The Prairie Astronomer

January, 2026 Volume 67, Issue #1

IN THIS ISSUE:

THE NEWSLETTER OF THE PRAIRIE ASTRONOMY CLUB

The Prairie Astronomer

David Woolf, Kalamazoo, MI at NSP 2018
Photo by Mark Dahmke

Next meeting: Tuesday January 27th 7:30pm at Hyde Observatory

NEXT MEETING

January Program:

We'll enjoy a pair of entertaining videos: "Funniest Moments and Pranks in Spaceflight History!" and "So Funny Carl Sagan!! Billions and Billions of Laughs."

February Program:
How to Use Your Telescope

The Prairie Astronomy Club will offer its annual program: "How to Use Your Telescope" on February 24th at 7:30pm. Do you own a telescope and need help getting started using it? The Prairie Astronomy Club would like to help. If you own a telescope and need some hands-on assistance, or are just interested and want to learn more, stop by!

CONTENTS

Cover: Perseverance Looks Toward 'Lac de Charmes' Photo credit: NASA

M31 by Brett Boller

Most of our club meetings are held at Hyde Memorial Observatory in Holmes Park.

The Observatory is owned and maintained by the City of Lincoln Parks and Recreation Department, but is operated by volunteers, many of whom are also members of the Prairie Astronomy Club.

CALENDAR

January PAC Meeting
Tuesday, January 27th, 7:30pm Hyde Observatory

February PAC Meeting
Tuesday, February 24th, 7:30pm Hyde Observatory
Program: How to Use Your Telescope

March PAC Meeting
Tuesday, March 31st, 7:30pm, Hyde Observatory

April PAC Meeting
Tuesday, April 28th, 7:30pm, Hyde Observatory

PAC Google calendar:
https://www.prairieastronomyclub.org/event-calendar/

2026 STAR PARTY DATES

	Date	Date
January	9	16
February	13	20
March	13	20
April	10	17
May	8	15
June	5	12
July	10	17
NSP	7/12-7/17	
August	7	14
September	4	11
October	2	9
November	6	13
December	4	11

Underlined dates are closest to the New Moon.

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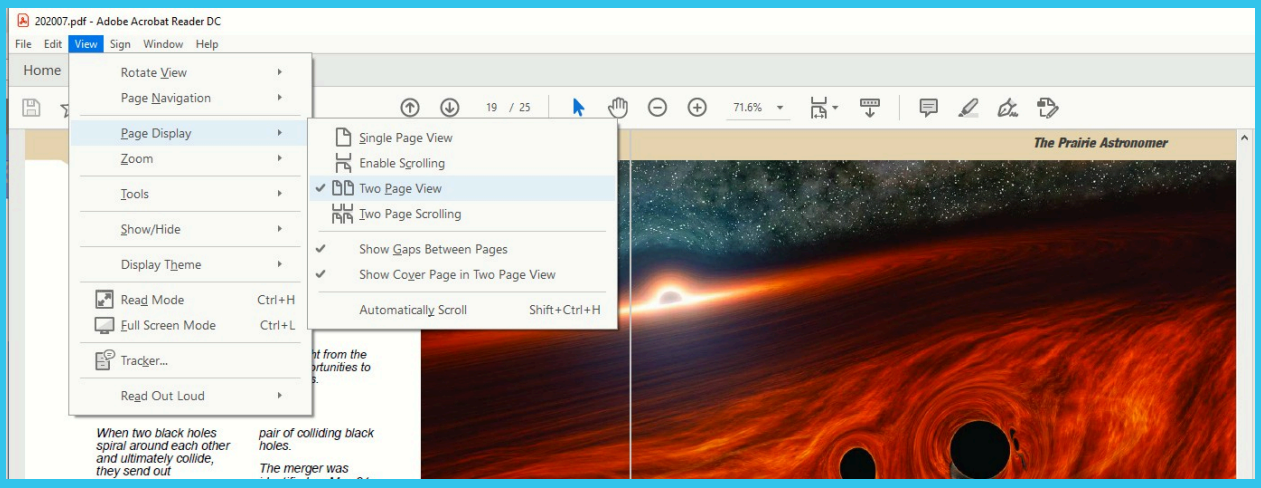
NOTICES

Newsletter Page View Format

How to Adjust Adobe Acrobat Settings for Two Page View



To view this newsletter in magazine spread format in Acrobat, select View ->Page Display->Two Page View. Acrobat will then show two pages side by side. Also make sure the checkboxes "Show Cover Page in Two Page View" and "Show Gaps Between Pages" are checked. If you have it setup correctly, the cover page will be displayed by itself and subsequent pages will be side by side with the odd numbered pages on the left.

Pay Dues

https://www.prairieastronomyclub.org/pay-dues-online/
If you're already a member and are renewing within 30 days of your anniversary date, select the early renewal option for a discount.

PAC-LIST

Subscribe through GoogleGroups or contact Mark Dahmke to be added to the list. You'll need a Google/ gmail account, but if you want to use a different email address, just associate that address with your google account to access Google Groups. Once subscribed, you can view message history through the GoogleGroups website. To post messages to the list, send to this address: pac-list@googlegroups.com

The President's Message

Jason O'Flaherty

Dear PAC Members,

Happy New Year! As we welcome 2026, I hope you all enjoyed a restful holiday season and are ready for another exciting year of observing, learning, and sharing our passion for the night sky. Winter may keep us bundled up, but it also brings longer nights and some excellent opportunities to slow down, look up, and enjoy the wonders above us.

