

November 2025

Monthly Newsletter



PASTimes

A Publication of the Phoenix Astronomical Society

Supermoon October 6 2025

In this newsletter
you can expect:

[Message From
The President](#)

[Stargazing Made
Simple](#)

[The Moon:
Earth's Quiet
Partner in The
Story Of Life](#)

[247th AAS
Meeting](#)

[Navigating The
November Night
Sky](#)

[Other Suns: Eta
Persei](#)

[Member Images ,
Book Review and
much more](#)



MARK JOHNSTON



azastroguy
ASTRONOMY EDUCATION



**EVENT
REMINDER**

1-Public Star Party | 6 – Monthly Lecture Series: Not just stars... Star systems!
| 15-Mirror Lab and Kitt Peak Tour | 20 – Telescope Workshop
| 22 – Book Club | 24 – ASIG Meeting | 29-Public Star Party



Hi everyone!

Talk about busy. My oh my, your PAS leadership team is keeping themselves and some of you, very busy. Star Parties, in-state field trips to astronomy-related facilities, lectures, newsletter, book club, our ASIG meetings, (astrophotographers' special interest group), workshops, Star Tours reaching out making presentations to schools, corporate events, your leadership team making presentations at local events and ending up on local television news! Help us spread the word, PAS is for real and can be found on Facebook, Threads and Instagram and of course our much-improved website www.pasaz.org.

Enough bragging, on to more interesting updates. Your winter sky is becoming filled with objects to view, including two comets, more constellations and as always, the ever-present moon. So, take some time to plan your night viewing.

Broadcasting our lectures live: We are investigating a better system to broadcast our monthly lectures live to you and members of the public. Keep an eye out for specific instructions when you register for our lectures. Our goal is to make it easy to join and give you a presentation with high-quality audio and video. Pay close attention to future instructions for our monthly lecture series.

HELP: I am still looking for a volunteer to help with our history file. This organization was founded in 1948, however for the past few years we have not had our history updated. Help me. stuartbrackney@pasaz.org

Suggestions: Your suggestions. We want to hear from you. Send them to us, your leadership team. Without your guidance, we can easily miss the mark of giving you what you want from PAS.

Clear skies everyone...they belong to you

Stuart Brackney



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NOVEMBER 2025 UPCOMING EVENTS SCHEDULE



6/
THUR

MONTHLY LECTURE SERIES

Not just stars... Star systems!



1 &
29/
SAT

PUBLIC STAR PARTY

Our Star Parties are held at one of our public star party sites which have an excellent view of the night sky. Parties begin before sunset so equipment setup may be completed in the daylight.



15/
SAT

CARIS MIRROR LAB AND KITT PEAK

Private tour of the Caris Mirror Lab in Tucson and then night tour of Kitt Peak National Observatory



20/
THUR

TELESCOPE WORKSHOP

101/201

101 What to buy
201 How to operate your telescope.



24/
MON

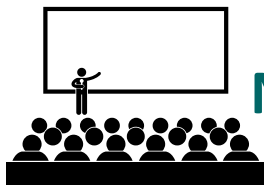
ASIG/ASTROIMAGING -

MEMBERS ONLY

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

**MORE
INFORMATION**

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.



November Lecture- Laura-May Abron

Topic: Not just stars... Star systems!

Summary: Born too late to explore earth, born too early to explore the galaxy.”? ..Not quite.

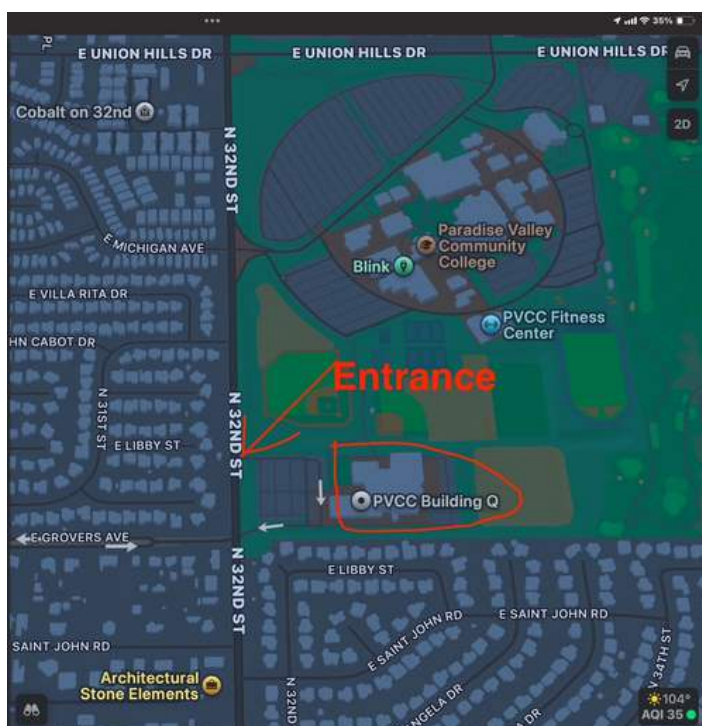
30 years after the discovery of the first exoplanet around a sun-like star, and 2,300 years since Epicurus waxed poetic about “the infinite number of the worlds”, we are privileged to live at the dawn of exoplanetary exploration. With missions and data aplenty, planets of all types and sizes have been ripe for the picking everywhere we look. And with the advent of the James Webb Space Telescope, we can now analyze their atmospheres like never before.. and more missions are yet to come!

Bio: Laura-May Abron is a French-US astronomer, science communicator and artist from Paris. She studied art at the University of London and astrophysics at the Paris Observatory, has produced and hosted multiple science shows, and currently works at Griffith Observatory. Laura-May is involved in research projects related to asteroids like YR4 and comets like 3I/Atlas. She is the current Astronomer in Residence for the Grand Canyon National Park. Her science art has been featured by NASA, New Scientist, Spaceweather.com, astronomy publications, and galleries internationally. In 2023 Laura-May became the first person to paint an active volcanic eruption in situ with hot lava. In her free time, she chases tornadoes, sunspots, auroras, volcanoes and eclipses.



NEW LOCATION

All of our PAS events at Paradise Valley Community College are now being held in **Building Q room 120A**. This is the former Maricopa County Library building south of the PVCC athletic fields on 32nd street.



Here's a recap of last month's Meeting

October Lecture-Amy Oliver Topic: Southern Arizona's Smithsonian Observatory

Summary: Join Amy C. Oliver, FRAS for a deep dive into the Smithsonian Institution's Fred Lawrence Whipple Observatory. Home to one of the largest single mirror telescopes on ground, the MMT and the only gamma-ray array in North America, the Whipple Observatory searches the visible and invisible Universe on roughly 300 clear nights to understand supernovae, galaxy behaviors, stellar metallicity, exoplanets, and TeV gamma rays.

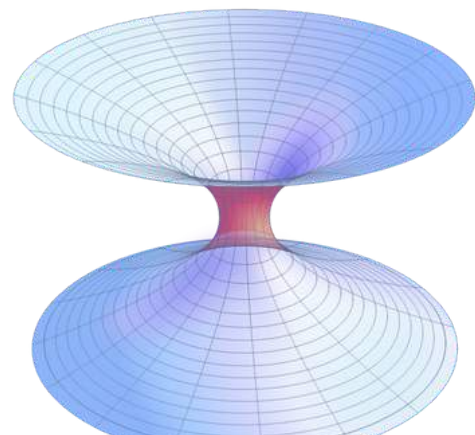
Mark Johnston spoke at the October PAS meeting on "Space exploration: Past and Future". He covered our journey to space from the first V2 rockets to today's reusable spacecraft. We saw video clips from the space race including President Kennedy's famous speech and Neil Armstrong first stepping on to the Moon. Then he discussed both current and proposed methods for interstellar travel, as well as theoretical methods including warp drive and wormholes.



