



PAStimes

A Publication of the Phoenix Astronomical Society

Stu's Views • Stu Brackney, President PAS

Hi everyone. Our warm weather has arrived as the busy winter skies have slowly faded. But our cosmos always has fun things to see. In this edition, like all our newsletters, we post a list of visible objects in our local night skies. Copy that list and use it the next time you are out with your scope.

Speaking of going out with your scope. TIP: Actually, two tips...make a list of everything you will need to take with you. Batteries, cables, flashlights etc. Before leaving home, check that you have not forgotten something. 2nd tip, astronomy stuff; it can end up everywhere, back seat of the car, truck, garage, back porch, TRY to keep all your gear in one location. Hours of searching will be reduced.

I am hoping all of you took the opportunity to vote in our annual election. All candidates are volunteers. Your sheer number of votes tells them you care about PAS.

We will continue our star parties this summer. Currently no lectures are planned for June, July or August. As with every event we have; star parties, lectures, workshops, field trips, we absolutely need you to register at: [PAS Event Calendar and Registration Site](#)

We have a problem. When members sign up for a workshop, our Event Manager Ruza Sabelja ensures there is a teacher for that student with their particular telescope needs. Our problem is, no shows. When that happens, our teacher is there with no student and, others on the waiting list missed the event.

Solution: Please if you cannot fulfill your commitment to attend, cancel your reservation.

Cheers everyone.
Stu



[Lecture: May 1st Pizza Party](#)

[Now Forming : Astroimaging group: see page 2 for details](#)

[Workshop: May 22nd
PVCC Main Campus](#)

[Star Party : May 3rd](#)

[ASIG: May 26th](#)

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Upcoming Events

Don't forget to register—spots fill up fast!



May 2025

- 1st - Pizza Party Social - Members Only
- 3rd -Public Star Party- Apache Wash Trailhead Park
- 22nd - Telescope Workshop-PVCC Main Campus
- 26th - ASIG -Zoom -Mono vs OSC

For more information and to register for these events, go to the [PAS Event Calendar and Registration Site](#). It is important to register for all events. In case of an event change or cancellation, you will be notified via email.

May Lecture Series

This is, as last year, a MEMBERS ONLY event.

We have another reason for you being a member of PAS. Instead of our monthly lecture we have decided that this May 1, 7:00 p.m., we are having a free pizza party for our members.

Election Results:

Board of Directors for 1-year.

- President: Stuart Brackney
- Vice President: Mark Johnston
- Secretary: Chris Ford
- Treasurer: Richard Sauerbrun
- Newsletter Editor: Richard Meyers
- Member at Large #1: Damon Finell
- Member at Large #2: Ruza Sabelja



Now Forming: Astroimaging Special Interest Group(ASIG)!

Are you passionate about capturing the beauty of the cosmos? Whether you're a beginner or an experienced astrophotographer, now is the perfect time to join The Phoenix Astronomical Society's Astroimaging Special Interest Group as we launch this exciting new group!

Astroimaging, also known as astrophotography, is the practice of capturing images of celestial objects like stars, planets, galaxies, and nebulae. It combines photography and astronomy, allowing you to create stunning visuals of the universe while exploring its mysteries.

Our mission is to:

- ✨ Advance the art and science of astroimaging.
- 🌌 Provide educational opportunities, mentorship, and technical Q&A.
- 📸 Inspire growth through shared experiences, monthly challenges, and interactive discussions.

This is your chance to join a collaborative community of like-minded enthusiasts, explore new techniques, and uncover the wonders of the universe through imaging!

Interested? Drop us an email to sign up for notifications of future events!

SIGN UP



Here's a recap of last month's lecture by Richard Meyers

Dark Sky Discovery Center Update- by Ted Blank

Ted shared a progress report on the International Dark Sky Discovery Center in Fountain Hills. The facility features a Night Sky Exhibit Hall with 20 exhibits on light pollution's impact, an observatory with a 700mm PlaneWave telescope, a tilted-dome planetarium with 8K projection, a 140-seat theater, a hands-on Einstein Exploration Station, and a stargazing terrace with four Celestron CPC11 telescopes. Construction is advancing, with the dome installed and the telescope expected by July. Funding is at \$21 million, with \$7 million needed. The center will host astronomy clubs and ASU research. The telescope pier is vibration-isolated.



Q&A Highlights: The theater's 3D capability is TBD; it will use a 6-projector system, not LED. The planetarium dome is tilted 20 degrees for viewer comfort. The facility aims to support amateur astronomy groups and research, with remote access planned for ASU. The telescope's innovative design includes a periscope system for easy eyepiece access.

For more details or to donate, visit darkskycenter.org.

Exoplanets Presentation-by Ted Blank

Ted delivered an engaging talk on exoplanets, planets orbiting stars other than the Sun, and their role in exploring whether we're alone in the universe. He framed the discussion around the Drake Equation, focusing on the fraction of stars with planetary systems and the number of planets per system. Key points included: Formation of Planetary Systems: Planets form from protoplanetary discs of dust and gas, which flatten and coalesce around a star, as seen in the Orion Nebula and other distant systems.



Detection Methods: Radial Velocity: Measures Doppler shifts in a star's spectrum as it wobbles due to a planet's gravitational pull, e.g., 51 Pegasi's 4.2-day orbit detected with high precision. Transit Method: Detects dips in starlight when a planet passes in front of its star, used by Kepler to find thousands of planets, though only 1% of orbits align for detection. Direct Imaging: Captures planets by blocking starlight, revealing orbits at Jupiter-like distances, as seen in systems 120 light-years away.

Gravitational Microlensing: Uses gravitational lensing to detect planets, though not detailed in the talk.

Missions: Kepler: Monitored 150,000 stars in Cygnus, discovering 3,758 confirmed exoplanets by 2018, many via transits.

TESS: Surveys brighter, closer stars across the entire sky, adding 620 confirmed exoplanets and 7,000 candidates.

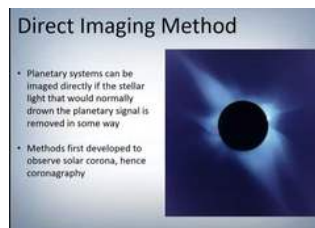
Nancy Grace Roman Telescope: Set for 2027, will detect distant and free-floating planets using infrared.

Goldilocks Zone: Planets in habitable zones, where liquid water could exist, are prime candidates for life.

Kepler found ~20 rocky planets in these zones.

Key Insight: There are more planets than stars, with over 100 million Earth-like planets likely in our galaxy alone, suggesting non-zero odds of life elsewhere.

Ted highlighted amateur contributions, like his friend in New Hampshire detecting transits with an 11-inch telescope, and closed with an animation of Kepler-discovered planets orbiting at relative speeds. The talk emphasized ongoing missions and the bias toward detecting large, close-in planets, fueling optimism about finding life in the cosmos.