We'll kick off the year with our January meeting at Hyde Memorial Observatory on Tuesday, January 27th, at 7:30 PM. January in Nebraska can feel long and cold, so this month we're keeping things light to help chase away the winter blues. We'll enjoy a pair of entertaining clips: "Funniest Moments and Pranks in Spaceflight History!" and "So Funny Carl Sagan!! Billions and Billions of Laughs." It should be a relaxed, fun evening and an easygoing way to start the new year together with fellow astronomy enthusiasts.

Looking ahead to February, we'll be hosting our annual "How to Use Your Telescope" public outreach event on Tuesday, February 24th, at 7:30 PM. This is one of our most important outreach efforts of the year, especially for newcomers who received telescopes over the holidays and aren't quite sure how to get started. Please help spread the word about this event to friends, family, and anyone you know who might benefit. If you're able to attend, your help would be greatly appreciated. We can always use extra hands assisting guests with setup, alignment, and basic observing tips, and your experience truly makes a difference for first-time observers. These outreach nights are often someone's first real introduction to astronomy, and your support helps make that experience a positive one.

I started this last year and decided to do it again. I've included a month-by-month calendar of notable astronomy and space exploration events below. The calendar focuses on events that space enthusiasts and amateur astronomers are likely to find interesting, with an emphasis on

The President's Message, continued

observable phenomena, planetary events, and major mission milestones. While exact dates for some missions may shift as the year progresses, this should serve as a helpful guide for planning observing sessions and keeping an eye on what's happening beyond Earth.

Thank you all for your continued enthusiasm, curiosity, and willingness to share your knowledge with others. I'm looking forward to another great year with the Prairie Astronomy Club.

Clear skies,

Jason O'Flaherty

New Club Member

Welcome Phil Heywood !

2026 Space & Astronomy Event Calendar

January

Early 2026: Vera C. Rubin Observatory begins early science operations. Its Legacy Survey of Space and Time (LSST) will repeatedly image large areas of the sky for a decade to build a time-lapse map of the universe and greatly increase the discovery of asteroids, supernovae, and variable stars. Rubin's public alert stream will issue near-real-time notifications whenever something new appears or something changes in the sky, enabling rapid follow-up observations.

February

Feb. 28: Six-planet lineup after sunset. Mercury, Venus, Jupiter, Saturn, Uranus, and Neptune will be arranged along the ecliptic. Venus, Jupiter, and Saturn will be easy to spot; Mercury may be challenging in twilight; Uranus needs binoculars; Neptune generally requires a telescope.

Sometime this month: NASA's Artemis II (earliest target). This crewed mission will send four astronauts around the Moon and back, marking humanity's first journey beyond low-Earth orbit since 1972.

Space & Astronomy Calendar, continued

March

Mar. 2–3: Total lunar eclipse ("Blood Moon"). Best visibility from western North America, with totality turning the Moon a deep red as it passes through Earth's shadow.

Mar. 8: Venus–Saturn conjunction. The two planets appear within ~1° of each other (about a thumb's width at arm's length), making a great naked-eye pairing and a fun binocular view.

Mar. 20: Spring equinox. The official start of spring in the Northern Hemisphere.

April

Apr. 3: Mercury at greatest elongation. One of the best chances in 2026 to spot elusive Mercury, low in the sky but at its greatest separation from the Sun.

Apr. 8 – May 7: SMILE launch window. ESA/CAS's Solar wind Magnetosphere Ionosphere Link Explorer will study how the solar wind interacts with Earth's magnetic environment, helping explain space weather processes.

Apr. 21–22: Lyrid meteor shower peaks. A reliable spring shower with fast meteors. The Moon will be a thin crescent and sets early, so dark skies should allow a decent display for Northern Hemisphere observers

May

May 5–6: Eta Aquariid meteor shower peaks. Fast meteors from Halley's Comet debris, best after midnight into dawn. This shower coincides with a bright Moon in 2026, so only the brightest meteors may be visible

May 31: Blue Moon. This rare extra full Moon of the month will rise on May 31 (a "Blue Moon" in name only). Interestingly, it will also be 2026's most distant full Moon, a so-called micromoon.

Sometime this month: NASA's Psyche spacecraft Mars flyby. The craft will be coming within ~4,400 km of Mars to slingshot toward its target, the metal-rich asteroid Psyche (arrival set for 2029).

June

June 9: Venus–Jupiter conjunction. The two brightest planets will appear just over 1° apart in the evening sky, almost forming a brilliant "double planet" to the naked eye

June 21: Summer solstice. The start of summer in the Northern Hemisphere.

June 30: Asteroid Day. A global day of awareness about asteroid impact risks, held on the anniversary of the Tunguska event. Many organizations host talks and activities on planetary defense.

Space & Astronomy Calendar, continued

July

Jul. 5: Hayabusa2 asteroid flyby (extended mission). Japan's Hayabusa2 probe (now in an extended mission after returning Ryugu samples) zooms past near-Earth asteroid 98943 Torifune, helping scientists study asteroid threat mitigation.

Jul. 12–17: Nebraska Star Party. The 33rd annual gathering under dark Sandhills skies at Merritt Reservoir, Nebraska. Amateur astronomers camp out to share views of the summer Milky Way, deep-sky observing, and astrophotography.

Jul. 30–31: Southern Delta Aquariids meteor shower peaks. An almost-full Moon will greatly hinder this typically modest display.

Sometime this month:

Tianwen-2 arrives at Kamoʻoalewa (2016 HO3). This craft arrives at asteroid 2016 HO3 (Kamoʻoalewa), a tiny "quasi-moon" of Earth. It aims to collect the first samples from this object for return to Earth in 2027.