Credit: Wikimedia commons



By AElfwine, CC BY-SA 3.0,
<https://commons.wikimedia.org/w/index.php?curid=185325>



Credit: Wikimedia commons



247TH MEETING OF THE AMERICAN ASTRONOMICAL SOCIETY
PHOENIX, ARIZONA 4–8 JANUARY 2026

The Super Bowl of Astronomical Sciences

Now Open to Amateur Astronomers

More than 3,600 attended last year's winter AAS meeting.

Space is limited, so don't miss your chance to attend North America's largest astronomical sciences event under the dark skies in Phoenix!

AAS Affiliate Members Save Over 80% on Registration Fees.

See below how S&T subscribers and astronomy club members qualify to become AAS Affiliate Members

The Largest Gathering of Astronomers in North America

This is your gateway to four incredible days filled with cutting-edge astronomical science, dynamic presentations, breakout sessions, press conferences showcasing the latest discoveries, and a bustling exhibit hall — past exhibitors include NASA, NSF, SETI, NOIRLab, STScI, and equipment manufacturers including PlaneWave, Observable Space, Diffraction Limited, FLI, Unistellar, and Stellarvue.

Save over 80% on your registration as an AAS Affiliate Member

As a Sky & Telescope subscriber or an astronomy club member, you have an exclusive opportunity to join the American Astronomical Society as an Affiliate Member and unlock discounted registration to the 247th AAS meeting in Phoenix. Affiliate Members also receive discounts on American Institute of Physics (AIP) publications, special rates on the Annual Review of Astronomy and Astrophysics, plus other great benefits.

AAS 247 Phoenix, Arizona, 4–8 January 2026 — Come for the Meeting, Stay for the Vacation

HELPFUL LINKS

[To register for AAS 247](#)

[To join AAS as an Affiliate Member](#)

[Register for AAS 247 as an Affiliate Member](#)



<https://aas.org/meetings/aas247/registration>

Why Attend?

The largest astronomical event worldwide

4 days, over 80 sessions featuring the latest astronomical discoveries, press conferences, and plenary sessions presented by the rock stars of astronomy, planetary science, solar science, historical astronomy, etc.

3,600+ professional astronomers

Universities, Planetariums, Museums, Private/Public Observatories, Private / Public Research Centers, companies involved in the space industry, federal agencies including NASA, NSF, plus more.

500+ amateur astronomers

We are partnering with astronomy clubs and organizations like yours, providing amateurs discounted access to the entire 4-day meeting and exhibit hall.

80+ Exhibitors

Featuring the latest greatest astronomical equipment including the Sky & Telescope Pavilion featuring: Celestron, PlaneWave, QHYCCD, FLI, ZWO, Stellarvue, Sky-Watcher and many more!

In the NEWS

Martian dust devils race at hurricane-speeds

Martian dust devils race at hurricane-speeds

Key takeaway: New research using deep-learning on thousands of images reveals that winds on Mars can reach up to ~160 km/h (≈ 44 m/s) — much stronger than previously thought. ([ScienceDaily](#))

What was done: Scientists analysed over 50,000 satellite images from European orbiters ExoMars Trace Gas Orbiter (via its CaSSIS camera) and Mars Express (via HRSC) to track dust devils and infer near-surface wind speeds. ([ScienceDaily](#))

Why it matters: These powerful winds help loft large amounts of dust into the Martian atmosphere, influencing its weather and climate; the findings also have implications for designing future landed missions. ([ScienceDaily](#))

Next steps: Researchers aim to carry out more targeted and coordinated observations of dust devils to refine models of Martian atmosphere and surface processes. ([ScienceDaily](#))



Image of a dust devil, whirlwind of dust that is blown across Mars' surface. Credit: CC BY SA 3.0 IGO ESA/TGO/CaSSIS for CaSSIS

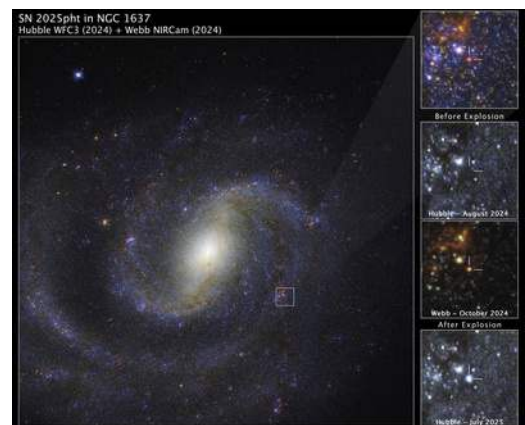
JWST Reveals a Doomed Star Hidden in Dust

Astronomers using the James Webb Space Telescope (JWST) have identified a red supergiant star moments before its explosive end, buried beneath a thick shroud of carbon-rich dust. The star, which later became supernova SN 2025pht in the galaxy NGC 1637, about 32 million light-years away, marks the first time a star of this kind has been directly observed before its death.

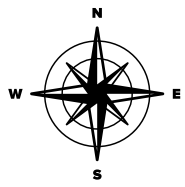
By comparing JWST's infrared data with archival images from the Hubble Space Telescope, researchers confirmed that the progenitor star had long been invisible in optical light—its brightness hidden by dense, carbon-laden dust. This breakthrough helps address the long-standing “red-supergiant problem,” where fewer bright red supergiant progenitors are detected than theoretical models predict.

The findings suggest that many massive stars may spend their final years cloaked in dust, escaping detection until they explode. JWST's powerful infrared vision is now allowing scientists to uncover these hidden giants, offering new insights into the final stages of stellar evolution and the complex processes that shape supernovae.

<https://www.universetoday.com/articles/the-jwst-spots-a-doomed-star-entombed-in-thick-dust>



This image shows a combined JWST and Hubble view of spiral galaxy NGC 1637, with the region of interest in the top right. The remaining three panels show a detailed view of a red supergiant star before and after it exploded. The star is not visible in the Hubble image before the explosion, but appears in the JWST image. The July 2025 view from Hubble shows the glowing aftermath of the explosion. Image Credit: NASA, ESA, CSA, STScI, Charles Kilpatrick (Northwestern), Aswin Suresh (Northwestern)



Summary of Outreach Events

Star Tours & Outreach events

4th International Observe the Moon Night

18th Arizona Science Center

20th Sanctuary Resort

21st Peoria Flex

Five members of PAS attended a major event at the Az Science Center on Saturday October 18th

On the occasion of the grand opening of their new Dorrance Dome, a planetarium, the Arizona Science Center invited our PAS team to share in the event with a mini lecture on the purpose of PAS and an information table. We also demonstrated a solar telescope outside of the building aimed at midday sun. Team members representing PAS, pictured below were Ted Blank, Scott Adams, Carla Meeske, Stu Brackney, PAS president and Mark Johnston, VP of PAS.





