



The Newsletter for Keene Amateur Astronomers

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April 2026

Artemis II Moon Rocket and the Crew



From left, NASA astronauts Reid Wiseman, Artemis II commander; Victor Glover, Artemis II pilot; Christina Koch, Artemis II mission specialist; and CSA (Canadian Space Agency) astronaut Jeremy Hansen, Artemis II mission specialist, stop for a group photograph as they visit NASA's Artemis II SLS (Space Launch System) rocket and Orion spacecraft, Monday, March 30, 2026, at Launch Complex 39B of NASA's Kennedy Space Center in Florida.

Credit: NASA/Bill Ingalls

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Editor's Message

April 1st is pretty exciting. No April Fools here. The Space Launch System (SLS) with the Orion capsule the crew has dubbed the Integrity, is currently being readied to launch this evening as I write this. It is the first time humans have traveled to the Moon since the Apollo 17 mission in 1972. Today is the start of our mission to return to the Moon. The Artemis II mission shares many similarities with the Apollo 8 mission manned by Frank Borman, Jim Lovell, and William Anders. Artemis II will be a test run of systems and a flyby.

The crew of Artemis II is Reid Wiseman, Victor Glover, Christina Koch, and Jeremy Hansen. Tonight they will make history. This is the first launch of a crewed SLS launch. I am planning my watch party for the latter part of the afternoon and evening. For many of us, this is our first Moon launch. I am so excited that we are sending astronauts to the Moon.

In addition to the launch tonight, there will be a Full Moon. For early morning risers, look for Mercury in the East before the Sun begins to rise on the 3rd. This will be one of the best opportunities to see the planet this year. The Lyrid Meteor shower will be April 21 - 22nd. Look to the constellation Lyra to spot 'shooting stars.' The best views will be the early hours of the 22nd with a possibility of 18 meteors and hour.

There also might be an opportunity to see a comet this month. Comets are always tricky to predict but current predictions for Comet C/2025 R3 is that it will be bright enough to see with binoculars around April 17th. Early risers will have the best chance of spotting the comet.

Great objects to view this month:

- **Messier 3** - a globular cluster with a bright core that fades around the edges. This object can be seen with a telescope or a pair of binoculars. It is one of the largest and brightest globular clusters containing over a half a million stars. Look for it in the constellation Canes Venatici.

- **Messier 97 - The Owl Nebula** A planetary nebula that is the result of the gas and dust released from a dying star. The nebula is known for its greenish tint. It is best to view this with a telescope with a larger aperture. You can find this nebula in Ursa Major.
- **Messier 94** - Is a spiral galaxy visible with binoculars if you are fortunate to have dark skies. It is located in Canes Venatici. A telescope will reveal details of the central core and the halo.

Clear skies.

- Susan Rolke

Monthly Business Meeting

Club meetings will resume this month. The business meeting will be held at Phinie Faux's house on April 17th at 7 pm. An observing session is scheduled for the following night at the observatory weather permitting.

Club Happenings

The Keene High School STEM event was a huge success with over 400 attendees. Dominic ran the 'gravity table' and explained principles of relativity to teens, tweens, and their parents. Susan and Kevin manned the presentation table and provided individuals with information about our club and the importance of dark skies. There was also a fun trivia quiz for individuals to try their astronomy knowledge.



The presentation table at the KHS STEM fair 2026.



The 'gravity table' used to demonstrate how mass bends space.

Did LIGO Detect a Black Hole Older Than the Stars?

By Susan Rolke

The Laser Interferometer Gravitational-Wave Observatory (LIGO) may have detected something extraordinary: a black hole that formed before the first stars ever existed.

If an unusual signal recorded this past November by LIGO, with detectors in Washington and Louisiana, has been interpreted correctly, it could provide the first evidence for primordial black holes which have long been theorized but never confirmed.



The Laser Interferometer Gravitational-Wave Observatory (LIGO) in Livingston, Louisiana. (LIGO)

According to our understanding of stellar evolution, black holes form when massive stars reach the end of their lives and explode as supernovae. These stars are typically several times more massive than our Sun. Since 2015, LIGO has been searching for gravitational waves, ripples in space, produced by violent cosmic events caused by the collisions between black holes or neutron stars. These mergers release enormous amounts of energy, making them detectable across vast distances.