Oumuamua: The Interstellar Enigma- by Richard Meyers

In 2017, 'Oumuamua, the first known interstellar object, stunned astronomers. Spotted by Hawaii's Pan-STARRS telescope, this reddish, tumbling visitor from beyond our solar system sparked wonder and debate.

A Cosmic Oddity

Entering from the direction of Vega, 'Oumuamua zipped around the Sun with unusual acceleration. Despite comet-like behavior, it lacked a visible tail or outgassing. Its reflective surface and chaotic 7–8-hour spin hinted at an elongated or pancake-like shape.

Theories and Questions

Was it a comet or an asteroid? Scientists lean toward natural explanations, like a nitrogen-ice fragment. Yet, its odd speed—possibly driven by solar radiation—led Harvard's Avi Loeb to propose it could be an alien light sail. No artificial signals were found, but mysteries persist.

A Contrast and a Clue: The second interstellar object, 2I/Borisov (2019), acted like a typical comet with a tail, making 'Oumuamua's quirks stand out even more.

What's Next? The Vera C. Rubin Observatory, launching soon, could spot 10+ interstellar objects yearly by 2030, offering clues to decode 'Oumuamua's nature.

Why It Captivates 'Oumuamua—natural or not—challenges our cosmic understanding and fuels curiosity. As we await new visitors, this scout remains a celestial puzzle.

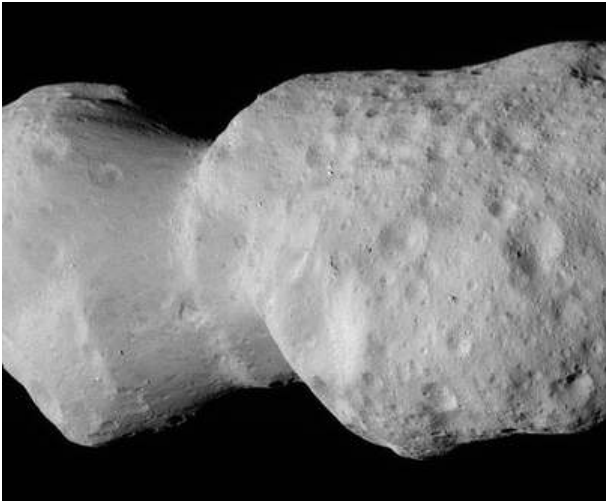


In the NEWS

Peanut-Shaped Asteroid Surprises Lucy Mission

NASA's Lucy spacecraft encountered its first asteroid, Dinkinesh, and discovered it's actually a binary pair—a peanut-shaped primary asteroid with a smaller satellite. The unexpected find, revealed during Lucy's flyby, provides valuable insights into asteroid formation. The mission, en route to Jupiter's Trojan asteroids, will study more such objects to uncover solar system secrets.

(Source: Astronomy.com)



NASA's Lucy spacecraft captured this image of asteroid 52246 Donaldjohanson on April 20. The image was taken by its high-resolution camera, Lucy LONg Range Reconnaissance Imager (L'LORRII), at 660 miles (1,100 km). This was 40 seconds before its closest approach at 600 miles (920 km). Credit: NASA/Goddard/SwRI/Johns Hopkins APL/NOIRLab

Hubble Captures Stunning New Image of Colorful Eagle Nebula

The Hubble Space Telescope has unveiled a breathtaking new view of the Eagle Nebula, showcasing its vibrant pillars of gas and dust where new stars are born. Famous for the iconic "Pillars of Creation," this nebula, located 6,500 light-years away, glows with intense radiation from young, massive stars. The latest image highlights its intricate structures, offering astronomers deeper insights into star formation.

(Source: Space.com)



A new Hubble Space Telescope image of the Eagle Nebula taken to celebrate the observatory's 35th anniversary. (Image credit: ESA/Hubble & NASA, K. Noll)

Scientists Discover Giant Glowing Gas Cloud Just 300 Light-Years Away

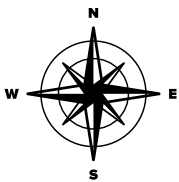
Astronomers have found a massive, previously hidden gas cloud only 300 light-years from Earth, glowing faintly in the dark. The cloud, detected using ultraviolet light observations, is likely illuminated by nearby stars. Its unexpected proximity challenges assumptions about the distribution of interstellar gas in our galaxy. The discovery could provide new insights into the structure of the Milky Way's local environment.

(Source: Space.com)

Did JWST Find Alien Life on K2-18b? Scientists Urge Caution

Recent claims of potential signs of life on exoplanet K2-18b—including possible biosignatures like dimethyl sulfide (DMS)—may be premature, scientists warn. While NASA's James Webb Space Telescope (JWST) detected intriguing chemical clues in the planet's atmosphere, researchers stress the need for further observations to rule out false alarms. K2-18b, a "Hycean" world with a hydrogen-rich atmosphere, remains a compelling target, but experts emphasize that extraordinary claims require extraordinary evidence.

(Source: Space.com)