StarTours by Andrew Stone

Objects to View in November 2025						
Object Name	Object Type	Constellation	Visual Magnitude	Apparent Size	Rise Time	Set Time
C/2025 A6 (Lemmon) 	Comet	Various	5	5'	10:30 AM	9:00 PM
Saturn 	Planet	Aquarius	0.6	18" (disk)	4:00 PM	3:30 AM
Uranus	Planet	Taurus	5.7	2.3" (disk)	7:00 PM	9:00 AM
Neptune	Planet	Pisces	7.8	4" (disk)	4:00 PM	4:00 AM
Jupiter	Planet	Gemini	-2.4	45" (disk)	11:00 PM	1:00 PM
M13: Great Globular Cluster	Globular Cluster	Hercules	5.8	20'	6:30 AM	10:30 PM
M92	Globular Cluster	Hercules	6.5	14'	6:30 AM	11:45 PM
M15	Globular Cluster	Pegasus	6.2	12'	1:30 PM	12:30 AM
M2	Globular Cluster	Aquarius	6.5	16'	1:30 PM	1:30 AM
M42 (Orion Nebula)	Emission Nebula	Orion	4	66' x 60'	9:00 PM	12:30 PM
M27 (Dumbbell Nebula)	Planetary Nebula	Vulpecula	7.5	8'	11:00 AM	1:00 AM
M57 (Ring Nebula)	Planetary Nebula	Lyra	8.8	1.4'	9:00 AM	12:30 AM
NGC 7009: Saturn Nebula	Planetary Nebula	Aquarius	8	0.5'	1:30 PM	12:30 AM
NGC 6826 Blinking	Planetary Nebula	Cygnus	8.8	2.1'	8:00 AM	3:30 AM
NGC 7662 Snowball	Planetary Nebula	Andromedae	8.3	0.5'	1:00 PM	6:00 AM
M31 (Andromeda Galaxy)	Spiral Galaxy	Andromeda	3.4	180' x 60'	11:30 AM	2:30 AM
M33 (Triangulum Galaxy)	Spiral Galaxy	Triangulum	5.7	70' x 40'	1:00 PM	4:00 AM
M52	Open Cluster	Cassiopeia	6.9	13'	1:00 PM	2:30 AM
M103	Open Cluster	Cassiopeia	7.4	6'	2:30 PM	4:00 AM
Double Cluster (NGC 869/884)	Open Cluster	Perseus	4.3 & 4.4	30'	3:30 PM	7:30 AM
M45: Pleiades	Open Cluster	Taurus	1.6	1.5°	5:00 PM	9:00 AM
M34	Open Cluster	Perseus	5.5	35'	3:30 PM	6:30 AM
M36	Open Cluster	Auriga	6	12'	7:30 PM	11:30 AM
M37	Open Cluster	Auriga	5.6	24'	7:00 PM	11:00 AM
M38	Open Cluster	Auriga	6.4	21'	8:00 PM	12:00 PM
NGC 457: Owl Cluster	Open Cluster	Cassiopeia	6.4	13'	3:00 PM	5:00 AM
Albireo	Double Star	Cygnus	3.1 / 5.1	35"	10:00 AM	1:00 AM
Epsilon Lyrae Double-Double	Double Star	Lyra	4.7 / 4.7	3.5'	8:00 AM	1:00 AM
Almach (Gamma Andromedae)	Double Star	Andromedae	2.3 / 5.1	9.6"	4:00 PM	8:00 AM
Achird Eta Cassiopeiae	Double Star	Cassiopeia	3.5 / 7.5	12'	N/A	N/A



Fun fact this "Teddy Bear Nebula" in its actual red hydrogen looks like a character from a PC survival horror game called "Five Nights at Freddy's".

Stargazing Made Simple: How Smart Telescopes Are Opening the Cosmos to Seniors

by By Lucas Tam, Arizona College Prep High School (lecture series support from CD Tam)

By the time the first stars appeared over Scottsdale, something remarkable had already happened. Inside the Via Linda Senior Center, a group of older adults—some with decades of curiosity about the night sky, others just discovering it—had begun their journey into astronomy. Not through dusty textbooks or complex charts, but through a sleek, intelligent device that did most of the work for them: a smart telescope. What started as a simple workshop turned into a revelation. Within ninety minutes, participants were viewing Saturn’s rings, the Orion Nebula, and distant galaxies—many for the first time. The experience challenged long-held assumptions about who astronomy is for and how accessible it can be.

The Old Way: Manual Telescopes and the Art of Observation

For centuries, astronomy has been the domain of patient, technically skilled observers. Manual telescopes—whether refractors with lenses or reflectors with mirrors—require knowledge, dexterity, and time. You need to align the scope, track celestial motion, and interpret inverted images. For serious hobbyists, this process is part of the joy. But for many seniors, it’s a barrier.

Manual scopes also demand physical effort: carrying equipment, bending to look through eyepieces, and traveling to dark-sky locations. For those with arthritis, back pain, or mobility issues, these requirements can be prohibitive.

Yet manual telescopes offer something irreplaceable: a direct connection to the sky. They teach you how light behaves, how to navigate constellations, and how to find faint objects through patient searching. The satisfaction of locating Jupiter on your own is real—and deeply rewarding.

The New Way: Smart Telescopes and Instant Access

Enter the smart telescope. Devices like the Seestar S50 are revolutionizing amateur astronomy by removing the steep learning curve. These telescopes align themselves automatically using starfield recognition. You simply turn it on, point it roughly skyward, and let the software do the rest.

Once aligned, the telescope tracks objects as Earth rotates, keeping them centered without manual adjustment. It captures dozens of short-exposure images and stacks them using onboard algorithms, revealing faint details that would otherwise be invisible.

This process, known as computational stacking, is transformative. Instead of relying on a single long exposure, the telescope takes many short ones and combines them to reduce noise and enhance clarity—making faint galaxies and nebulae pop into view.

Even more impressive is the use of AI-enhanced imaging. The telescope’s software doesn’t just stack images—it analyzes them in real time, adjusting contrast, brightness, and color balance. Some systems even use machine learning trained on thousands of astronomical images to recognize specific deep-sky objects and optimize how they’re displayed. The result? Stunning, high-contrast images of deep-sky objects—delivered in minutes.

Even better, the entire system is controlled via a smartphone app. Seniors can sit comfortably indoors, browse a catalog of thousands of celestial objects, and view live images on their screen. No bending, no squinting, no frustration.

A Tale of Two Telescopes

During the workshop, participants had the chance to use both manual and smart telescopes. The contrast was striking. Some enjoyed the tactile experience of adjusting a Dobsonian reflector, learning how to find the Moon or Mars manually. Others were captivated by the smart telescope’s instant results and ease of use.

One participant, who struggled with arthritis, found the manual scope nearly impossible to operate. But with the smart telescope, she was able to control everything from her phone and view the Andromeda Galaxy in detail—something she’d dreamed of for years.

Another attendee raised a thoughtful question: “Are these enhanced images real?” It’s a valid concern. Smart telescopes use computational imaging, which means the colors and contrast are algorithmically adjusted. But the features revealed—nebulae, star clusters, planetary rings—are absolutely real. The technology simply makes them visible.

And perhaps the most touching moment came when one participant quietly said, “I’ve always loved the stars, but I never thought I’d actually see them like this. It feels like they’re finally within reach.”

Why This Matters

Smart telescopes aren't just gadgets—they're gateways. For older adults, they remove three major barriers to astronomy:

1. Knowledge: No need to memorize star charts or understand optics.
2. Physical Demand: No heavy lifting or awkward eyepiece angles.
3. Time Investment: No hours spent searching for faint objects.

Instead, seniors can explore the universe quickly, comfortably, and meaningfully. They can share discoveries with friends, revisit saved images, and learn about celestial phenomena without needing to become expert astronomers.

Looking Ahead

As smart telescope technology improves, expect sharper images, better AI enhancements, and even augmented reality overlays. Prices will drop, making these devices more accessible to senior centers, libraries, and community groups. Imagine a future where seniors gather weekly to explore the cosmos together—no travel, no technical hurdles, just wonder. That future is already beginning.