An artist's rendering of a binary black hole merger. Credit: Carl Knox/LIGO.

However, the signal detected by LIGO in November appears to tell a different story. One of the objects in the merger appears to have a mass less than our Sun. Based on current theories of how stars evolve, a black hole this small shouldn't exist.

Two researchers at the University of Miami, Nico Cappelluti and Alberto Magaraggia, propose a possible explanation. In their paper which will be published in an upcoming issue of *The Astrophysical Journal*, they argue that the signal could be the result of a merger between a typical black hole and an ancient object known as a primordial black hole.

Primordial black holes are thought to have formed in the first moments after the Big Bang, when the universe was incredibly dense. Unlike ordinary black holes, they wouldn't require stars to form. Instead, small regions of extraordinarily dense space may have collapsed under its own gravity into a black hole. Some of these primordial black holes could be very small and could have a mass less than our Sun.

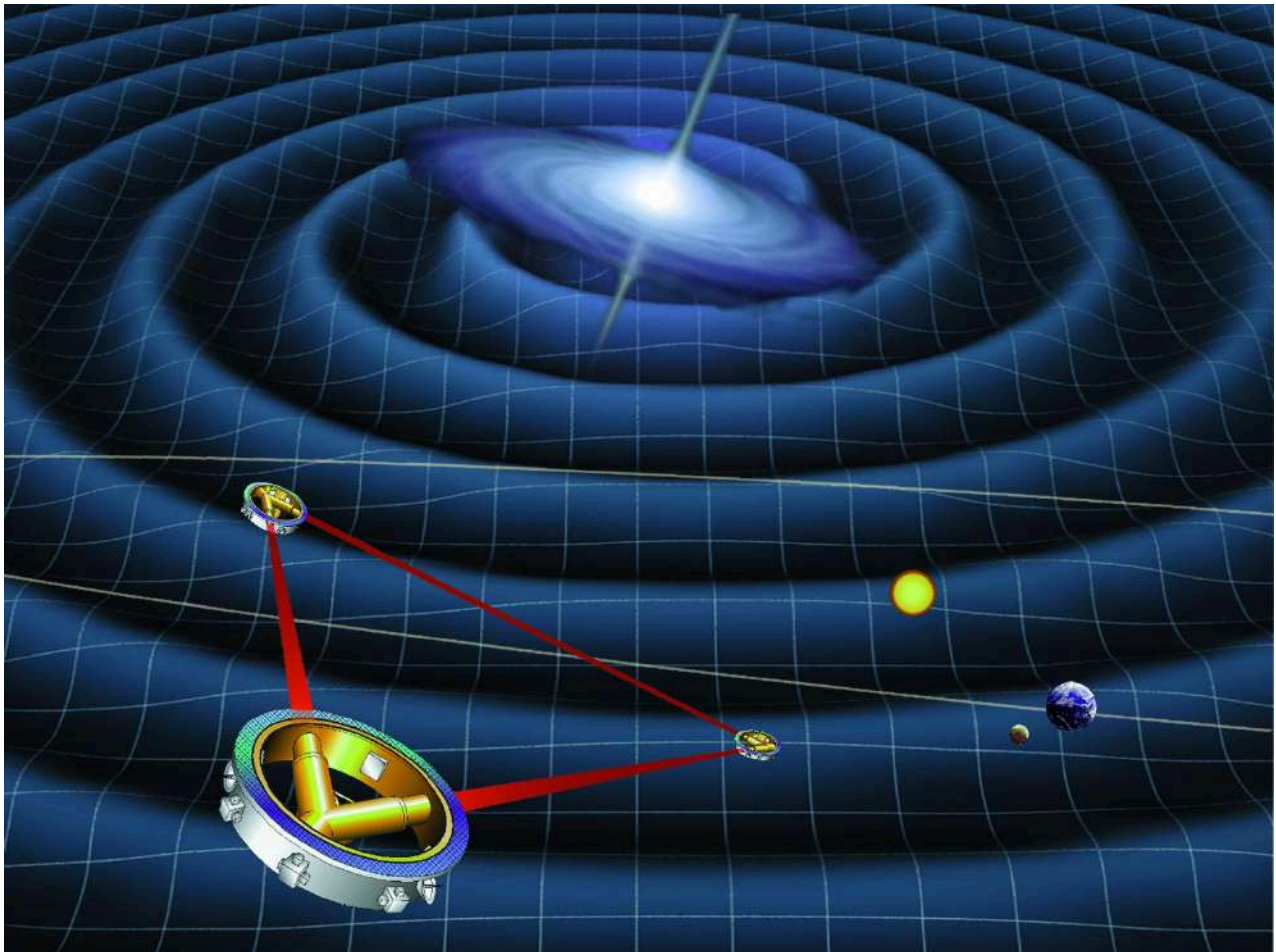
Cappelluti and Magaraggia also estimated how many primordial black holes might exist and how often LIGO might detect them. Their work suggests that black holes smaller than the Sun would be extremely rare, which would make detections like this one equally uncommon.