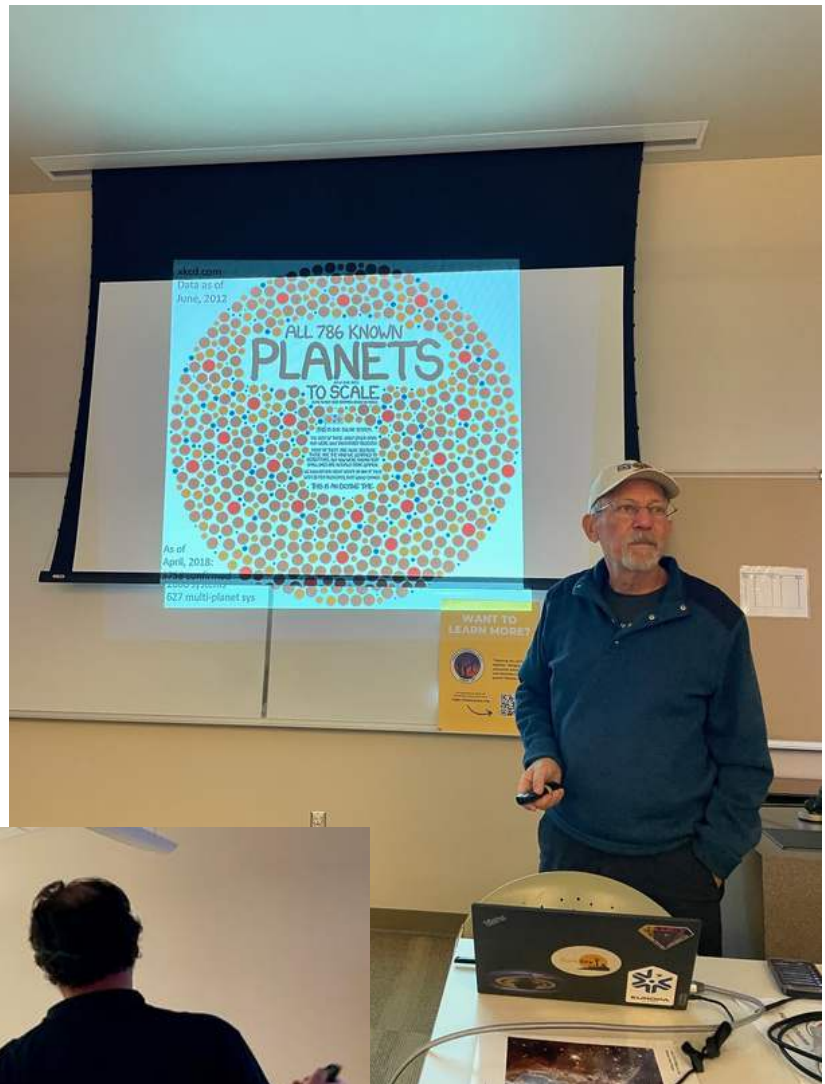


Summary of April Outreach Events

3rd -Lecture

17th- Telescope Workshop

StarTours-None



Book Club



Book Club

The Book Club is a community or group dedicated to reading and discussing books about astronomy, space, and related scientific topics.

Book: Quanta and Fields: The Biggest Ideas in the Universe

Meeting June 7th: 1PM @Coffee Plantation

7366 E Shea Blvd #101, Scottsdale, AZ 85260

Please reach out to: saeidmousavi@yahoo.com

First Book: Quanta and Fields introduces quantum field theory in an approachable way, making it ideal for readers eager to grapple with the universe's fundamental ideas. Starter questions like "How does Carroll make quantum concepts relatable?" or "What's surprising about fields in physics?"

AstroImaging Special Interest Group(ASIG)

Your astroimages have been stunning—each galaxy spiral and nebula glow pushes our group's passion deeper into the cosmos. This May, let's turn the night sky into our canvas:

April 17th -Workshop: What a blast at our recent workshop diving into planetary stacking! Those stacking tips and software demos (shoutout to AutoStakkert! and RegiStax) have us all pumped to polish our planetary shots.



TRENDING
NOW

May Target Challenge:

Easy (Small Telescopes):

- NGC 3115 (Spindle Galaxy): Located in Sextans, this bright, elongated galaxy resembles a football. Easily visible with small telescopes under dark skies due to its high surface brightness.
- M108: An edge-on spiral galaxy near the Big Dipper in Ursa Major. Its faint, thin structure pairs well with the nearby Owl Nebula (M97) for a nice viewing combo in small scopes.

Challenge (Large Telescopes):

- NGC 4214: A faint, star-forming dwarf galaxy in Canes Venatici. Its low surface brightness and small size make it a tough target, requiring larger telescopes and dark skies to spot its patchy details.
- NGC 4449: An irregular galaxy in Canes Venatici, often called a "cosmic carnival" for its chaotic, starburst appearance. Large telescopes reveal its knotted structure and faint extensions.

Best Nights: May 1-7 and May 22-31, 2025, offer dark skies ideal for observing these galaxies, especially in areas with low light pollution.

Avoid: May 15-21, 2025, due to the full moon, which will wash out fainter objects like these galaxies.

Helpful Youtube channels

[AstroBackyard](#) – Excellent for beginner and intermediate astrophotographers, covering gear, imaging techniques, and post-processing.

[Nebula Photos](#) – Focuses on budget astrophotography, including DSLR and smartphone imaging.

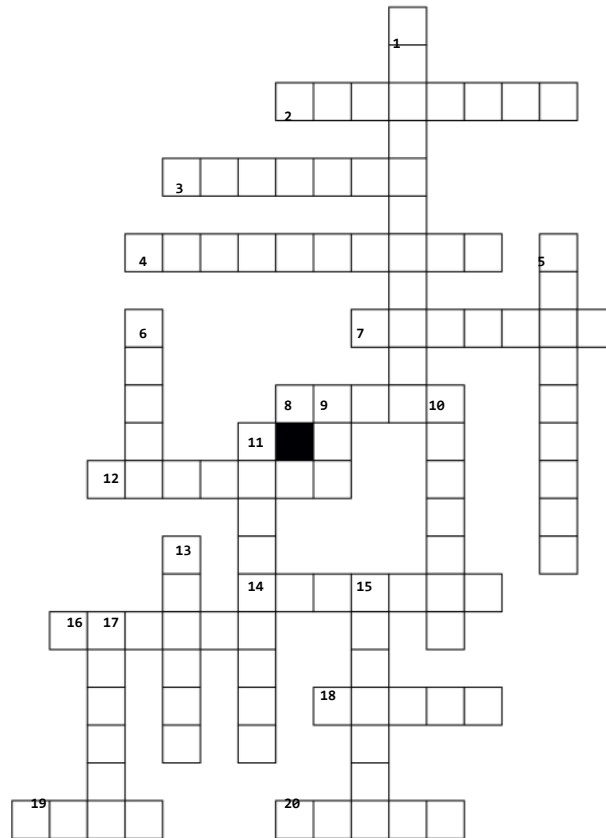
[Peter Zelinka](#) – Great for nightscape and deep-sky astrophotography techniques.

[Chuck's Astrophotography](#) – Covers deep-sky imaging, processing tutorials, and equipment reviews.

[NSN Webinar Series: JWST: Revealing the Invisible Universe](#) - Principal Science Visuals Developer Joseph DePasquale will provide some background on the observatory and the art and science of image processing that reveals the inherent beauty of the infrared universe.

[Masterofpixinsight](#)-Masters of PixInsight is an educational platform dedicated to teaching astrophotographers how to effectively use PixInsight for deep-sky image processing.