Conclusion

A New Path to the Stars Manual telescopes will always have their place. They teach discipline, skill, and a deep connection to the sky. But smart telescopes offer something equally valuable: access. For someone who's spent a lifetime wondering what Saturn's rings look like, seeing them clearly from a backyard in minutes is transformative. It's not about replacing tradition—it's about expanding possibility. The stars have always been there. Now, thanks to smart telescopes, more people than ever can finally see them

Stargazing Tips and Tricks

by Richard Meyers

Stargazing is one of the most rewarding hobbies—no special equipment required, just curiosity and a clear night sky. To get started, find a dark location away from city lights. The farther you are from light pollution, the more stars and celestial objects you'll see. Bring a red flashlight to preserve your night vision and allow your eyes at least 20 minutes to adjust to the darkness.

Start by learning the major constellations such as Orion, Ursa Major, and Cassiopeia. These "anchor" patterns help you locate other stars and deep-sky objects. Free mobile apps like SkySafari or Stellarium can overlay the constellations in real time, making it easy to navigate the sky.

A simple pair of binoculars is perfect for beginners—they reveal craters on the Moon, Jupiter's moons, and the Andromeda Galaxy. Check weather forecasts and moon phases before heading out; a new moon night offers the best visibility.

Finally, keep a stargazing journal. Note the constellations, planets, and meteor showers you spot. Over time, you'll notice how the sky changes with the seasons. With patience and practice, you'll not only recognize constellations—you'll begin to feel at home among the stars.

The Moon: Earth's Quiet Partner in the Story of Life

by Cyrus Mousavi

If Earth were a grand stage for life, the Moon would be the stage manager — unseen but indispensable. While the Sun bathes us in energy and warmth, the Moon does the behind-the-scenes work: keeping our planet steady, the oceans breathing, and the climate civilized. Without that pale companion overhead, Earth might have been just another unstable, storm-ridden rock spinning its way to chaos.

Let's rewind 4.5 billion years to the cosmic drama that started it all.

The Day Earth Met Theia: Back in the early days of the solar system, the neighborhood was rough. Space was crowded with newborn planets crashing into each other like toddlers fighting over toys. One day, a Mars-sized protoplanet — we now call it *Theia* — slammed into the young Earth.

The collision was cataclysmic: mountains melted, oceans vaporized, and a chunk of molten Earth was blasted into orbit. Over time, that debris came together and cooled into our Moon.

Lunar rocks brought home by Apollo astronauts show that the Moon's composition closely matches Earth's outer layers — evidence of their violent shared origin. It wasn't just a cosmic accident; it was the beginning of a partnership that would shape everything that followed.

Keeping the Planet on Its Toes (and Tilt): Earth spins on an axis tilted about 23.5 degrees. That tilt gives us seasons — spring blossoms, autumn leaves, and ski seasons, all courtesy of geometry. But here's the kicker: without the Moon, that tilt could swing wildly over time.

Simulations suggest that a moonless Earth might wobble like a drunk top, veering between near-vertical (no seasons) and extreme (think tropical poles and frozen equator). Such chaotic shifts would have made stable climates — and stable ecosystems — nearly impossible.

The Moon's gravity acts like a cosmic stabilizer, damping those wobbles and keeping Earth's tilt more or less constant. Thanks to that, evolution had a calm, predictable playground to work with.

Tides: The Moon's Gentle Hand on the Oceans: Every time the tide rises and falls, you're seeing the Moon's gravitational pull in action. It's not just a poetic rhythm for beachgoers — tides have been one of evolution's greatest tools.

In Earth's early history, shallow tidal zones were nature's laboratory. The regular ebb and flow of water created environments that were alternately wet and dry, concentrating organic molecules and encouraging the complex chemistry that gave rise to life.

Even now, marine life dances to the Moon's rhythm: corals spawn during specific lunar phases, sea turtles time their nesting with the tides, and certain fish even migrate by moonlight. The Moon, it seems, not only moves oceans — it keeps time for life itself.

Slowing Down Earth's Spin: When Earth was young, it spun much faster — a single day lasted just five or six hours. Then the Moon stepped in, exerting a gentle but persistent drag on our rotation through gravitational tides.

Over billions of years, this "tidal braking" has slowed our planet's spin to today's 24-hour cycle. That extra time per day might seem trivial, but it created a stable rhythm of light and darkness, temperature, and photosynthesis.

Without that steady pace, Earth could have been a restless, wind-swept world spinning at breakneck speed — hardly the tranquil blue marble we call home.

The Light That Guided Life: Even the Moon's soft glow has shaped behavior on Earth. Before humans invented electricity, the lunar cycle was nature's nightlight — guiding hunters, navigators, and farmers. In the wild, many creatures still synchronize their activity with the Moon's phases: predators hunt by full moon, prey hide during it, and ocean life uses it as a celestial metronome.

The Moon's monthly rhythm has woven itself into biological clocks and human culture alike — from crop planting to mythmaking. Not bad for a rock that doesn't even shine by its own light.

Our Rare Cosmic Balance: Astronomers have noted that large moons like ours are rare among rocky planets. Most worlds either have none or have tiny ones that barely matter. The Moon's size, distance, and timing were all remarkably lucky — a cosmic coincidence that turned Earth from a violent, molten sphere into a stable, life-supporting oasis.

In short, Earth and Moon are partners in a delicate gravitational dance, each shaping the other over eons. The Moon keeps Earth balanced, slows its spin, stirs its oceans, and quietly sustains the conditions life depends on.

So the next time you look up at that glowing disk in the night sky, remember — it's not just a pretty face. It's Earth's lifelong companion, the silent guardian that made our world habitable. The poets got one thing right: the Moon really does make everything better!

Astroimaging Special Interest Group (ASIG)

Your astroimages have been stunning—each galaxy spiral and nebular glow pushes our group's passion deeper into the cosmos.

Monthly Target Challenge:

✨ Easy (Small Telescopes)

M31 – Andromeda Galaxy (Andromeda)

The grandest galaxy in the night sky and visible even to the naked eye under dark skies. Small scopes reveal its bright core and faint oval shape; look for its companions M32 and M110 nearby.

M45 – Pleiades (Taurus)

A beautiful open cluster of hot blue stars that sparkle like diamonds. Through binoculars or a small telescope, the cluster fills the field of view—perfect for beginners and outreach nights.

M42 – Orion Nebula (Orion)

Visible late in the month as Orion rises earlier. This glowing stellar nursery is bright even under suburban skies. Small scopes easily show its greenish core and the Trapezium star cluster inside.

👉 Challenge (Large Telescopes)

NGC 891 – Edge-on Spiral Galaxy (Andromeda)

A stunning edge-on galaxy with a dark dust lane bisecting its bright core. A great test of sky transparency and contrast—magnificent under dark skies.

NGC 2392 – Eskimo Nebula (Gemini)

A compact planetary nebula with a bright core and halo resembling a parka hood. Responds beautifully to higher magnification; try an O III filter to bring out structure.

NGC 1499 – California Nebula (Perseus)

A large, faint emission nebula best captured with wide-field imaging setups or viewed with a narrowband filter. Its elongated shape resembles the outline of California—perfect for astrophotographers.

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.