However, many astrophysicists believe the signal was an error. It will take years of additional observations to determine whether this event provided evidence of a merger with a primordial black hole.

If confirmed, the implications would be profound. Primordial black holes could help solve one of astronomy's biggest mysteries: dark matter. For decades, scientists have known that the visible matter in the

universe isn't enough to explain how galaxies and larger structures behave. Dark matter, an invisible substance, appears to make up about 85 percent of all matter in the universe.

Primordial black holes could account for a significant portion of this missing matter.



Artist impression of LISA, the Laser Interferometer Space Antenna. Credit: NASA

For now, astronomers will be watching closely for similar signals. Future upgrades to LIGO will improve its sensitivity, increasing the chances of detecting rare events like this one. Even more powerful instruments are on the way, including the space-based Laser Interferometer Space Antenna, planned for launch in 2035, and the proposed Cosmic Explorer, which could be up to ten times more sensitive than current detectors.

Each new detection brings us closer to understanding the earliest moments of the universe and whether black holes truly existed before the first stars lit up the cosmos.

Resources:

- [Implications for PBH Dark Matter from a Single-Sub-Solar Mass GW Detection in LVK 01-04](#)
- [A Potential Discovery From the Dawn of Time](#) article
- Video, [Deep Dive Into Primordial Black Holes](#)

Night Sky Network Online Webinar

Join the NASA [Night Sky Network](#) on April 28th at 9 PM EST for 'Dragonfly: NASA's mission to Titan' with Dr. Jason W. Barnes. Barnes will discuss NASA's Dragonfly mission to Saturn's moon Titan, set to arrive in the 2030's.

Observing

To find out skywatching tips for this month, click on the following link to learn more.

Video: [What's Up April 2026 Sky Watching Tips from NASA](#)

You can find past pdfs of the Astronomical League charts [here](#). Turn to the end of the Newsletter to see what is up this month.