Astrobotic Griffin lunar mission (earliest target). Astrobotic's large Griffin lander will deliver Astrolab's FLIP rover and other payloads to the lunar south pole as part of NASA's Commercial Lunar Payload Services program. Originally designed to carry NASA's VIPER ice-hunting rover, the mission was reconfigured after VIPER's cancellation in 2024. VIPER has since been reassigned to Blue Origin for a late 2027 launch.

August

Aug. 12: Total solar eclipse. Totality is visible from Greenland (and parts of Europe along the path). Parts of northern and northeastern North America will see a partial eclipse.

Aug. 12–13: Perseid meteor shower peaks. This shower will be under ideal new-moon conditions. Expect one of the year's best meteor shows, with up to ~100 meteors/hour under dark skies.

Aug. 27–28: Partial lunar eclipse (North America). A large portion of the Moon slips into Earth's umbral shadow, providing a deep partial eclipse.

Sometime this month: Chang'e 7 (earliest target). China's plans to launch a mission to the Moon's south pole. This ambitious mission will send an orbiter, lander, rover, and even a hopping micro-robot to search for water ice and lay the groundwork for a future lunar base.

Space & Astronomy Calendar, continued

September

Sept. 22: Fall equinox. The official start of autumn in the Northern Hemisphere.

Sept. 25: Neptune at opposition. Neptune reaches peak brightness for the year (still dim), making this the best time to try spotting it with a telescope.

Sometime this month: JUICE Earth flyby. ESA's Jupiter Icy Moons Explorer uses Earth for a gravity assist on its long route to Jupiter.

Sometime this fall: Nancy Grace Roman Space Telescope launches (earliest target). Often described as NASA's next "great observatory," Roman will conduct wide-field surveys to study dark energy and dark matter, while also searching for exoplanets using gravitational microlensing.

October

Oct. 4: Saturn at opposition. Saturn is at its brightest and best positioned for telescope observing this year.

Oct. 4–10: World Space Week. A global celebration of space science and exploration, often with events and programming worldwide. 2026's theme is "Rocket Revolution", spotlighting advances in rocketry and spaceflight.

Oct. 13: Asteroid 4 Vesta at opposition. Vesta reaches its best placement of 2026, brightening to around magnitude 6.5 and becoming a strong binocular/small-telescope target.

Oct. 21–22: Orionid meteor shower peaks. These fast meteors from Halley's Comet may be harder to see in 2026, as the Moon will be in a bright gibbous phase during the peak.

Sometime this month: MMX (Martian Moons eXploration) launches. JAXA's new mission will set off to explore Mars' moons Phobos and Deimos, including an attempted landing on Phobos to collect samples for return to Earth.

November

Nov. 9: Sagan Day. A day to celebrate the legendary astronomer's life, cosmic vision, and science outreach legacy on his birthday.

Nov. 17: Leonid meteor shower peaks. The Leonids of 2026 occur with only a first-quarter Moon setting early, so skies will be dark after midnight, with about 10–15 meteors per hour expected at peak.

Space & Astronomy Calendar, continued

Nov. 24: Supermoon. This Beaver Moon is one of 2026's three supermoons, appearing a bit larger and brighter than usual as the full Moon nears perigee.

Nov. 25: Uranus at opposition. The distant planet reaches its brightest of the year (barely visible to the naked eye under dark skies). A good night to try to spot Uranus with binoculars or a telescope.

Sometime this month: BepiColombo enters orbit at Mercury. This joint ESA/JAXA mission will split into two orbiters (ESA's MPO and JAXA's Mio) to map Mercury's surface, study its interior, and probe its magnetic field, humanity's first Mercury orbiter arrival since 2011.

Sometime this month: Hera arrives at Didymos–Dimorphos. ESA's planetary defense mission arrives at asteroid Didymos & its moonlet Dimorphos. Hera will rendezvous with the same binary asteroid system that NASA's DART spacecraft impacted in 2022, releasing two small cubesats and surveying the post-impact crater.

Sometime this month: Voyager 1 reaches one light-day from Earth. The nearly 50-year-old NASA probe, now ~25.9 billion km away, will be so far that its radio signals take 24 hours to reach Earth.

December

Dec. 3: Europa Clipper Earth flyby. NASA's Europa-bound spacecraft swings past Earth (~3,200 km distance) for a gravity assist, slinging it toward Jupiter's moon Europa (arrival planned in 2030).

Dec. 13–14: Geminid meteor shower peaks. 2026 should be an excellent year for the Geminids – the Moon will be only a thin crescent that sets early, leaving dark skies for this rich meteor shower (often 100+ meteors/hour).

Dec. 21: Winter solstice. Start of winter in the Northern Hemisphere.

Dec. 22: Ursid meteor shower peaks. Unfortunately, a nearly full Moon will brighten the sky, so only the few brightest Ursid meteors will be visible this year.

Dec. 23: Supermoon (Central Time). This "Cold Moon" supermoon will be 2026's brightest full Moon, appearing up to 14% larger than a typical full moon.

The Treasurer's Report

John Reinert

PAC Dues Collection Proration Table

In order to bring existing members forward to a November 1st anniversary date for annual PAC dues collection I include the following proration table.

Once current members have transitioned fully to November 2027 the annual dues will be $12, $30, and $36 respectively. The table preserves the value in what you have already paid to date.

For those who are up-to-date as you renew, smaller amounts take you either to November 2026 or larger amounts to November 2027.

Restated, November 1st, 2027 is our goal whether you make two payments to get there or only one. New members can use the same table to make one or two payments as may be their preference. You'll notice from the table that from Aug-Oct I reinforce this idea of making a single payment instead of two.