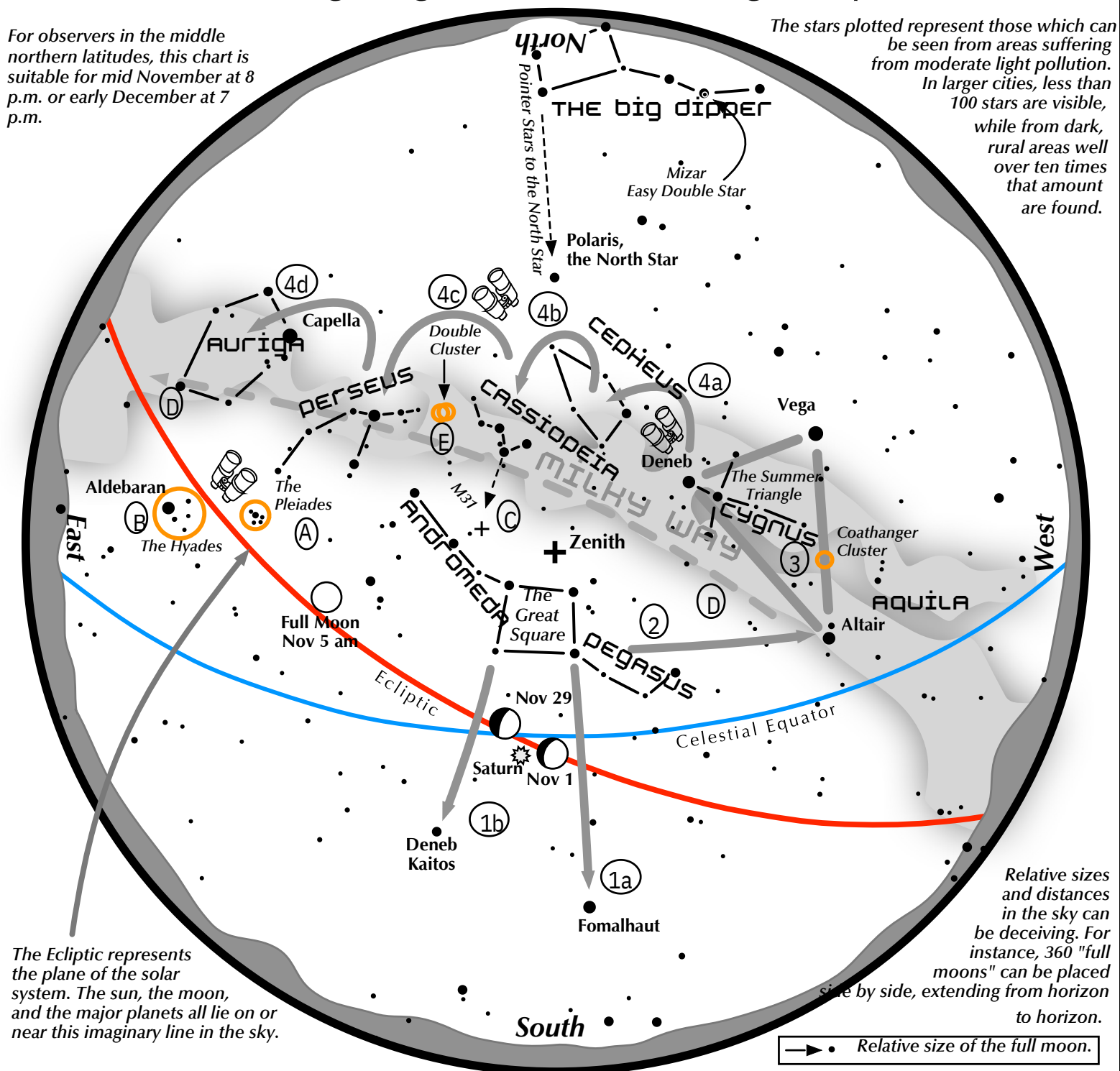
[Mastersofpixinsight](#)-Masters of PixInsight is an educational platform dedicated to teaching astrophotographers how to effectively use PixInsight for deep-sky image processing.

[20 Top TIPS for Better Astrophotography](#) Dylan O'Donnell Dylan covers both image acquisition as well as processing and provides some great tips for better images.

Navigating the November Night Sky

For observers in the middle northern latitudes, this chart is suitable for mid November at 8 p.m. or early December 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 November night sky: Simply start with what you know or with what you can easily find.

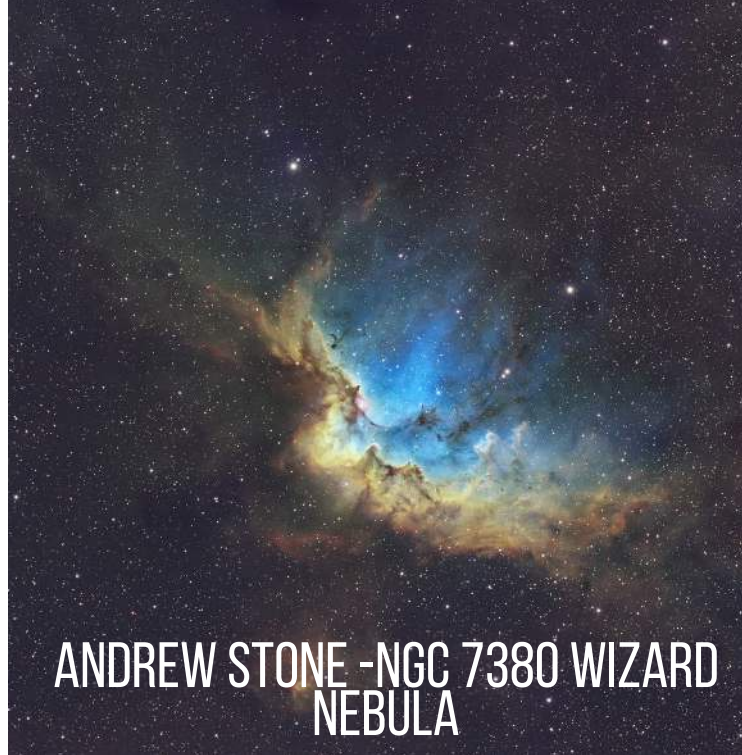
- 1 Face south. Almost overhead lies the "Great Square" with four stars about the same brightness as those of the Big Dipper. Extend a line southward following the Square's two westernmost stars. The line strikes Fomalhaut, the brightest star in the south. A line extending southward from the two easternmost stars, passes Deneb Kaitos, the second brightest star in the south.
- 2 Draw a line westward following the southern edge of the Square until it strikes Altair, part of the "Summer Triangle."
- 3 Locate Vega and Deneb, the other two stars of the Summer Triangle. Vega is its brightest member, while Deneb sits in the middle of the Milky Way.
- 4 Jump along the Milky Way from Deneb to Cepheus, which resembles the outline of a house. Continue jumping to the "W" of Cassiopeia, then to Perseus, and finally to Auriga with its bright star Capella.

Binocular Highlights

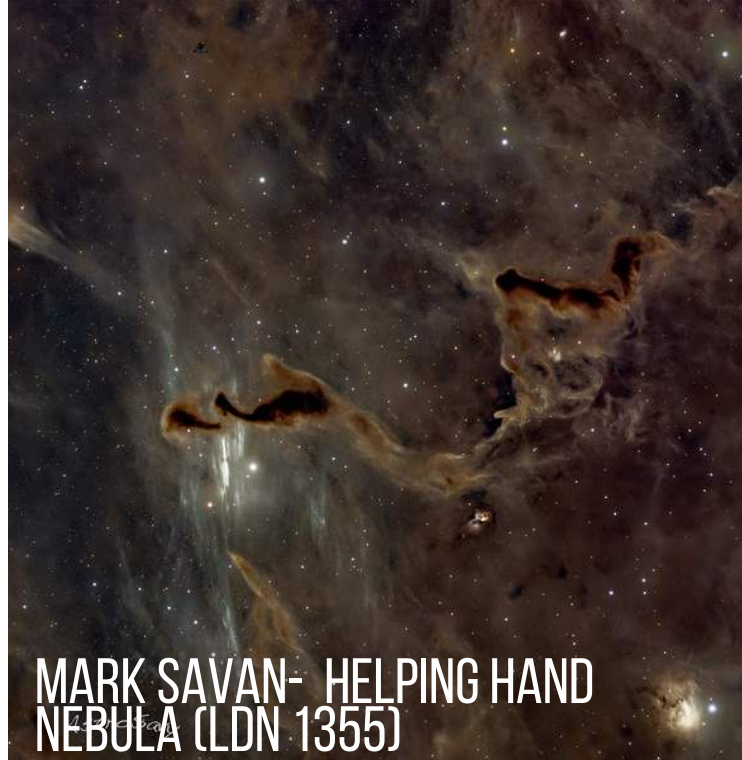
A and B: Examine the stars of the Pleiades and Hyades, two naked eye star clusters. C: The three westernmost stars of Cassiopeia's "W" point south to M31, the Andromeda Galaxy, a "fuzzy" oval. D: Sweep along the Milky Way from Altair, past Deneb, through Cepheus, Cassiopeia and Perseus, then to Auriga for many intriguing star clusters and nebulous areas. E: The Double Cluster.