NASA Night Sky Notes



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

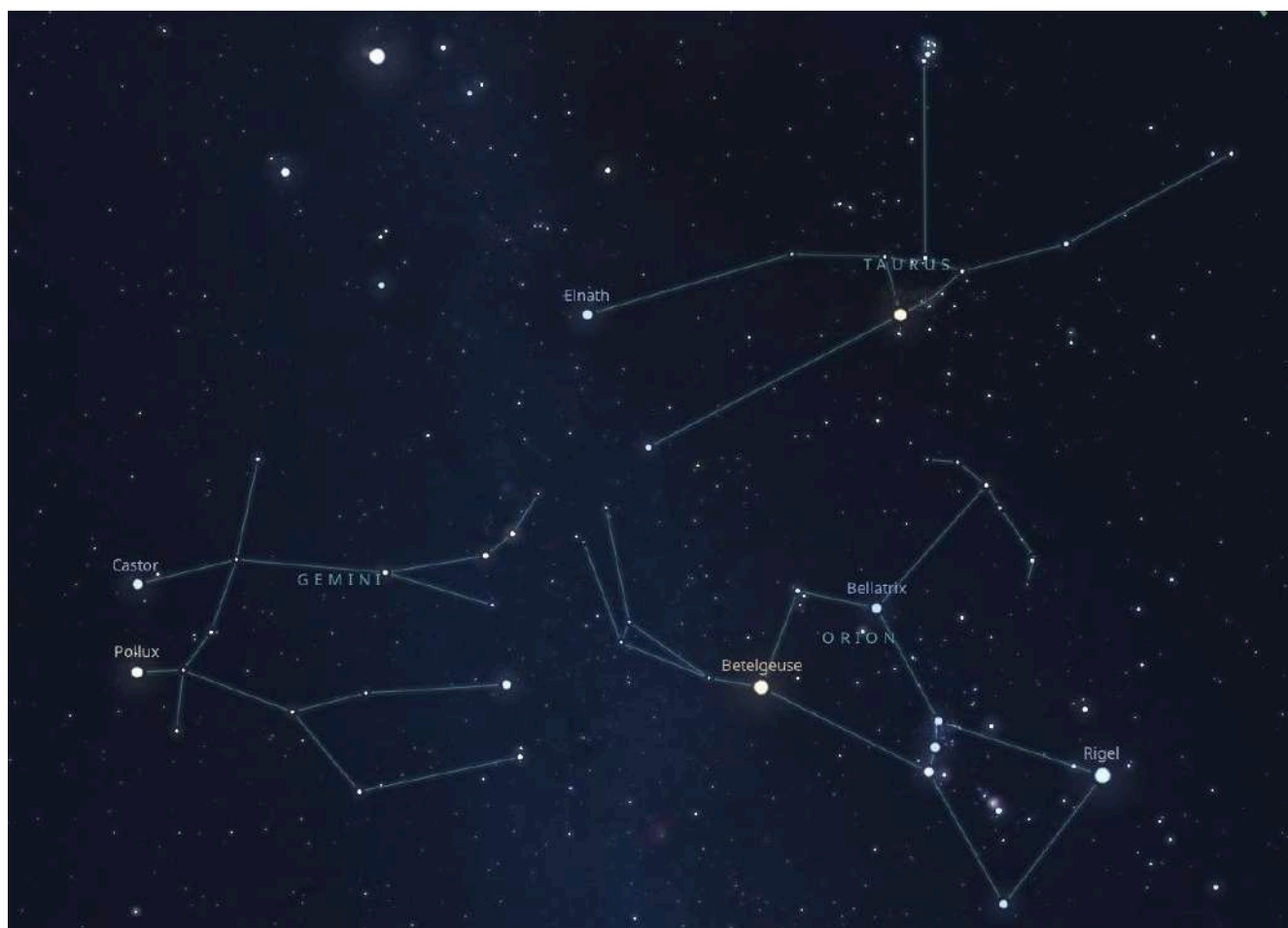
The NSN program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.gov to find local clubs, events, and more!

Find the Twins: Gemini Constellation

Originally written by Dave Prosper, updated by Kat Troche

(Please note - this article was sent mid February so I am providing it here.)

The night skies of February are filled with beautiful star patterns, and so this month we take a closer look at another famous constellation, now rising high in the east after sunset: Gemini, the Twins!



Gemini, the Twins. This constellation can be seen in the winter sky, along with neighboring constellations Orion and Taurus. Stellarium Web

If you're observing Orion, then Gemini is easy to find: just look above Orion's "head" to see Gemini's "feet." Or, make a line from brilliant blue-white Rigel at the foot of Orion, through its distinct "Belt," and then on through orange Betelgeuse. Keep going, and you will end up between the bright stars Castor and Pollux, the "heads" of the Gemini Twins. While not actually related – these stars aren't bound to each other and are almost a magnitude apart in brightness – they do pair up nicely when compared to their surrounding stars. Take note: more than one stargazer has confused Gemini with its next-door neighbor constellation, Auriga. The stars of Auriga rise before Gemini's, and its brightest star, Capella, doesn't pair up as strikingly with its second most brilliant star as Castor and Pollux do. Star-hop to Gemini from Orion using the trick above if you aren't sure which constellation you're looking at.