Votes required:

By increasing the current family rate by $1 per year from $35 to $36 and current student rate by $2 per year from $10 to $12, the dues amounts become easier to divide by twelve. This requires a vote of the membership.

Oct	$13.00	$32.50	$33.00
Sept	$14.00	$35.00	$36.00
Aug	$15.00	$37.50	$39.00
July	$4.00	$10.00	$12.00
June	$5.00	$12.50	$15.00
May	$6.00	$15.00	$18.00
Apr	$7.00	$17.50	$21.00
Mar	$8.00	$20.00	$24.00
Feb	$9.00	$22.50	$27.00
Jan	$10.00	$25.00	$30.00
Dec	$11.00	$27.50	$33.00
Nov	$12.00	$30.00	$36.00
	Student	Individual	Family

Your anniversary month

The club currently offers a 10% reduction in the dues collected for paying early. A dedicated few eagerly anticipate this perk and I respect you for it. However, during this transitional period I ask that we keep the math simple and revisit the subject at later date along with the fact that the club currently picks up the Stripe and PayPal fees that range from 3-5%. I propose that we suspend one perk in favor of retaining the other (paying the Stripe and PayPal fees).

I expect that dues notice e-mails will continue to be sent during the transition. In this way you will know what your anniversary month is. The Night Sky Network also records this information but I'm not sure that everyone knows where to find it as they log in? As always I can respond electronically or in person as you may have questions.

MRO's HiRISE Takes Its 100,000th Image of the Martian Surface

Mesas and dunes stand out in the view snapped by HiRISE, one of the imagers aboard the agency's Mars Reconnaissance Orbiter.

After nearly 20 years at the Red Planet, NASA's Mars Reconnaissance Orbiter (MRO) has snapped its 100,000th image of the surface with its HiRISE camera. Short for High Resolution Imaging Science Experiment, HiRISE is the instrument the mission relies on for high-resolution images of features ranging from impact craters, sand dunes, and ice deposits to potential landing sites. Those images, in turn, help improve our understanding of Mars and prepare for NASA's future human missions there.

Captured Oct. 7, this milestone image from the spacecraft shows mesas and dunes within Syrtis Major, a region about 50 miles (80 kilometers) southeast of Jezero Crater, which NASA's Perseverance rover is exploring. Scientists are analyzing the image to better understand the source of windblown sand that gets trapped in the region's landscape, eventually forming dunes.

"HiRISE hasn't just discovered how different the Martian surface is from Earth, it's also shown us how that surface changes over time," said MRO's project scientist, Leslie Tamppari of NASA's Jet Propulsion Laboratory in Southern California. "We've seen dune fields marching along with the wind and avalanches careening down steep slopes."

The subject of the 100,000th image was recommended by a high school student through the HiWish site, where anyone can suggest parts of the planet to study.

Team members at University of Arizona in Tucson, which operates the camera, also make 3D models of HiRISE imagery so that viewers can experience virtual flyover videos.

"Rapid data releases, as well as imaging targets suggested by the broader science community and public, have been a hallmark of HiRISE," said the camera's principal investigator, Shane Byrne of the University of Arizona in Tucson. "One hundred thousand images just like this one have made Mars more familiar and accessible for everyone."

For more information, visit:

https://science.nasa.gov/mission/mars-reconnaissance-orbiter

HiRISE, continued

This view of the Martian landscape was captured on Oct. 7, 2025, by NASA's Mars Reconnaissance Orbiter using its High-Resolution Imaging Science Experiment, or HiRISE, camera. This image marked HiRISE's 100,000th snapshot of the Red Planet. Shown here are plains and sand dunes within Syrtis Major, a region about 50 miles (80 kilometers) southeast of Jezero Crater, which the agency's Perseverance rover is currently exploring. Studying this landscape is helping scientists understand how sand is produced and trapped here, eventually forming dunes. Credit: NASA/JPL-Caltech/University of Arizona

ARP 88

The Mantrap Skies Image Catalog

Arp 88 (Very small pair, in cropped image above center to the right)
This one falls in his category Spirals with large, high surface brightness companions on their arms. There is very little on this one. It is also known as PGC 004728/VV 445 and listed as a galaxy pair in the VV catalog as well as the Arp Atlas. The larger spiral carries the designation 2MASX J01190524+1228240 so is an IR source. NED gives no distance data nor attempts to even classify it as a spiral. Even its magnitude estimate is blank! I'm literally drawing a blank on this one. Even the note at NED is very strange. There's only the one. I guess when as a researcher you draw a blank this is what you write:
"One of the rare cases where the companion at the end of a spiral arm is also a spiral. Here, a chain of H II regions encircles the massive condensation thus forming a small spiral ripening at the periphery of the larger one and liable to gemmate." I really doubt it is reproducing by budding as his comment would seem to indicate! The note does date to 1977. Likely he is being descriptive in a more poetic way than Arp. http://

Rick Johnson

Rick Johnson, a founding member of the Prairie Astronomy Club, passed away in January, 2019. His legacy lives on through his comprehensive catalog of over 1600 images at www.mantrapskies.com.

ARP 88, continued

adsabs.harvard.edu/cgi-bin/bib_query?1977A%26AS...28....1V It's a 41 meg download, I didn't download it just trusted NED's note.

Arp 119 (The obvious pair)
Arp put it in his category of Elliptical and elliptical-like galaxies close to and perturbing spirals. The southern galaxy, MCG +02-04-021, is the more interesting. It shows two radial velocities with an emission knot between the core and northern galaxy showing a radial velocity about 800 km per second faster. NED classes it as SBc with an AGN while in another place it says Sdm: LINER. A note says SA(r)cd pec. I don't really see the ring many papers mention but otherwise, I agree with this last classification.