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



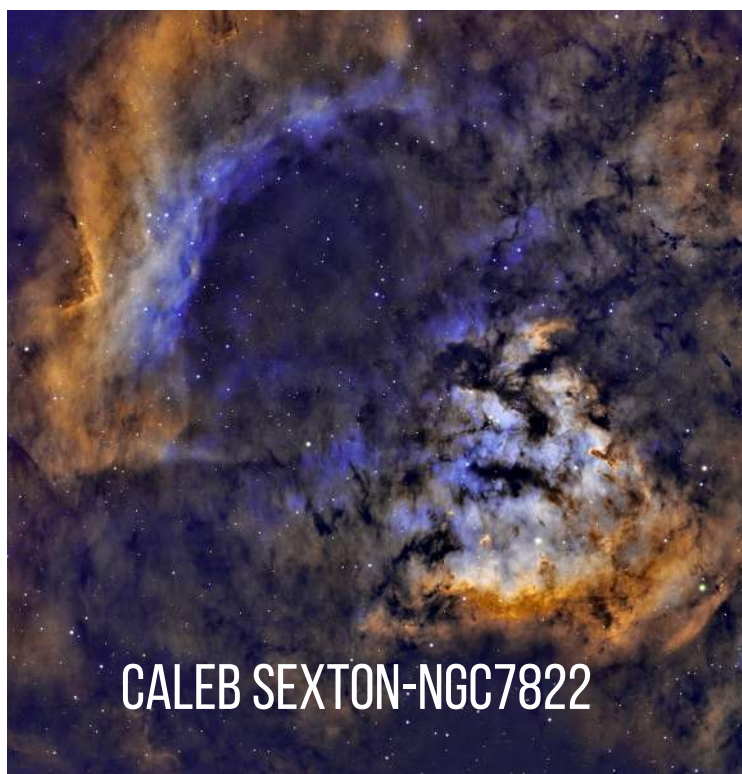
ANDREW STONE -NGC 7380 WIZARD
NEBULA



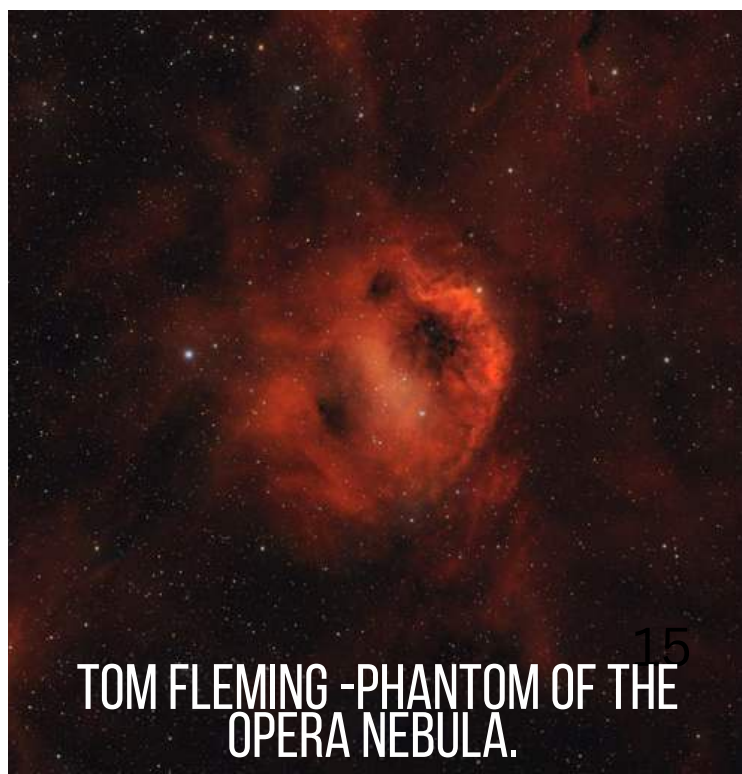
MARK SAVAN- HELPING HAND
NEBULA (LDN 1355)



STEVE GLICK- NGC 7293 HELIX NEBULA



CALEB SEXTON-NGC7822



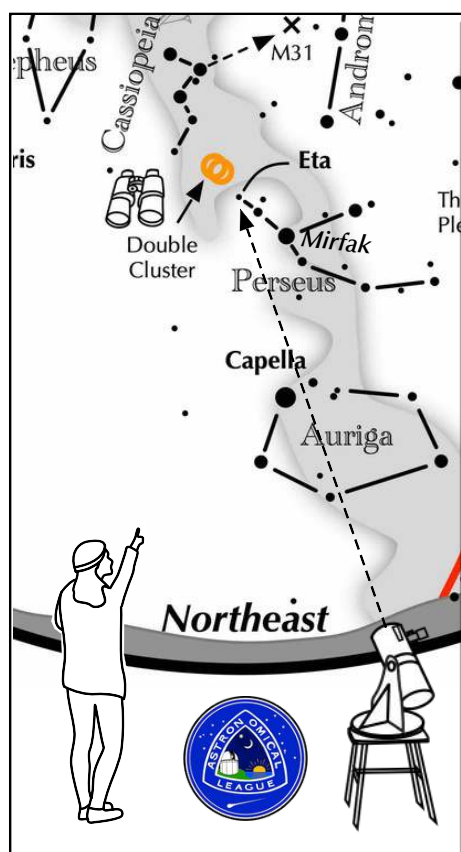
TOM FLEMING -PHANTOM OF THE
OPERA NEBULA.

7 Telescope Targets for October

Each month, we feature 7 good targets for small telescopes that should be visible in the evening. For the month of November, the targets are:

1. NGC7662 Blue snowball nebula- Surprisingly bright compact blue ball, like a large Neptune
2. M31/32/110 Andromeda Galaxy-The largest galaxy near us. Look for its two faint companion galaxies M32 and M110
3. NGC7009 Saturn nebula-Another small but bright planetary nebula with 'handles' on each side – looks like Saturn!
4. Almach -Beautiful blue/yellow double star in Andromeda
5. NGC253 Sculptor galaxy – Easiest galaxy to spot in a telescope after Andromeda
6. NGC7318B Stephan's Quintet-This is a challenge but this compact galaxy group in Pegasus is 200-340 million light years away so it's fun to look for under a dark sky
7. M15 -Bright globular cluster in Pegasus

ASTRONOMICAL LEAGUE Double Star Activity



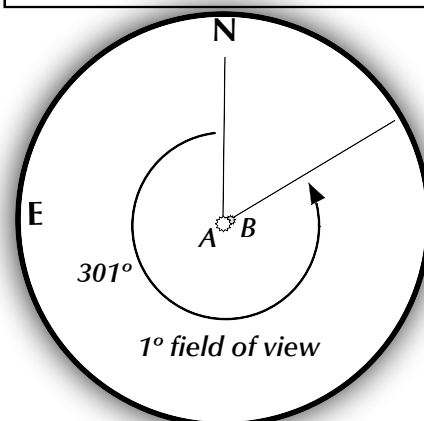
Other Suns: Eta Persei

How to find Eta Persei on a November evening

Face northeast. Between bright Capella and the "W" of Cassiopeia, is the constellation Perseus. Eta Persei is not quite mid way between Mirfak, the brightest star in Perseus, and the eastern edge of the "W." It lies close to the Double Cluster.