Lunar Mysteries: Explore the mysteries of Earth's closest celestial neighbor



Across

- 2.** Layer of loose, fragmented material covering the Moon's surface
- 3.** Passage of the Moon across Earth's sky or a telescope's view
- 4.** Scientific study of the Moon's geology
- 7.** Moon phase when more than half is illuminated but not full
- 8.** Ocean movements influenced by lunar gravity
- 12.** Hemisphere of the Moon not visible from Earth
- 14.** Current NASA program aiming to return humans to the Moon
- 16.** Dark volcanic rock common on lunar maria
- 18.** Long, narrow valley or trench on the lunar surface
- 19.** Earth's natural satellite
- 20.** Lunar rock type rich in potassium, rare earth elements, and phosphorus

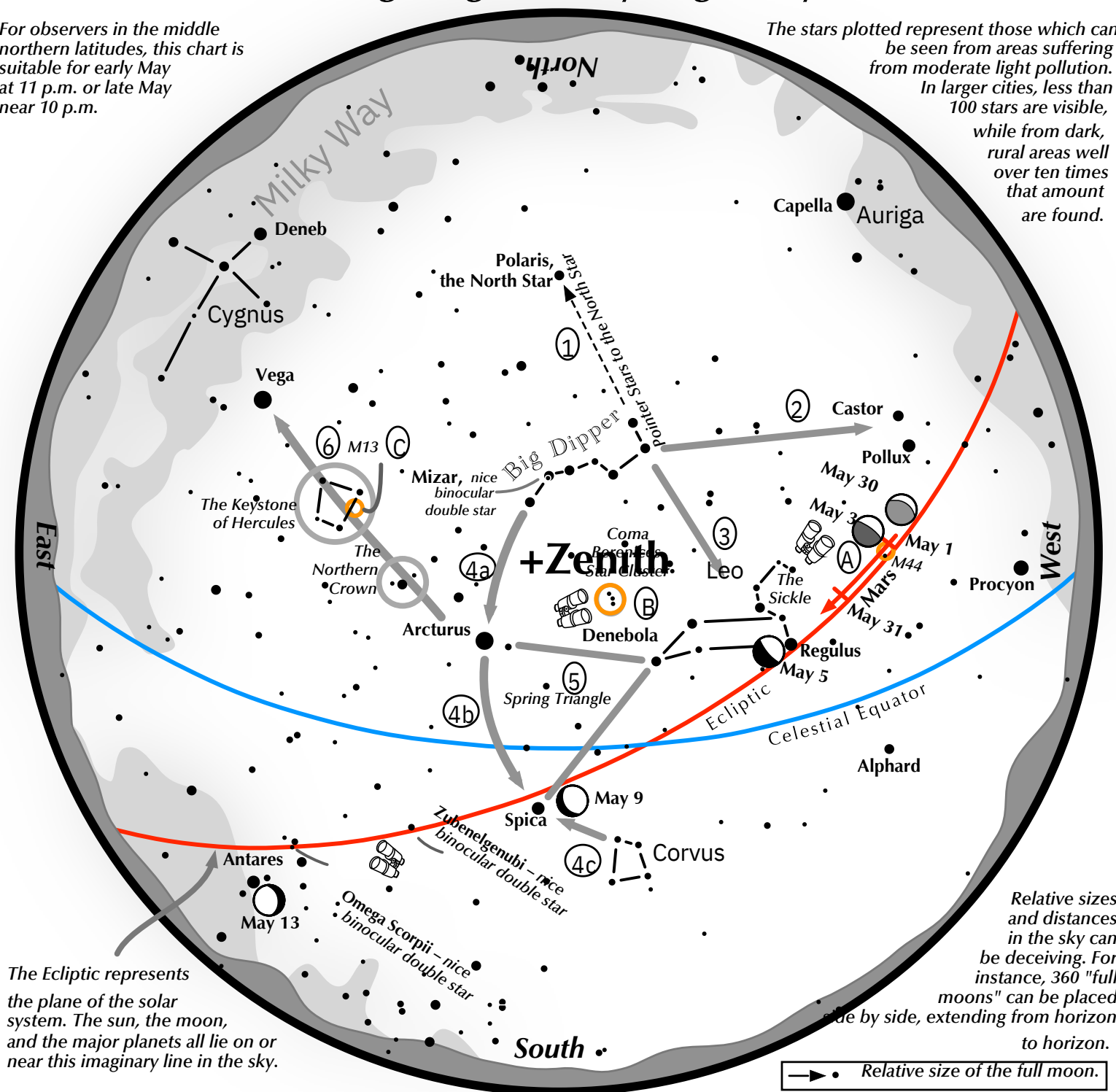
Down

- 1.** Light-colored rock dominating the lunar highlands
- 5.** Target region for future lunar bases due to water ice deposits
- 6.** Dark, flat plains on the Moon formed by ancient lava flows
- 9.** Frozen water detected in shadowed lunar craters
- 10.** 29.5-day cycle between identical Moon phases
- 11.** Wobbling motion allowing us to see slightly more than half the Moon
- 13.** Bowl-shaped depression formed by meteor impacts
- 15.** Event when Earth or Moon blocks sunlight from the other
- 17.** NASA program that landed humans on the Moon

Navigating the May Night Sky

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.



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 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.



Member Astro Images-Lunar Eclipse

MARK SAVAN

COSMIC BAT - LDN 43
TAKEN WITH STELLARVUE SVX130 REFRACTOR: ASI2600MM
CAMERA; 17 HOURS LRGB EXPOSURE



RUZA SABELJA

NGC2244



MARK JOHNSTON

NGC4565 FROM THE CHIRICAHUA ASTRONOMY
COMPLEX

CYRUS MOUSAVI

NNGC6992EASTVEILNEBULA STACKED SIRIL
GRAXPERT SIRIL GIMP



7 Telescope Targets for This Month

Each month we feature 7 good targets for small telescopes that should be visible in the evening

1. M51 The Whirlpool Galaxy Possibly the finest example of a face-on spiral galaxy
2. Cor Caroli The brightest star in Canes Venatici is also an Orange/Blue double star
3. NGC 5139 Omega Centauri By far the most spectacular globular cluster in the night sky, it barely scrapes above the horizon in Arizona in the south. But it's worth looking for, I have even seen it from Cave Creek looking south through the Phoenix sky glow with a 5" telescope.
4. 24 Com Yellow/blue binary star in Coma Berenices
5. NGC4565 Largest edgewise galaxy visible from Earth
6. M104 the Sombrero Galaxy Third brightest galaxy visible from Earth. Look for the dust lane bisecting the galaxy
7. Stargate cluster Fascinating asterism featuring a triangle of stars inside a triangle of stars in the constellation Corvus

Star Party Targets

- Planets: Venus (evening, west), Jupiter (evening, high), Saturn (pre-dawn, southeast), Mars (after midnight, east), Mercury (mid-May, low west after sunset).
- Deep-Sky Objects: Virgo Cluster (M87, M84, M86), Leo Triplet (M65, M66, NGC 3628), M51 (Whirlpool Galaxy), M13 (Hercules Cluster), M81/M82 (Bode's/Cigar Galaxies), M104 (Sombrero Galaxy), M3 (globular cluster), NGC 4565 (Needle Galaxy), M94, M97 (Owl Nebula), M44 (Beehive Cluster), Double Cluster (NGC 869/884).
- Stars: Arcturus (Boötes), Regulus (Leo).
- Event: Eta Aquariid Meteor Shower (peaks May 5–6, ~30 meteors/hour, pre-dawn).
- Constellations:
 - Leo: Southwest, with Regulus; Leo Triplet.
 - Virgo: South, with Spica; Virgo Cluster, M104.
 - Ursa Major: Overhead, Big Dipper; M81/M82, M97.
 - Boötes: East, Arcturus; M3.
 - Canes Venatici: Near Ursa Major; M51, M3, M94.