The northern galaxy is MCG +02-04-022. It is classed as E? This seems odd to me as well. A note at NED says: "Our images show a clear stretching of this galaxy along the direction towards Arp 119S. We observe two definite components: an inner region (a < 16") where the surface brightness profile seems of de Vaucouleurs type, and other external region (a > 18") where the {mu} profile looks like a exponential profile. However, the geometric profiles do not show evidence for disky structure. At this point, the galaxy could be classified as E3 ... The total ... color is representative of E, S0 types." That I can agree with. Its radial velocity is about half waybetween the two measurements for the southern galaxy. It does appear they are interacting.

Arp's comment on this pair reads "Some material seems attracted, some repelled." Using the northern galaxies radial velocity the distance to this pair is about 640 million light-years.

The Odd looking blue galaxy below Arp 119 is MRK 0983. It is classed simply as Peculiar though appears to be a distorted spiral. I wouldn't be surprised if it isn't actually two interacting galaxies but I have nothing to support this but what I see in my image. Its radial velocity puts it at about 630 million light-years. This likely means it is part of the Arp 119 system and may have tangled with one or both Arp 119 members.

Arp 48 (lower left corner if full image -- inset in cropped image)
The third Arp entry is Arp 48 to the southeast of Arp 119. Arp put it in his category: "Spiral Galaxies with low surface brightness companions on arms." I put it in the lower right corner of the enlarged and cropped image as there wasn't

ARP 88, continued

much in that corner but it is a bit confusing to put it there. When I imaged Arp 119 I knew Arp 88 was coming along for the ride but missed Arp 48. In fact, I imaged it separately a couple months later never realizing I already had it. Good thing as the intentional image had poor seeing compared to the Arp 119 image. It wasn't until I went to process this image I noted Arp 48 but thought it one Arp missed until I looked it up. The pair is also known as CGCG 436-026.

Individually the lower galaxy carries the IR source designation of 2MASX J01195923+1220377 and shows a radial velocity and shows a radial velocity distance of 635 million light-years. So it too is likely part of the same group as Arp 119. NED has no notes on it nor does it attempt to classify it. It does say this: "Low surface brightness companion on end of arm. M51 Type." Now, which of three objects is this referring to, the golden galaxy, the odd blue knot or galaxy by the cut-short arm or the galaxy to the south? I see no hint of an M51 type arm structure reaching over any of these. I could sort of make this work for the smaller blue fuzz patch, though that seems more likely a part of the northern galaxy's mostly missing arm.

The northern galaxy with one good and one not so good arm is another IR source listed as 2MASX J01200039+1220537 and also as PGC 4789. NED has absolutely nothing on it. Not even a magnitude. Odd, as it appears to be the major galaxy here. Arp certainly considered it the main one. It also appears that he considered the fainter blue fuzz patch as the companion on the arm and ignored the southern galaxy entirely. His comment reads: "Some material seems attached, some repelled." This "repelling" comment may be due to the sudden cut off of the arm. Without a redshift, it is impossible to say with certainty the northern galaxy is even related to either of the other two. I'd like some confirmation here. Neither the blue knot that's Arp's "companion" nor the golden galaxy just east of the northern spiral are in NED at all. This is a very poorly researched area it would appear.

There's an obvious galaxy cluster below Arp 48. This is NSCS J01195 at 4 billion light-years. NED shows it as containing 64 members. It extends south out of this field of view. While I got all of it in the later image of Arp 48 the seeing is so bad it isn't worth processing. This view will have to do.

The only other object in

ARP 88, continued

my image with a redshift measurement is CGCG 436-027. It is the blue spiral nearest the upper left corner. Oddly, NED makes no attempt to classify it, not even The only other object in my image with a red shift measurement is CGCG 436-027. It is the blue spiral nearest the upper left corner. Oddly, NED makes no attempt to classify it, not even a a spiral. It too appears to be about 635 million light-years away and thus part of the same system that Arp 119 and Arp 48 reside in. Though it appears very ordinary with nicely defined spiral arms. It too is listed as an IR source (2MASX J01200039+1238007). To its lower right is another rather obvious spiral that does appear to have a southern arm drawn well away from its "body". The gap seems oddly dark in fact. It is another IR source, 2MASX J01195236+1235486. I presume it too is part of the same system but can't confirm it without more data. It too may have some distortion.The only other object in my image with a red shift measurement is CGCG 436-027. It is the blue spiral nearest the upper left corner. Oddly, NED makes no attempt to classify it, not even a a spiral. It too appears to be about 635 million light-years away and thus part of the same system that Arp 119 and Arp 48 reside in. Though it appears very ordinary with nicely defined spiral arms. It too is listed as an IR source (2MASX J01200039+1238007). To its lower right is another rather obvious spiral that does appear to have a southern arm drawn well away from its "body". The gap seems oddly dark in fact. It is another IR source, 2MASX J01195236+1235486. I presume it too is part of the same system but can't confirm it without more data. It too may have some distortion.The only other object in my image with a red shift measurement is CGCG 436-027. It is the blue spiral nearest the upper left corner. Oddly, NED makes no attempt to classify it, not even a a spiral. It too appears to be about 635 million light-years away and thus part of the same system that Arp 119 and Arp 48 reside in. Though it appears very ordinary with nicely defined spiral arms. It too is listed as an IR source (2MASX J01200039+1238007). To its lower right is another rather obvious spiral that does appear to have a southern arm drawn well away from its "body". The gap seems oddly dark in fact. It is another IR source, 2MASX J01195236+1235486. I presume it too is part of the same system but can't confirm it without more data. It too may have some distortion.The only other object in my image with a redshift measurement is CGCG 436-027. It is the blue spiral nearest the upper

ARP 88, continued

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The obvious asteroid in the image is (243847) 2000 VA62 at an estimated magnitude of 17.7. This magnitude seems reasonable.

