEREx (Cont'd)

(Continued from page 3)

will play a key role in answering the big questions about the universe we tackle at NASA every day."

From its perch in Earth orbit, **SPHEREx** peers into the darkness, pointing away from the planet and the sun. The observatory will complete more than 11,000 orbits over its 25 months of planned survey operations, circling Earth about 14½ times a day.

It orbits Earth from north to south, passing over the poles, and each day it takes images along one circular strip of the sky. As the days pass and the planet moves around the sun, SPHEREx's field of view shifts as well, so that after six months, the observatory will have looked out into space in every direction.

When SPHEREx takes a picture of the sky, the light is sent to six detectors that each produces a unique image capturing different wavelengths of light. These groups of six images are called an exposure, and SPHEREx takes about 600 exposures per day.

When it's done with one exposure, the whole observatory shifts position—the mirrors and detectors don't move as they do on some other telescopes. Rather than using thrusters, SPHEREx relies on a system of reaction wheels, which spin inside the spacecraft to control its orientation.

Hundreds of thousands of SPHEREx's images will be digitally woven together to create four all-sky maps in two years. By mapping the entire sky, the

mission will provide new insights about what happened in the first fraction of a second after the big bang. In that brief instant, an event called cosmic inflation caused the universe to expand a trillion-trillion-fold.

"We're going to study what happened on the smallest-sized scales in the universe's earliest moments by looking at the modern universe on the largest scales," said Jim Fanson, the mission's project manager at NASA's Jet Propulsion Laboratory in Southern California. "I think there's a poetic arc to that."

Cosmic inflation subtly influenced the distribution of matter in the universe, and clues about how such an event could happen are written into the positions of galaxies across the universe. When cosmic inflation began, the universe was smaller than the size of an atom, but the properties of that early universe were stretched out and influence what we see today.

No other known event or process involves the amount of energy that would have been required to drive **cosmic inflation**, so studying it presents a unique opportunity to understand more deeply how our universe works.

"Some of us have been working toward this goal for 12 years," said Jamie Bock, the mission's principal investigator at Caltech and JPL. "The performance of the instrument is as good as we hoped. That means we're going to be able to do all the amazing science we planned on and perhaps even get some unexpected discoveries."

The SPHEREx observatory

won't be the first to map the entire sky, but it will be the first to do so in so many colors. It **observes 102 wavelengths**, or colors, of infrared light, which are undetectable to the human eye. Through a technique called spectroscopy, the telescope separates the light into wavelengths—much like a prism creates a rainbow from sunlight—revealing all kinds of information about cosmic sources.

For example, spectroscopy can be harnessed to determine the distance to a faraway galaxy, information that can be used to turn a 2D map of those galaxies into a 3D one. The technique will also enable the mission to measure the collective glow from all the galaxies that ever existed and see how that glow has changed over cosmic time.

And spectroscopy can reveal the composition of objects. **Using this capability**, the mission is searching for water and other key ingredients for life in these systems in our galaxy. It's thought that the water in Earth's oceans originated as frozen **water molecules** attached to dust in the interstellar cloud where the sun formed.

The SPHEREx mission will make over 9 million observations of interstellar clouds in the Milky Way, mapping these materials across the galaxy and helping scientists understand how different conditions can affect the chemistry that produced many of the compounds found on Earth today.