Perfect for star parties, offering easy and challenging targets. Use binoculars or a telescope for best views under dark skies. 🌌



Mare Orientale

... this most astounding impact basin is only partially seen

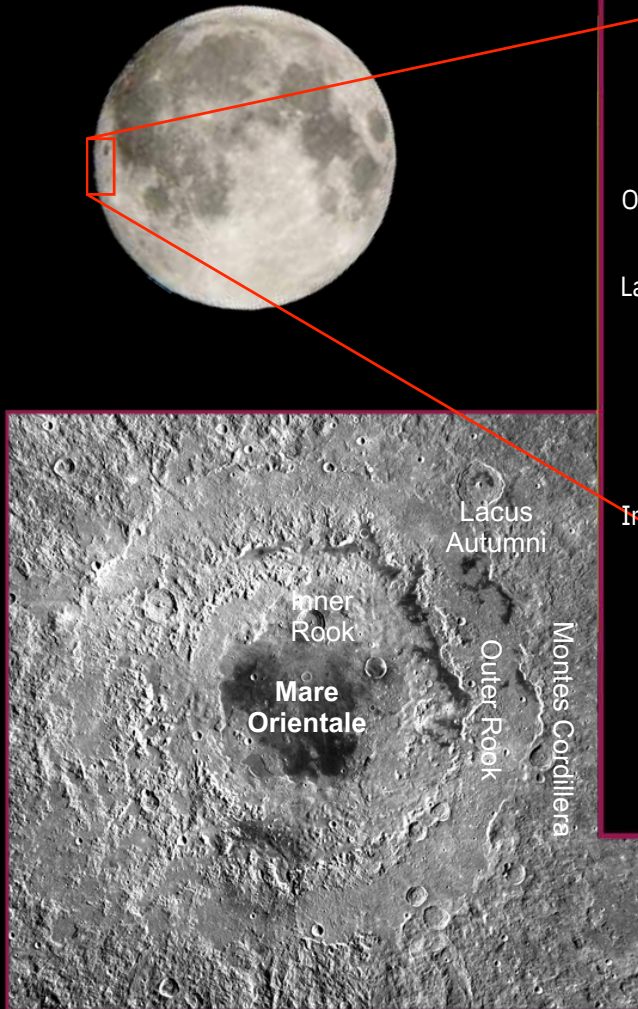
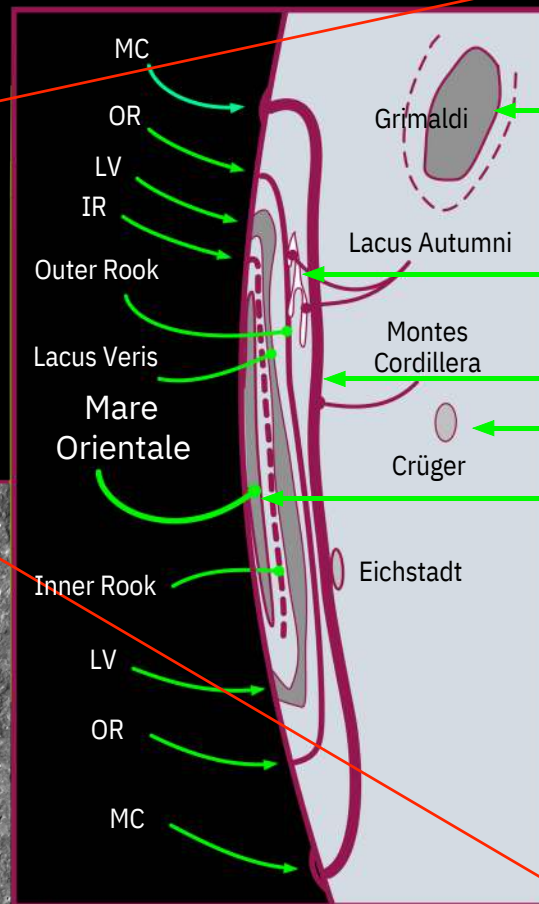


image: NASA/GSFC/ Arizona State University



Mare Orientale

Best seen in 2025

the mornings around May 18, June 18, and July 16

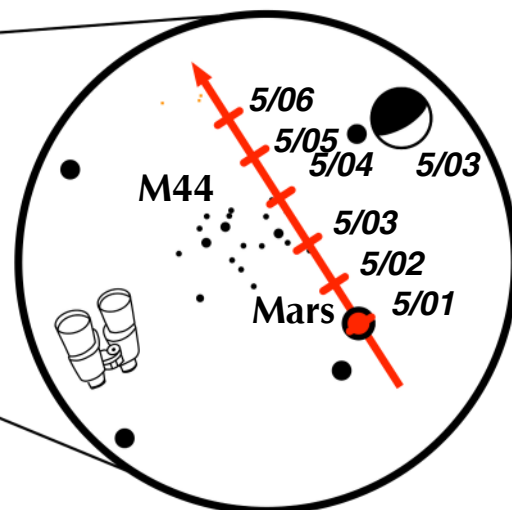
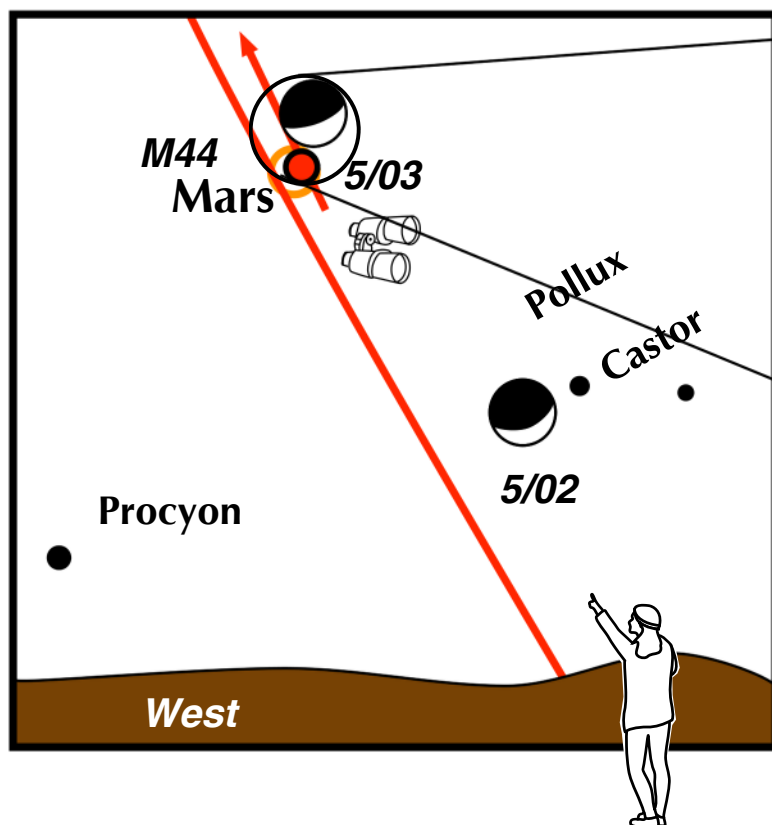
A good viewing of Mare Orientale requires that the Moon be at or near maximum western libration. This happens on three, four, or five days in some, but not all months. Of course, it should not hide in the lunar night, which immediately eliminates fifteen days each month. The three mornings leading up to new Moon are also poor times because the waning thin crescent lies too close to the horizon to give a sharp enough image for a clear, meaningful view.