A second asteroid in the image is more difficult to find. It is near the right edge a bit below center just above a typical white star. It shows as a horizontal line about 7 pixels long so is very short. It is the slow moving asteroid (146703) 2001 VY112 at an estimated magnitude of 19.5. It appears only slightly fainter than the far brighter (243847) 2000 VA62 because its very slow motion greatly increases its exposure time on any one pixel. As there isn't much information on this field the annotated image only points out the three Arp systems and the two asteroids.

Focus on Constellations: Gemini

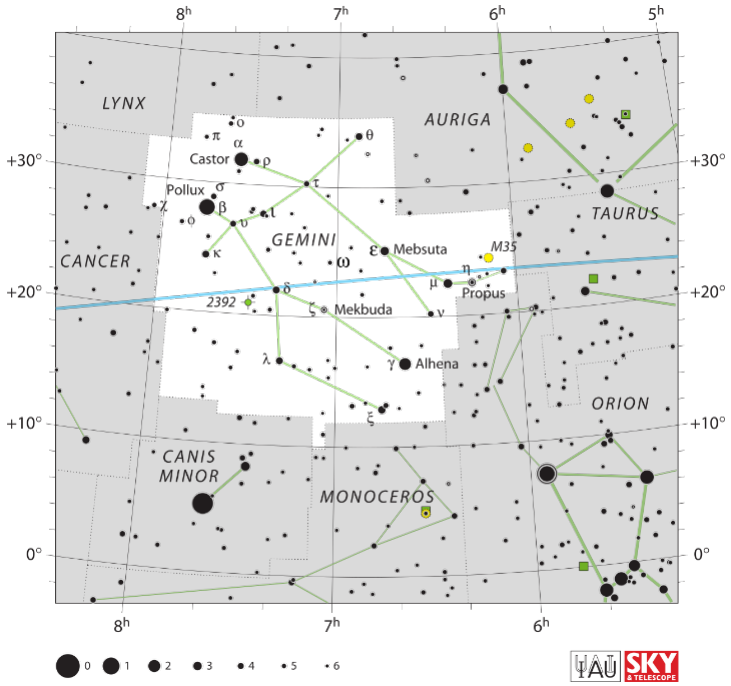
Jim Kvasnicka

Gemini the Twins is one of the twelve constellations of the Zodiac. The brightest stars are in two parallel rows, each representing one of the Twins. The bright stars at the NE end of the rows mark the Twin's heads and bear their names, Castor and Pollux. The Milky Way runs through the feet of Gemini so the constellation contains a wide variety of objects. Gemini's two finest objects ate the large open cluster M35 and the bright Planetary Nebula NGC 2392 the Eskimo Nebula.

Showpiece Objects
Open Clusters: M35, NGC 2129, and NGC 2266
Planetary Nebulae: NGC 2392
Multiple Stars: 15 Geminorum, 20 Geminorum, 38 Geminorum, Lambda Geminorum, Delta Geminorum, Alpha Geminorum, Kappa Geminorum

Mythology
Although Leda was the mother to both Castor and Pollux they had different fathers. Pollux was the son of Zeus who seduced Leda in the form of a swan. Since he was a son of a god Pollux was immortal. Castor was the son of Leda's husband Tyndareus. Their sister was Helen of Troy and both brothers fought in the Trojan War. They also sailed with Jason and his Argonauts in the Quest for the Golden Fleece. The Twins fell in love with beautiful sisters who were already betrothed to suitors. The Twins challenged the suitors in battle and slew them, but Castor was mortally wounded. Overcome with grief, Pollux would have committed suicide to be with his brother, but since he was immortal it proved impossible. Finally, Zeus placed both their souls together in the sky as symbols of brotherly love.

Number of Objects Magnitude 12.0 and Brighter
Galaxies: 3
Globular Clusters: 0
Open Clusters: 12
Planetary Nebulae: 7
Dark Nebulae: 0
Bright Nebulae: 0
SNREM: 1



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February Observing

Jim Kvasnicka

This is a partial list of objects visible for the upcoming month.

Planets
Venus: Evening planet sets 70 minutes after sunset at the end of the month.
Mars: too close to the Sun to be seen.
Jupiter: Evening planet in Gemini at magnitude -2.6 with a disk 45.7" wide.
Saturn: Evening planet in Pisces at magnitude +1.0 with a disk 16.4" wide.
Uranus: Just south of the Pleiades in Taurus.
Neptune: Evening planet in Pisces.
Mercury: Evening planet shining at -0.8 magnitude.

Messier List
M1: The Crab Nebula in Taurus.
M35: Open cluster in Gemini.
M36/M37/M38: Open clusters in Auriga.
M42/M43: The Orion Nebula with M43 just to the north.
M45: The Pleiades.
M78: Emission nebula in Orion.
M79: Class V globular cluster in Lepus.

Last Month: M33, M34, M52, M74, M76, M77, M103
Next Month: M41, M44, M46, M47, M48, M50, M67, M81, M82, M93

NGC and other Deep Sky Objects
NGC 2244: Open cluster embedded in the Rosette Nebula in Monoceros.
NGC 2264: The Christmas Tree cluster in Monoceros.
NGC 2301: Open cluster in Monoceros.
NGC 2362: The Tau Canis Majoris Cluster.
NGC 2392: The Eskimo Nebula in Gemini.
NGC 2403: Galaxy in Camelopardalis.