Suggested magnification: 40x
Suggested aperture: >3 inches

Eta Persei A-B
separation: 28 sec
magnitude: 3.8 B
magnitude: 8.5
Position Angle: 301° A
& B colors:
yellow, blue

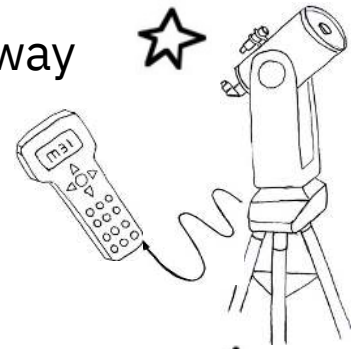


How do you find celestial objects?

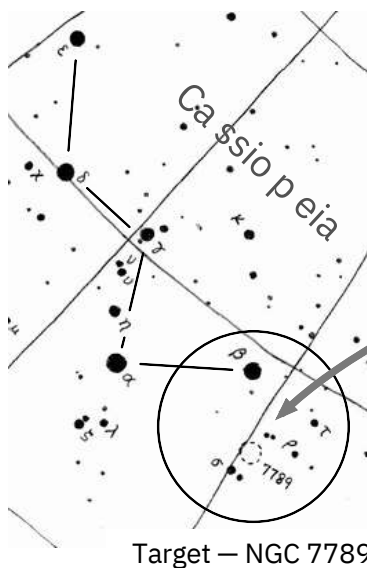
★ Finding celestial targets the modern way ★

Computerized "GoTo" telescopes ... the quick and easy method:

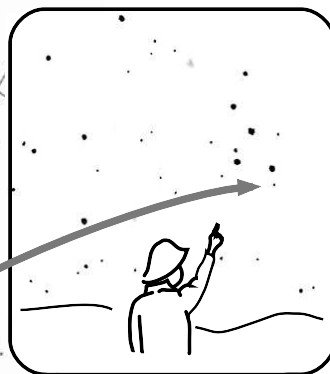
- 1 Level the telescope mount
- 2 Point the tube towards north
- 3 Indicate the date and time
- 4 Indicate observing location
- 5 Center on first guide star
- 6 Center on second guide star
- 7 Enter the target's designation
- 8 The scope automatically slews to it



★ Finding celestial treasures the old fashioned way ★



Target — NGC 7789



1 Learn the stars and constellations

- ★ There is no substitute for sitting under the stars with a map and red flashlight.
- ★ Use a star map that plots all stars visible to the unaided eye.
- ★ Start by finding well-known star patterns such as the Big Dipper, or the constellation of Orion or Cassiopeia.
- ★ Continue by identifying neighboring star patterns.

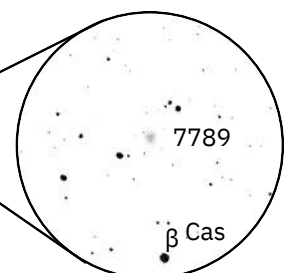
2 Finderscope: little scope, big view

Why a finderscope?

- ★ Gives a wide field of view, about 5°,
- ★ Must be aligned with the main telescope,
- ★ Only the bright planets, brighter nebulae and star clusters are visible.

Simply...

- ★ Point the finder at a suitable guide star, or
- ★ Triangulate to the object by using nearby recognizable stars.



Finderscope view, note the upside-down image

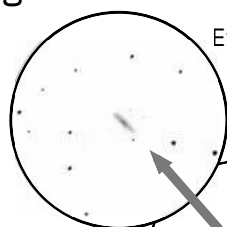
3 Star Hopping: finding the faintest of objects...

Before hopping begins:

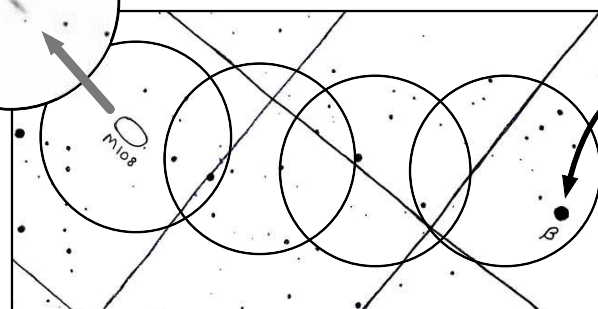
- ★ Must have a **detailed** star map.
- ★ Must know the field of view of the eyepiece.

As an example, find galaxy M108:

- ★ Begin hopping at a reference star, in this case Beta (β) Ursae Majoris in the Big Dipper.
- ★ Match the stars on the map with those in the eyepiece.
- ★ Hop among the stars in each subsequent field of view until the correct field is reached.
- ★ Look closely to see the dim galaxy M108.



Eyepiece view of M108



Star hopping to M108 from Beta Ursae Majoris

The Big Dipper



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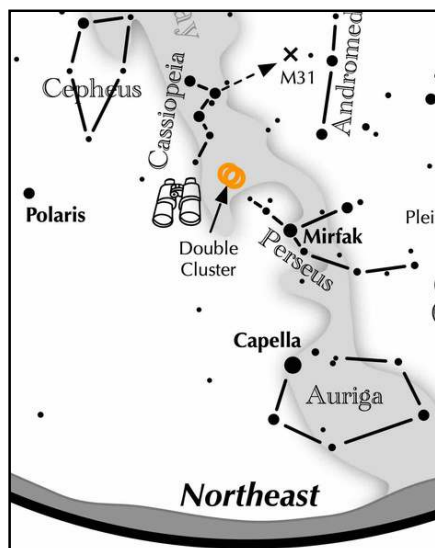


Can you easily find this open cluster showpiece?

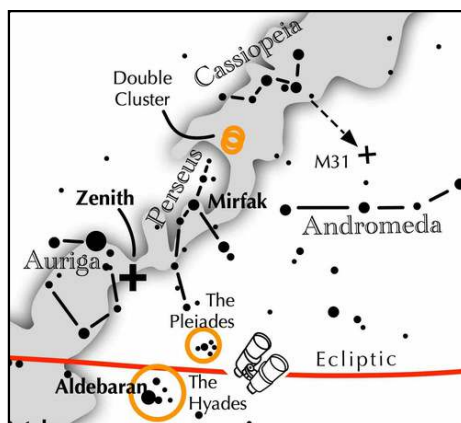
Every Curious Skywatcher should know how to find the Double Cluster



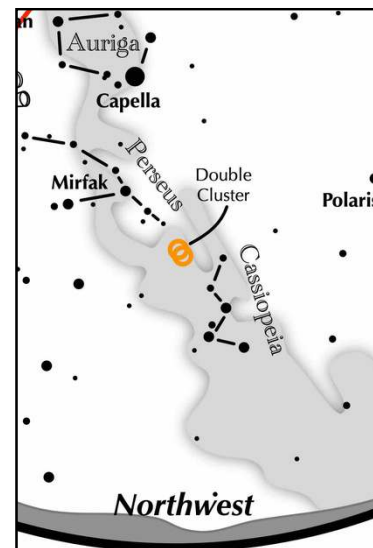
Visible in the early evening sky from late October through late March.