As a result, opportunities for studying Mare Orientale are infrequent, occurring on fewer than twenty days each year. Generally, four months running present three, four, or five good opportunities each, followed by a string of nine or ten months that present no suitable occasions for viewing it. And then there is the weather!

Identifying Orientale's fascinating features demands steady seeing and moderate magnification.



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.



This article is distributed by NASA's Night Sky Network (NSN).

The NSN program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit go.nasa.gov/nightskynetwork to find local clubs, events, and more!

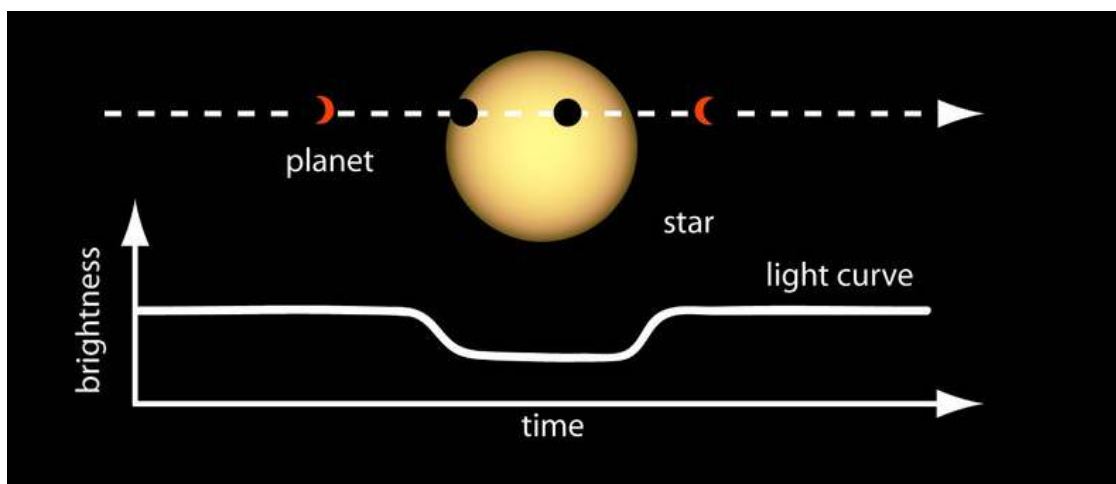
May's Night Sky Notes: How Do We Find Exoplanets?

By: Dave Prosper

Updated by: Kat Troche

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

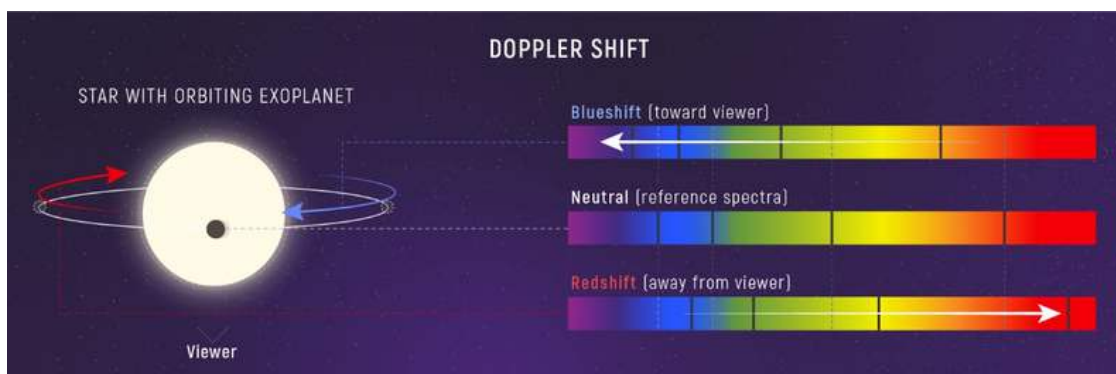


A planet passing in front of its parent star creates a drop in the star's apparent brightness, called a transit. Exoplanet Watch participants can look for transits in data from ground-based telescopes, helping scientists refine measurements of the length of a planet's orbit around its star. Credit: NASA's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

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, a transit is 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



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)

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 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 measuring 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 atmospheres for potential biosignatures!

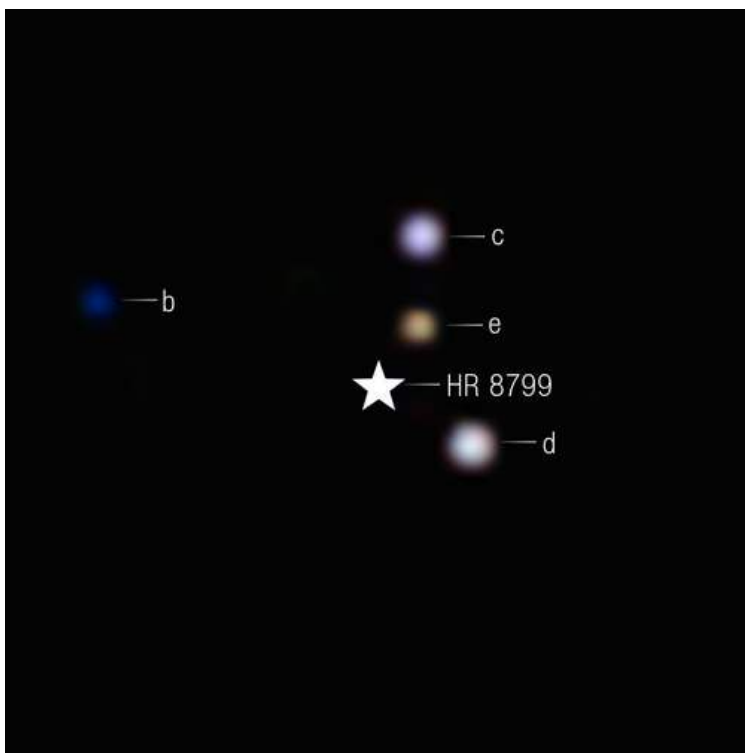


Image taken by the James Webb Space Telescope of four exoplanets orbiting HR 8799. Credit: NASA, ESA, CSA, STScI, Laurent Pueyo (STScI), William Balmer (JHU), Marshall Perrin (STScI)

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.