Pollux is the brighter of Gemini's two "head" stars - imagine it has the head of the "left twin" - and is located about 34 light-years away from our Solar System. Pollux even possesses a planet, Pollux b, with a mass over twice that of Jupiter. Castor - the head of the "right twin" - by contrast, lies about 51 light-years distant and is slightly dimmer. While no planets have been detected, there is still plenty of company as Castor is actually a six-star system! There are several deep-sky objects to observe as well. You may be able to spot one with your unaided eyes, if you have dark skies and sharp eyes: M35, a large open cluster near the "right foot" of Gemini, about 3,870 light-years away. It's almost the size of a full Moon in our skies!

Optical aids like binoculars or a telescope reveal the cluster's brilliant member stars. Once you spot M35, look around to see if you can spot another open cluster, NGC 2158, much smaller and more distant than M35 at 9,000 light-years away. Another notable object is NGC 2392, a planetary nebula created from the remains of a dying star, located about 6,500 light-years distant. You'll want to use a telescope to find this intriguing, faint, fuzzy object located near the "left hip" star Wasat.



The International Gemini Observatory consists of twin 8.1-meter diameter optical/infrared telescopes located on two of the best observing sites on the planet. From their locations on Maunakea in Hawai‘i and Cerro Pachón in Chile, Gemini Observatory's telescopes can collectively access the entire sky. The International Gemini Observatory is supported in part by the National Science Foundation (NSF) and operated by NSF NOIRLab.

International Gemini Observatory/NOIRLab/NSF/AURA, Gemini North: P. Horálek (Institute of Physics in Opava), Gemini South: Kwon O Chul.

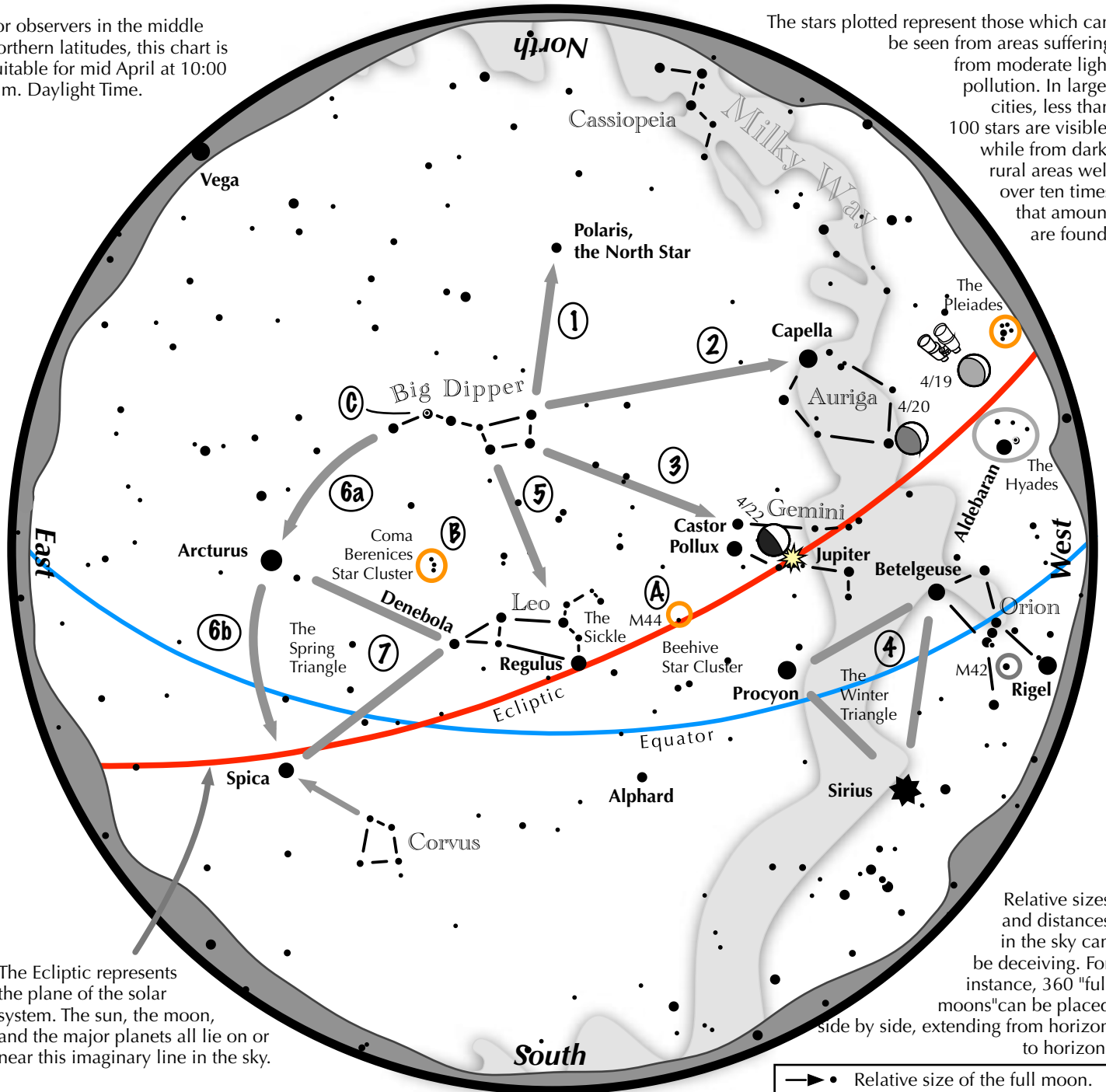
Gemini’s stars are referenced quite often in cultures around the world, and even in the history of space exploration. NASA’s famed [Gemini program](#) took its name from these stars, as do the appropriately named twin [Gemini North and South Observatories](#) in Hawaii and Chile.