November in the northeast

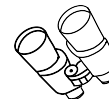


January facing south
looking past the zenith



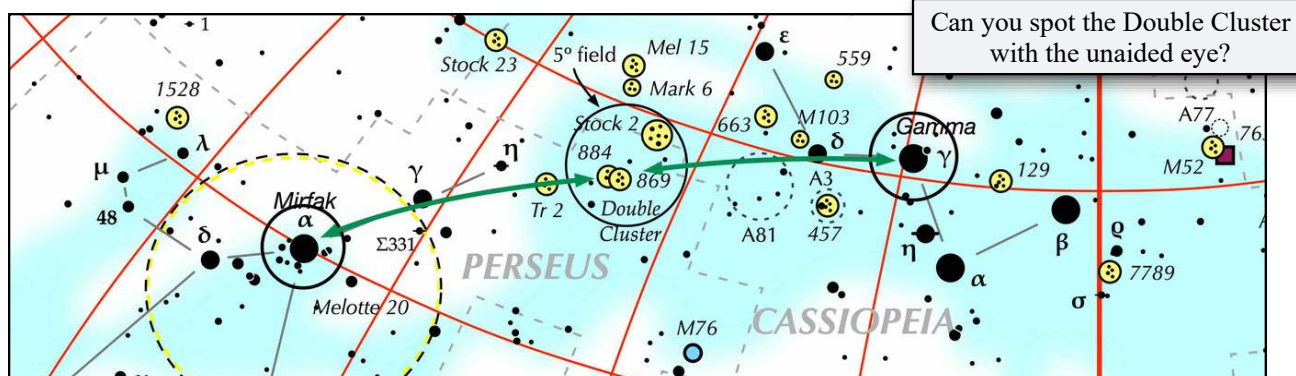
March in the northwest

The **Double Cluster** can be spotted with unaided eye from a dark sky as a dim glow in the Milky Way between Perseus and Cassiopeia. Through 10x50 binoculars, it is an obvious sight, revealing its brighter glittering lights. The neighboring cluster, **Stock 2**, can be seen as a much dimmer and more spread out grainy glow.



How to find the Double Cluster (aka NGC 869 & 884, and Caldwell 14):

1. Find the "w" shaped constellation Cassiopeia and the neighboring constellation to its southeast, Perseus. Identify Perseus' brightest star, 1.8 magnitude Mirfak.
2. Mid way between the center star of Cassiopeia's "w" (Gamma Cas) and Mirfak lies a soft glow.
3. Binoculars aimed at the glow reveal the famous Double Cluster, also called NGC 869 and 884, Caldwell 14, and h Persei and Chi Persei.
4. Place the Double Cluster near the southern edge of the field. Near its center lies Stock 2, the Muscleman Cluster, which appears as a large, dim grainy glow.



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!

Starizona: <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



PAS offer: This is a first come, first served offer. Review the list. Decide what you want. Email president@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

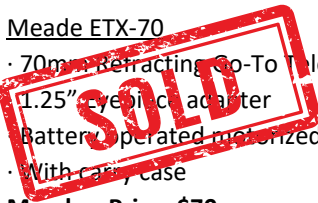
· 70mm Refracting Go-To Telescope

· 1.25" Eyepiece adapter

· Battery operated motorized mount

· With carry case

Member Price: \$70



Celestron 6" F/4 Newtonian Astrograph Telescope

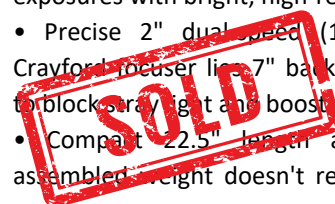
• Fast 6"-aperture reflector lets you take short exposures with bright, high-resolution results

• Precise 2" dual-speed (10:1) linear-bearing Crayford focuser lets 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 Powerseeker 127

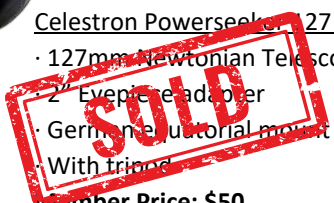
· 127mm Newtonian Telescope

· 2" Eyepiece adapter

· German equatorial mount

· With tripod

Member Price: \$50

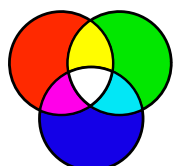
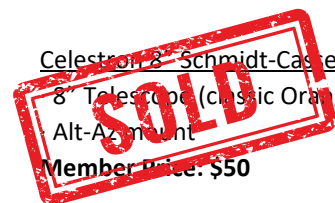


Celestron 8" Schmidt-Cassegrain

· 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

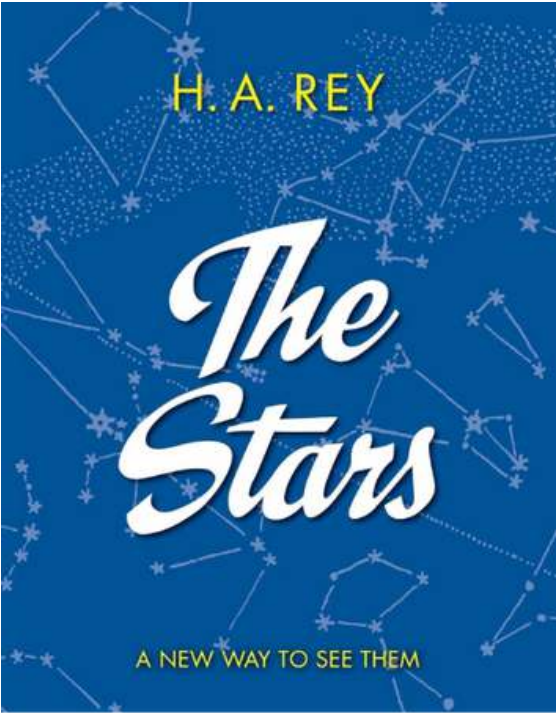
Accessory Kit #5 – 1.25" Eyepieces & filters





"The Stars: A New Way to See Them"
by H.A. Rey

H.A. Rey’s *The Stars: A New Way to See Them* is a timeless classic that simplifies stargazing for everyone. Rey, also the co-creator of the Curious George series, presents an innovative approach to identifying stars and constellations, using easy-to-follow drawings and intuitive descriptions. The book’s clear, user-friendly illustrations help stargazers learn how to navigate the night sky using simple patterns, making it ideal for beginners. Rey emphasizes understanding rather than memorization, so readers can truly engage with the sky and recognize key stars and constellations.



22

SAT

BOOK CLUB-MEMBERS ONLY

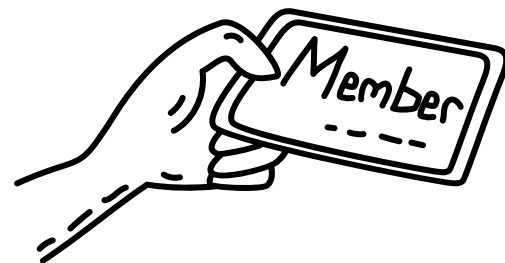
The beauty of falling : a life in pursuit of gravity,
Claudia de Rham, 2024
Please reach out to: saeidmousavi@yahoo.com



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 in the left index column for the link "Join Our Society," click on that, and there you go. Your membership runs from 1 January to 31 December or from the date you sign up to the end of the year. Our Membership Manager will assist you with any questions you may have: membership@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