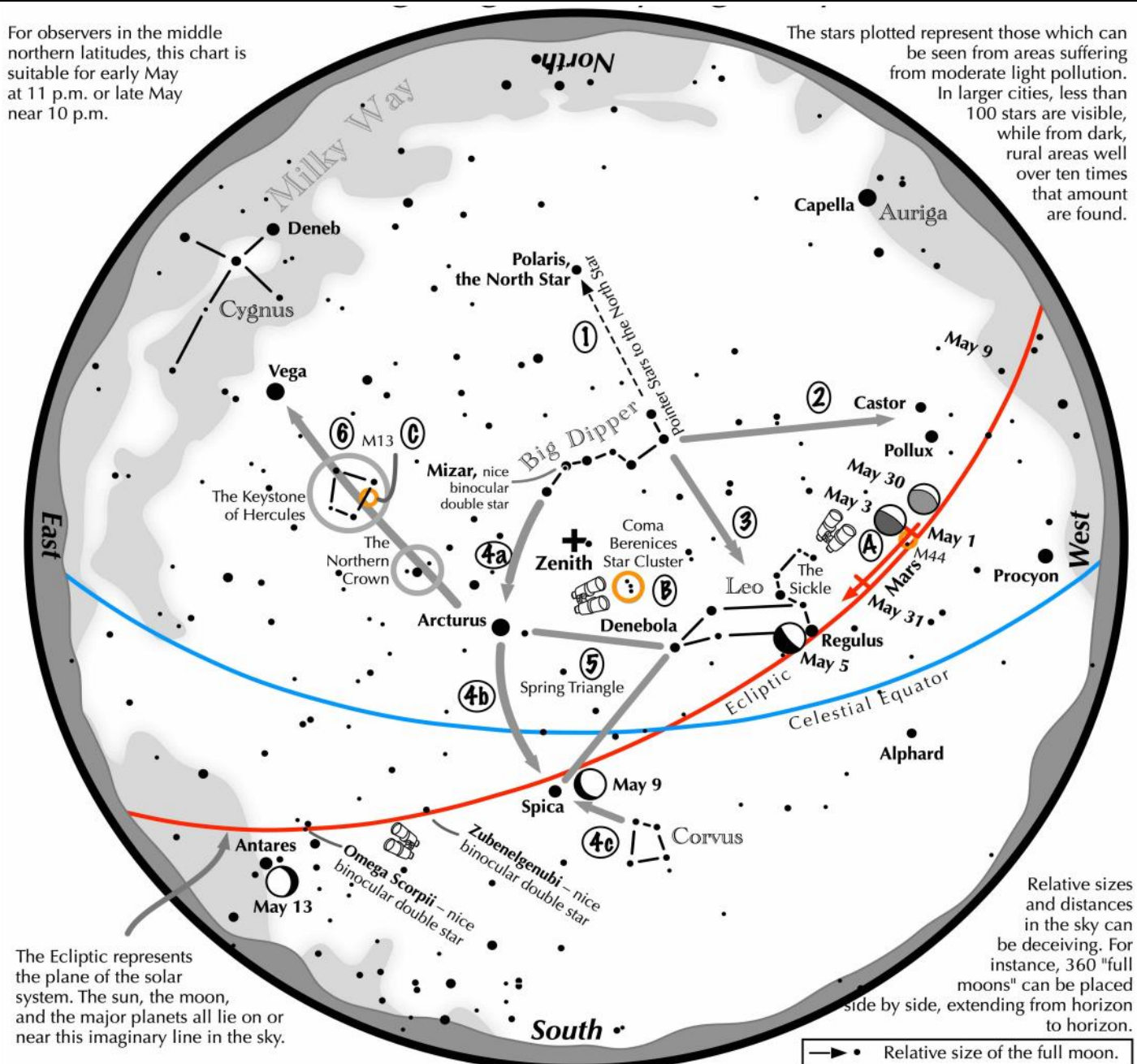
Learn more about SPHEREx at [SPHEREx](http://www.ccas.us).

Navigating the Mid-May 2025 Night Sky

courtesy of the Astronomical League

For observers in the middle northern latitudes, this chart is suitable for early May at 11 p.m. or late May near 10 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.



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

- 1 Extend a line northward from the two stars at the tip of the Big Dipper's bowl. It passes by Polaris, the North Star.
- 2 Through the two diagonal stars of the Dipper's bowl, draw a line pointing to the twin stars of Castor and Pollux in Gemini.
- 3 Directly below the Dipper's bowl reclines the constellation Leo with its primary star, Regulus.
- 4 Follow the arc of the Dipper's handle. It first intersects Arcturus, then continues to Spica. Confirm Spica by noting that two moderately bright stars just to its southwest form a straight line with it.
- 5 Arcturus, Spica, and Denebola form the Spring Triangle, a large equilateral triangle.
- 6 Draw a line from Arcturus to Vega. One-third of the way sits "The Northern Crown." Two-thirds of the way hides the "Keystone of Hercules." A dark sky is needed to see these two dim stellar configurations.