Navigating the mid-April Night Sky

2026

For observers in the middle northern latitudes, this chart is suitable for mid April at 10:00 p.m. Daylight Time.

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



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

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

→ • Relative size of the full moon.

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

- 1 Extend an imaginary line north from the two stars at the tip of the Big Dipper's bowl. It passes Polaris, the North Star.
- 2 Draw another imaginary line west across the top two stars of the Dipper's bowl. It strikes Capella low in the northwest.
- 3 Through the two diagonal stars of the Dipper's bowl, draw a line pointing to the twin stars of Castor and Pollux in Gemini.
- 4 Look in the west-southwest for the bright Winter Triangle stars of Sirius, Procyon, and Betelgeuse.
- 5 Directly below the Dipper's bowl reclines the constellation Leo with its primary star, Regulus.
- 6 Follow the arc of the Dipper's handle. It first intersects Arcturus, then continues to Spica.
- 7 Arcturus, Spica, and Denebola form the Spring Triangle, a large equilateral triangle.

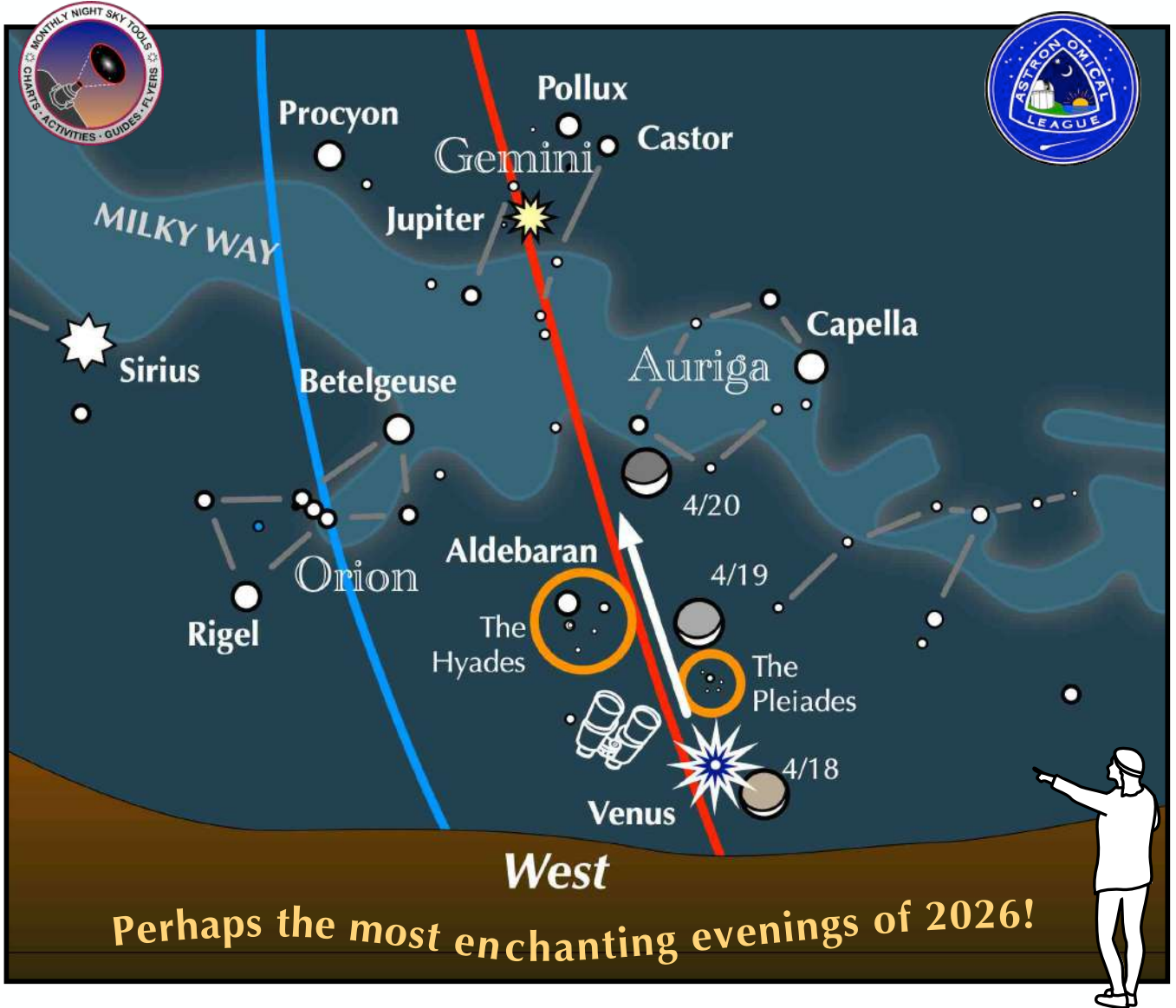
Binocular Highlights

- A: M44, a star cluster barely visible to the naked eye, lies to the southeast of Pollux.
- B: Look nearly overhead for the loose star cluster of Coma Berenices.
- C: In the Big Dipper's handle shines Mizar next to a dimmer star, Alcor.

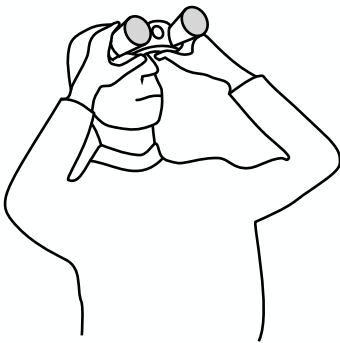


Astronomical League
www.astronleague.org

If you can see only one celestial event this April, see this one.



Perhaps the most enchanting evenings of 2026!



**Enhance the scene –
use binoculars!**

On April 18, 19, & 20, look low in the west-northwest 60 minutes after sunset.

- On the first evening, the crescent moon, glowing full with earthshine, floats near brilliant Venus, while on the second evening, it moves just above the delicate Pleiades star cluster, and to the right of the bright star Aldebaran and the intriguing Hyades star cluster.
- On the third evening, the slightly thicker, but more pronounced crescent moon hangs above the Pleiades and the Hyades.
- Above it all, bright Jupiter plows through Gemini, shining near Castor and Pollux.