Helpful Astronomy Websites

by Mark Johnston

The following websites are great free resources to help you plan and enjoy your astronomy adventures

Astromart: astromart.com/

This is one of the top two sites for buying and selling used astronomy gear, product reviews, and forums where you can discuss any aspect of astronomy with other enthusiasts. A small fee is required.

Astrometry.net: <https://nova.astrometry.net/>

This site will take any astronomy image you send it (galaxy, starfield, nebula, etc) and then tell you what it is and where it is in the sky.

Astronomy Tools: astronomy.tools/calculators/field_of_view/

This site has a lot of capabilities but I use it primarily to figure out how a target (e.g. the Helix nebula) will look in my eyepiece or astronomy camera. You pick your scope, camera, eyepiece and target and the site does the rest.

Astrospheric: www.astrospheric.com/

Probably the best short term astronomy weather forecasting tool, providing predictions of clouds, transparency and seeing.

Clear Sky Charts: www.cleardarksky.com/

Excellent source of astronomy seeing conditions forecast. Also a great tool for finding observing sites with lower light pollution.

Cloudynights: www.cloudynights.com/

This is one of the top two sites for buying and selling used astronomy gear, product reviews, and forums where you can discuss any aspect of astronomy with other enthusiasts. Free.

Dark site finder: darksitefinder.com/map/

Great website for finding a dark observing location.

Heavens above: heavens-above.com/

Top site for predicting naked eye observations of satellites. See when the ISS is visible in your neighborhood!

Jupiter transits: shallowsky.com/jupiter/

For anyone with a small telescope, this is a great site. You can find out when the Great Red Spot and Jupiter's satellite transits are visible.

Solar Dynamic Observatory (SDO): <https://sdo.gsfc.nasa.gov/data/>

Find out how the Sun looks right now, at various wavelengths. If you own a solar telescope, this site coupled with Astrospheric is all you need to plan fabulous solar observing!

Starzonia: <https://starizona.com/>

Astronomy store located in Tucson, Arizona. They specialize in a wide range of astronomy equipment and accessories, catering to both amateur and professional astronomers. Their offerings include telescopes, cameras, filters, and eyepieces, among other products. Knowledgeable staff and passion for astronomy.

Telescopius: telescopius.com/

This site is very helpful in planning an observing evening. It will tell you when any particular target is rising and setting and when is the best time to observe it. This allows you to sequence your observing in a planned manner.

Used equipment for sale

Duration: Ads run for 3 months and may be renewed if submitted by the deadline and space permits.

Cost: Ads are FREE for members only. Equipment Requirements: All items must be in good working order.

Acceptable items include books, star charts, telescopes, eyepieces, finder scopes, binoculars, lasers, and other astronomy-related gear.

Submission Details: Email the following information to editor@pasaz.org: **Make *Model *Description (Under 100 words-include a link to the manufacturer's site if available) *Price *Contact Information *Preferred Contact Method(Email or phone) *Approximate Location*

PAS is not responsible for the ads and does not guarantee the quality of the items for sale. PAS reminds everyone, you purchase at your own risk, so do your research beforehand.

Description: Obsession 18" f/4 UC with Feather Touch Focuser, Argo Navis (factory installed), Shroud, Telrad

-Purchased the equipment 3 years ago, but have not used the scope in a year having moved from visual to imaging. At 65 years old with the onset of cataracts imaging is a more satisfying pursuit to me now. I also have the Paracorr, 21mm, 13mm Ethos eyepieces which the purchaser may elect to buy as well (priced separately)

Price: \$8,000

Contact Information: Toby Patton

Preferred Contact Method: flyfishman2010@gmail.com

NEW

SPECIAL OFFER

PAS offer: This is a first come, first served offer. Review the list. Decide what you want. Email stuartbrackney@pasaz.org what you want. He will set up a day/time for you to come to his location to purchase.

Bring your check payable to Phoenix Astronomical Society or cash ... no credit cards please.



Explore Scientific AR102 with Tripod

- 102mm Doublet Refractor
- 2" Eyepiece adapter
- Alt-Az manual mount

Member Price: \$400



Celestron 6" AstroMaster

- 6" Newtonian Telescope – OTA only

Member Price: \$50



Meade ETX-70

- 70mm Refracting Go-To Telescope
- 1.25" Eyepiece adapter
- Battery operated motorized mount
- With carry case

Member Price: \$70



Celestron Powerseeker 127

- 127mm Newtonian Telescope
- 2" Eyepiece adapter
- German equatorial mount
- With tripod

Member Price: \$50

Celestron 6" F/4 Newtonian Astrograph Telescope

- Fast 6"-aperture reflector lets you take short exposures with bright, high-resolution results
- Precise 2" dual-speed (10:1) linear-bearing Crayford focuser lies 7" back in the optical tube to block stray light and boost contrast
- Compact 22.5" length and light 12.7 lb. assembled weight doesn't require an enormous mount
- Includes two heavy-duty hinged tube rings, 8x50 finder scope, dovetail mounting bar, and more

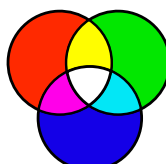
Member Price: \$250



Celestron 8" Schmidt-Cassegrain

- 8" Telescope (classic Orange Tube)
- Alt-Az mount

Member Price: \$50



Various Filters – 1.25"

Red, Yellow, Blue, Green, Multiple O3 filters

Member Price: \$100

Telescope Loan Program

The PAS Telescope Loan Program provides PAS active members access to various donated telescopes and accessories to enhance their learning of visual astronomy as well as astrophotography.

Check-out Process: The entire PAS inventory of telescopes is available for active members to use. Some telescopes require completion of a training program, others do not. Several of the loaner telescopes represent a significant dollar value. In certain cases, the PAS member will be asked to provide credit card information as insurance against potential damage or loss.

A kit of eyepieces and accessories is available for all loaner telescopes if needed. There is also a special kit of advanced 2" eyepieces available for loan as well as advanced finder scopes. Laser collimation tools are also available for loan if needed.

Loan periods are for a maximum of one month. However, longer periods may be granted in special cases.