Binocular Highlights

A: M44, a star cluster barely visible to the naked eye, lies to the southeast of Pollux. **B:** Look near the zenith for the loose star cluster of Coma Berenices. **C:** M13, a round glow from a cluster of over 500,000 stars.

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



Night Sky Notes (Cont'd)

(Continued from page 9)

mospheres for potential biosignatures!

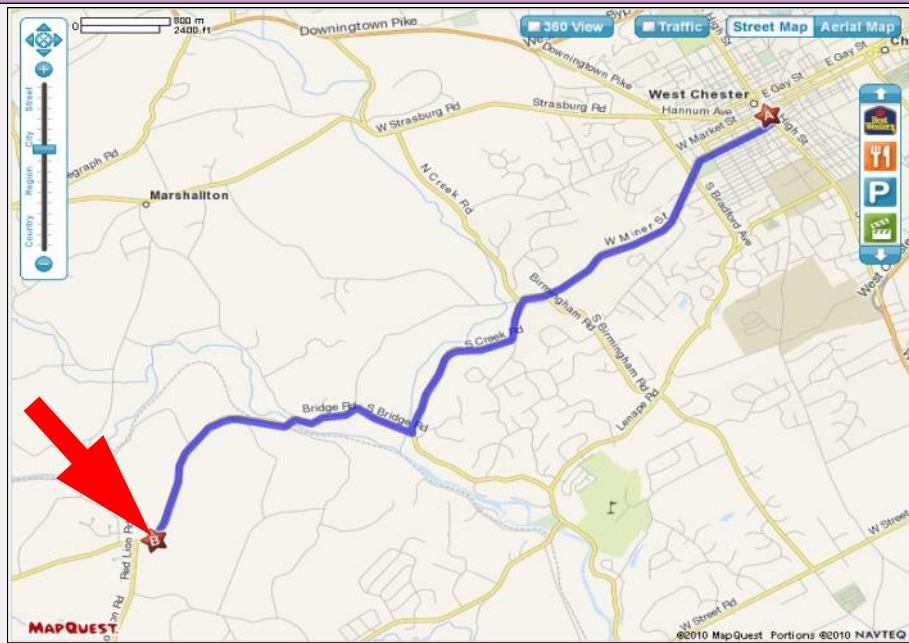
You can find more information and activities on [NASA's Exoplanets](#) page, such as the [Eyes on Exoplanets](#) browser-based program, [The Exoplaneteers](#), and some of the [latest exoplanet news](#). Lastly, you can find more resources in our [News & Resources](#) section, including a [clever demo](#) on how astronomers use the wobble method to detect planets!

The future of exoplanet discovery is only just beginning, promising rich rewards in humanity's understanding of our place in the Universe, where we are from, and if there is life elsewhere in our cosmos.

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.