Double Star Program List
32 Eridani: Yellow and white stars.
55 Eridani: Yellow and pale-yellow pair.
Gamma Leporis: Pair of yellow stars.
Epsilon Monocerotis: White primary with a pale-yellow secondary.
Beta Monocerotis: Three bluish white stars.
Kappa Puppis: Equal pair of white stars.
Alpha Ursa Minoris: Polaris, yellow-white and white stars.
N Hydrae: Equal yellow stars.

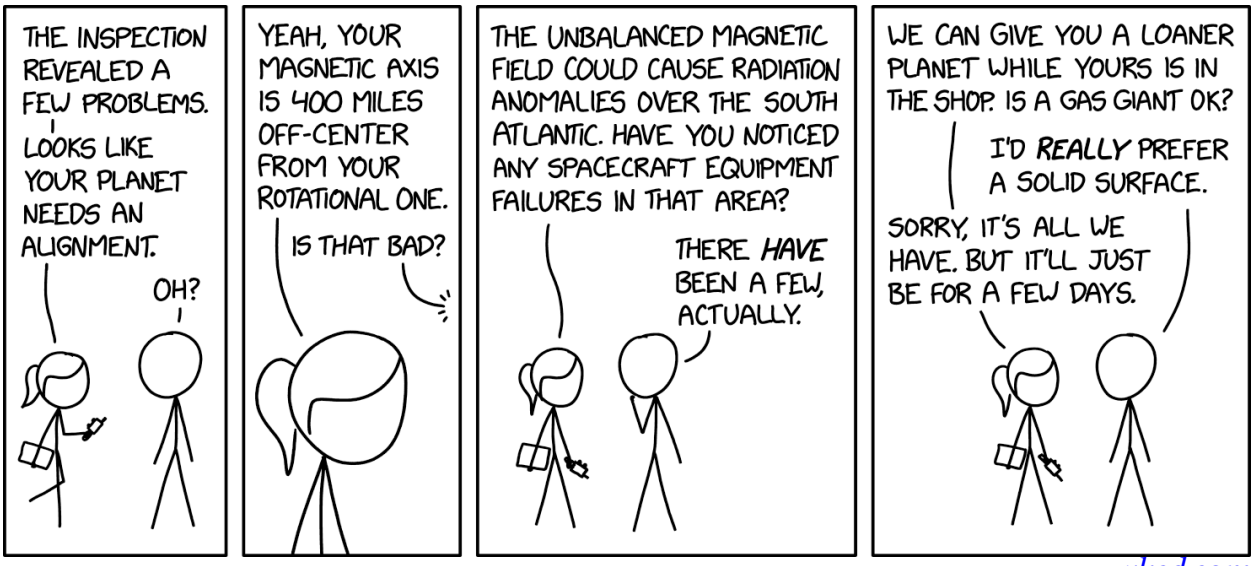
Challenge Object
NGC 2280: Dim elongated 2' x 1' galaxy in Canes Major.

Club Outreach

Don Hain
dhain00@gmail.com
402-440-5318

At this point, Hyde continues to be open to the public on Saturdays in 2026 - the renovation of the foyer and restrooms is looking like it may have been postponed to next year. For now, those of us who volunteer at Hyde should plan on the facility continuing to not need to be closed for deck renovation until/unless you hear differently from the Hyde volunteer co-ordinator Rachel Scheet.

I volunteered at Hyde a couple times late in December. Both times I was there, a crowd with varying levels of experience of the night sky showed up. Everyone enjoyed discussions about Orion and the Pleiades and the "winter hexagon" asterism. In fact, early in the night back in December, portions of the summer triangle were also still visible. Being able to see stars that are harbingers of both summer and winter can lead to some really meaningful conversations about the history of astronomy.



xkcd.com

Club Outreach

Upcoming event(s):

Cosmos and Cocktails: Animal Mating Rituals
When: Saturday, February 14, 2026, 6 to 9 PM
Where: Nebraska State Museum and Planetarium
Needs: we did not commit to this, but you are welcome to join in the festivities (there is a cost associated) - Perhaps we could discuss the mating of hydrogen atoms/nuclei … churning out young 'uns of helium to folks coming by a booth ???

Lied Lodge - Project Learning Tree
When: March 22-24, 2026 (which day is still unknown)
Where: Lied Lodge
Sponsored by: Project Learning Tree | Sustainable Forestry Initiative, Inc.
Needs: volunteers to help with a star walk or stargazing activity

see https://www.plt.org/ and https://www.forests.org

Astronomy Night
When: Saturday, April 11, 2026 5 to 9 PM
Where: Nebraska State Museum and Planetarium
Needs: volunteers at the PAC table(s) - displaying and talking with folks about an astronomy related topic

Hyde Observatory: OPEN

When: Saturday nights … and other nights for groups per request
Where: Hyde Observatory
Needs: volunteers willing to work out on the deck or manage the shows in the classroom about one Saturday per month, or nights scheduled by request of a group

See https://www.hydeobservatory.info/volunteer/ for more information

See https://forms.gle/ZKr4ivapvUhfejwL6 for the volunteer form to get paperwork with the city started. Since Hyde offers the activity through city government a background check is needed. Submission of this form will get that going.