All telescope equipment and accessories must be picked up at the PAS storage facility and delivered back to the facility by the end of the loaner period. If you wish to check out one of PAS's telescopes, send an email to telescope@pasaz.org with the following information:

- Full Name
- Email Address
- Desired Telescope and/or accessory kit
- Check out date
- Check in date
- Additional information as needed

ZWO SeeStar S50

Coronado Personal Solar Telescope (PST)

Orion SkyQuest XT-10 - 10" Dobsonian

Orion Skyquest XT-8 – 8" Dobsonian

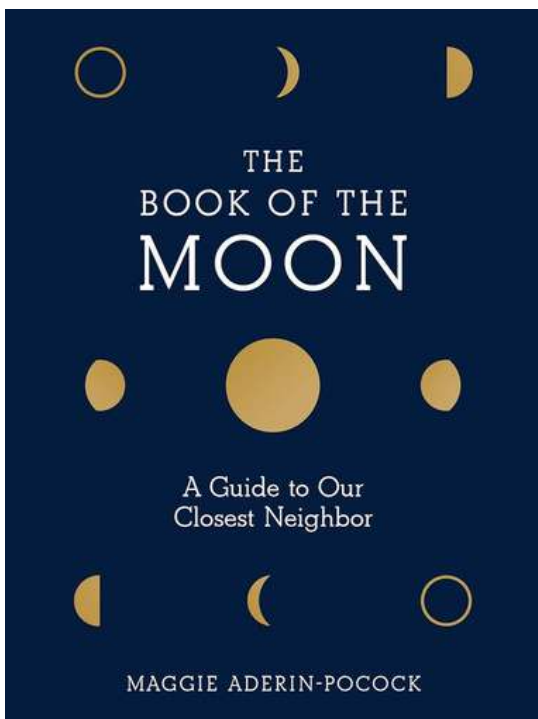
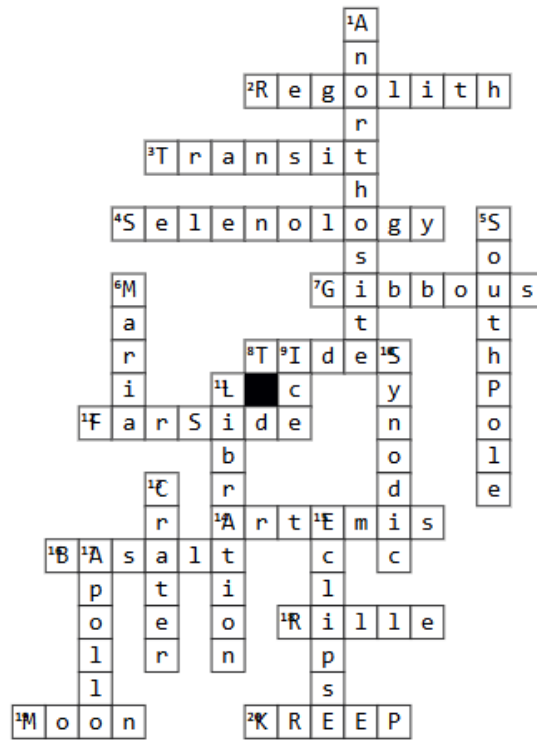
Meade ETX-70 Go-To Refractor

Sky-Watcher – 10" Collapsible Motorized Dobsonian

Accessory Kit #4 - Advanced Observing

Accessory Kit #5 – 1.25" Eyepieces & filters





Book Review: The Book of the Moon by Maggie Aderin-Pocock

Maggie Aderin-Pocock's *The Book of the Moon* is a captivating and comprehensive exploration of our closest celestial neighbor. Blending science, history, and mythology, the book covers everything from lunar formation and space missions to the Moon's cultural significance and future exploration plans.

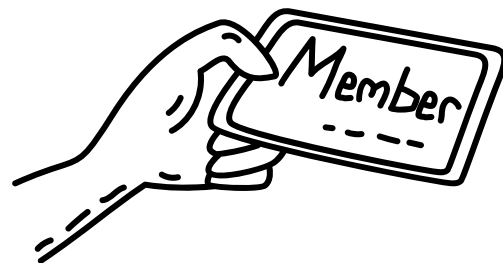
Written in an engaging and accessible style, Aderin-Pocock makes complex topics easy to understand, making this an excellent read for both casual readers and astronomy enthusiasts. The book also includes fascinating lunar facts, beautiful imagery, and insights into humanity's enduring fascination with the Moon.



Sign Up

Are you fascinated by the stars and eager to explore the wonders of the universe? Do you want to connect with like-minded individuals who share your passion for astronomy?

Hi everyone. Great news, your Board of Directors decided not to keep up with inflation. They did not raise your annual dues! More good news is, you can easily renew your membership by going to our public website www.pasaz.org, look on the left index column for the link "Join Our Society," click on that and there ya go. Your membership runs from 1 January to 31 December or the date you sign up to the end of the year. Our new Membership Manager, Mr. Richard Pipkin will assist you with any questions you may have: richardpipkin@pasaz.org



Benefits of PAS Membership

- Helping the Society accomplish its mission of astronomy outreach and education
- Contributing toward the Society's ability to provide college scholarships to astronomy students
- Participation on the Society's email distribution list
- Email receipt of the Society's monthly newsletter
- Participation in the Society's telescope loaner program
- Ability to serve as a teacher at the Society's telescope workshops
- Ability to serve as a mentor at the Society's star parties
- Ability to participate in the Astro Imaging Special Interest Group (ASIG)
- Ability to serve as a paid presenter in the Society's Star Tours program
- Opportunity to purchase used astronomical equipment at 50% off current value
- Access to club trips to the darkest Arizona sites and top observatories
- Connections with professional astronomers and researchers through guest lectures or workshops.
- Opportunities to hold leadership positions within the club, such as committee chairs or officers.

By becoming a member of the Phoenix Astronomical Society, you not only enhance your own astronomical journey but also contribute to a vibrant community that shares your passion. Together, let's explore the universe and inspire others to do the same.

Sign Up Now and Start Exploring the Cosmos with Us!



Phoenix Astronomical Society Contact Info

President	Stu Brackney	president@pasaz.org
Vice President	Mark Johnston	vicepresident@pasaz.org
Treasurer	Richard Sauerbrun	treasurer@pasaz.org
Secretary	Chris Ford	secretary@pasaz.org
Newsletter Editor	Richard Meyers	editor@pasaz.org
Member-at-Large	Ruza Sabelja	mal1@pasaz.org
Member-at-Large	Damon Finell	mal2@pasaz.org
Membership Manager	Richard Pipkin	membership@pasaz.org
Star Tours Manager	Andrew Stone	startours@pasaz.org
Event Manager	Ruza Sabelja	events@pasaz.org
Website Manager	Ed Skinner	webmaster@pasaz.org

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Star Tours Team 2025

These individuals have successfully met the qualifications to participate in Star Tours Events and receive compensation for their services. ★

Mark Johnston
Ted Blank
Mark Savan
Andrew Stone-Star Tours Manager
Richard Sauerbrun
Stu Brackney
Roger Anzini
Peter Turner
Chris Ford
Scott Adams
Ryder David
Alessandro Cavallaro
Richard Meyers