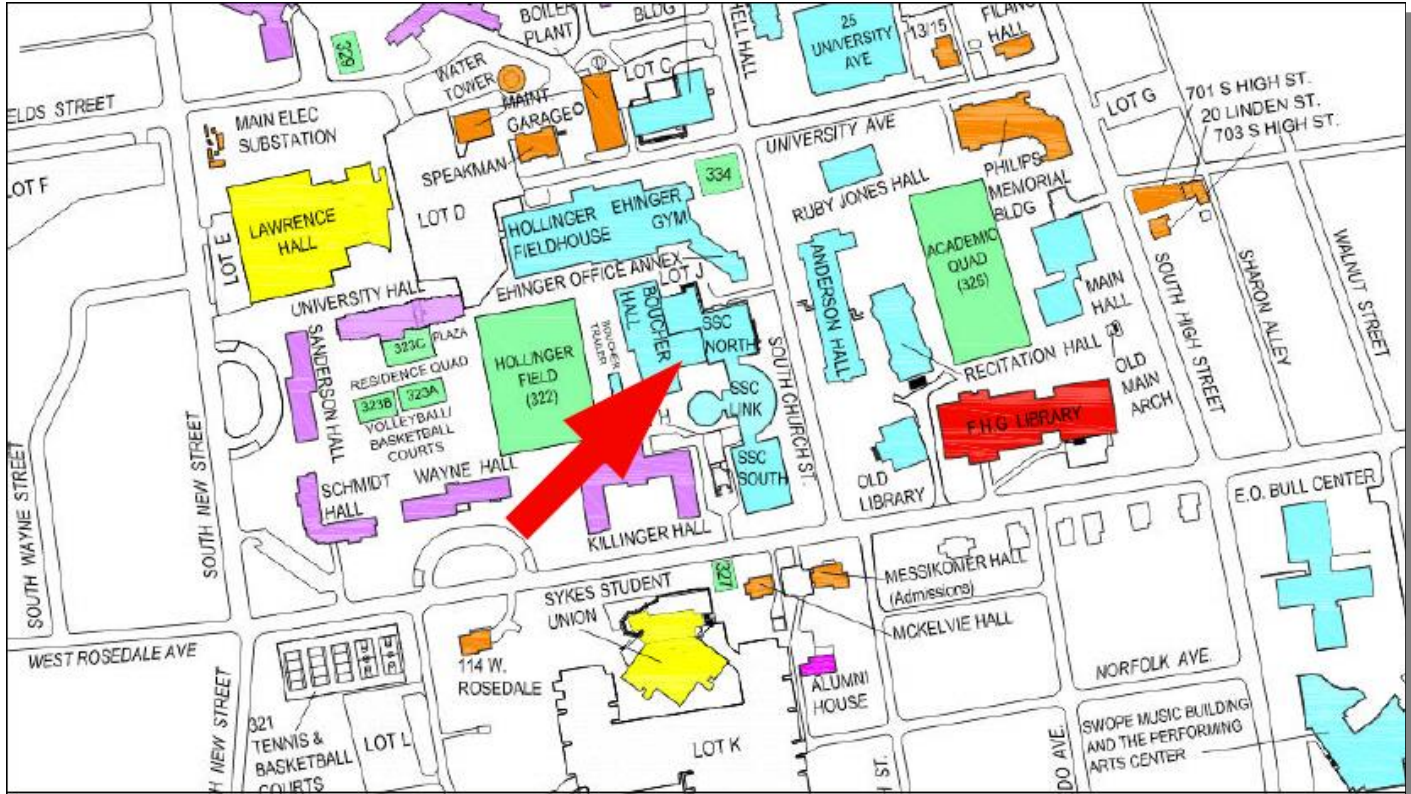
To get to the Myrick Conservation Center from West Chester, go south on High Street in West Chester past the Courthouse. At the next traffic light, turn right on Miner Street, which is also PA Rt. 842. Follow Rt. 842 for about 6 miles. To get to the observing site at the BRC property, turn left off Route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



Speaker Bio (Cont'd)

(Continued from page 7)

and a master's in aerospace engineering (2011) from the Université de Liège (Belgium), as well as having completed master's studies at the Institut Supérieur de l'Aéronautique et de l'Espace in astrophysics, planetology and space systems science. He then moved to EAPS at MIT to pursue his PhD and postdoctoral studies.

Further details of Dr. de Wit's research work can be found at the MIT/EAPS website: <https://eaps.mit.edu/people/faculty/julien-de-wit/>

CCAS Membership Information and Society Financials

Treasurer's Report by Don Knabb

April 2025 Financial Summary

Beginning Balance	\$1850
Deposits	\$50
Disbursements	-\$0
Ending Balance	\$1900

New Member Welcome!

Welcome to new CCAS member Robert Scottoline, a WCU student from Havertown, 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

Public Relations: Ann Miller
610-558-4248

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.