Robert "Doc" Manthey

September 30, 1922 - December 23, 2025

Hyde Volunteer and PAC Member
PAC Vice President 1970-1973

Robert (Bob) Manthey grew up in Lake Badus, SD, with his 5 sisters, Genevieve Tomscha, Jane Archer (Winston-Salem, NC), Paula Popek (Downers Grove, IL), Carolyn Bowers (La Grange, IL), and Patricia Anawski (Sioux Falls, SD) and his parents, Anthony and Mary (Egger) Manthey.

Bob grew up in a very musical family. Each family member sang and played various instruments, and most of the family played by ear and knew 100+ songs. They had a family band called the Manthey Meadowlarks. Bob played the drums as a young boy, learned the trumpet as he got older, and was the emcee for the band. Bob learned to play the drums from the Ramona band, in which his dad was a bass horn player. Bob learned the coronet from the hired hand, Johnson, on the family farm. The Manthey Meadowlarks played at area dances and events near Madison, SD, such as Chamberlain, Lake Poinsett, Nunda, Lake Campbell and the nearby Indian reservation by the Nebraska/South Dakota border. They played 2 to 3 nights a week during the school year and 7 days a week in the summer. The band received about $5 per dance. On Sundays, no one could dance (there was a prohibition to dancing on Sundays), so the Brown and Manthey children would entertain the crowd with tap dancing and music until midnight when the dancing could start.

Bob was in WWII from 1942-1946, where he achieved the rank of Lieutenant Junior Grade in the Navy Air Corp. He graduated from the Naval Air School as a navigator and served in the Pacific theater of World War II. He was a member of the Pacific Fleet Squadron Number VP44, also known as the "Black Cats." Bob was a member of the first graduating class of celestial navigators.

After the war ended, Bob attended college in Ann Arbor, where he met his wife, Virginia Hallett. During college he played in the Phil Bushy band. They moved to Memphis, TN where Bob attended Optometry school and played in the Pappy Graves band. He graduated in the top 3 of his class in 1950. After passing his Optometry boards, the family moved to Minden, NE where they lived from 1950-1960. While in Minden, Bob played in the Forest Roland band. After

Manthey, continued

Minden, the family moved to Pawnee City, NE, where they lived from 1960-1964. Finally, they settled down in Lincoln, NE in 1964, where Bob owned his Optometry practice next to Pearl Vision, then in Montgomery Wards, then back in private practice along 70th and O Streets. Bob retired in 2000.

Although Bob and his family played at dances, he never knew how to dance. Bob wanted his kids to know how to dance, so he signed them up for dance lessons. Soon after, Bob and Virginia started taking ballroom dance lessons with Don and Polly Anderson. They went on to learn many different styles of dancing. Bob and Virginia enjoyed dancing at the Pla-Mor ballroom and the Elks with their friends. After Virginia's passing, Bob kept dancing at the Pla-Mor, the Auld Center and various area dances. At the Auld center, he wanted people to remain until the end, so he started raffling off gold dollar coins after the last song.

Bob and Virginia were members of the Cathedral choir from 1964-1977. They were founding members of St. Joseph parish and were active in the choir there until Virginia's passing. Bob continued to sing in the choir until the early 2000's.

Bob was a member of the Prairie Astronomy club and helped establish the Hyde Observatory in Lincoln. As a celestial navigator in WWII, he had a strong interest in stars and planets. He would take his kids to the club meetings and the observatories in surrounding areas. Before the Gateway mall renovation, he would bring his telescope to the outdoor fountain and invited visitors to look at the moon and planets. He loved talking about vision through the view finder of the telescope to attendees of the observatory, incorporating his optometry knowledge into his love for astronomy.

Clay Anderson with Hyde Observatory Volunteers. Jack Dunn, Steve Lloyd (back row), Caelum Hubl, Erik Hubl, Robert Manthey, Lee Taylor, Clay Anderson, Cassie Etmund, Jason DeVore, Josh Machacek, Dave Knisely. March, 2009

NASA's SPHEREx Observatory Completes First Cosmic Map Like No Other

The telescope will help scientists answer big-picture questions about everything from water deposits in the Milky Way to what happened in the first second after the big bang.

Launched in March, NASA's SPHEREx space telescope has completed its first infrared map of the entire sky in 102 colors. While not visible to the human eye, these 102 infrared wavelengths of light are prevalent in the cosmos, and observing the entire sky this way enables scientists to answer big questions, including how a dramatic event that occurred in the first billionth of a trillionth of a trillionth of a second after the big bang influenced the 3D distribution of hundreds of millions of galaxies in our universe. In addition, scientists will use the data to study how galaxies have changed over the universe's nearly 14 billion-year history and learn about the distribution of key ingredients for life in our own galaxy.

"It's incredible how much information SPHEREx has collected in just six months — information that will be especially valuable when used alongside our other missions' data to better understand our universe," said Shawn Domagal-Goldman, director of the Astrophysics Division at NASA Headquarters in Washington. "We essentially have 102 new maps of the entire sky, each one in a different wavelength and containing unique information about the objects it sees. I think every astronomer is going to find something of value here, as NASA's missions enable the world to answer fundamental questions about how the universe got its start, and how it changed to eventually create a home for us in it."

Circling Earth about 14½ times a day, SPHEREx (which stands for Spectro-Photometer for the History of the Universe, Epoch of Reionization, and Ices Explorer) travels from north to south, passing over the poles. Each day it takes about 3,600 images along one circular strip of the sky, and as the days pass and the planet moves around the Sun, SPHEREx's field of view shifts as well. After six months, the observatory has looked out into space in every direction, capturing the entire sky in 360 degrees.

Managed by NASA's Jet Propulsion Laboratory in Southern California, the mission began mapping the sky in May and completed its first all-sky mosaic in December. It will complete three additional all-sky scans during its two-year primary mission, and

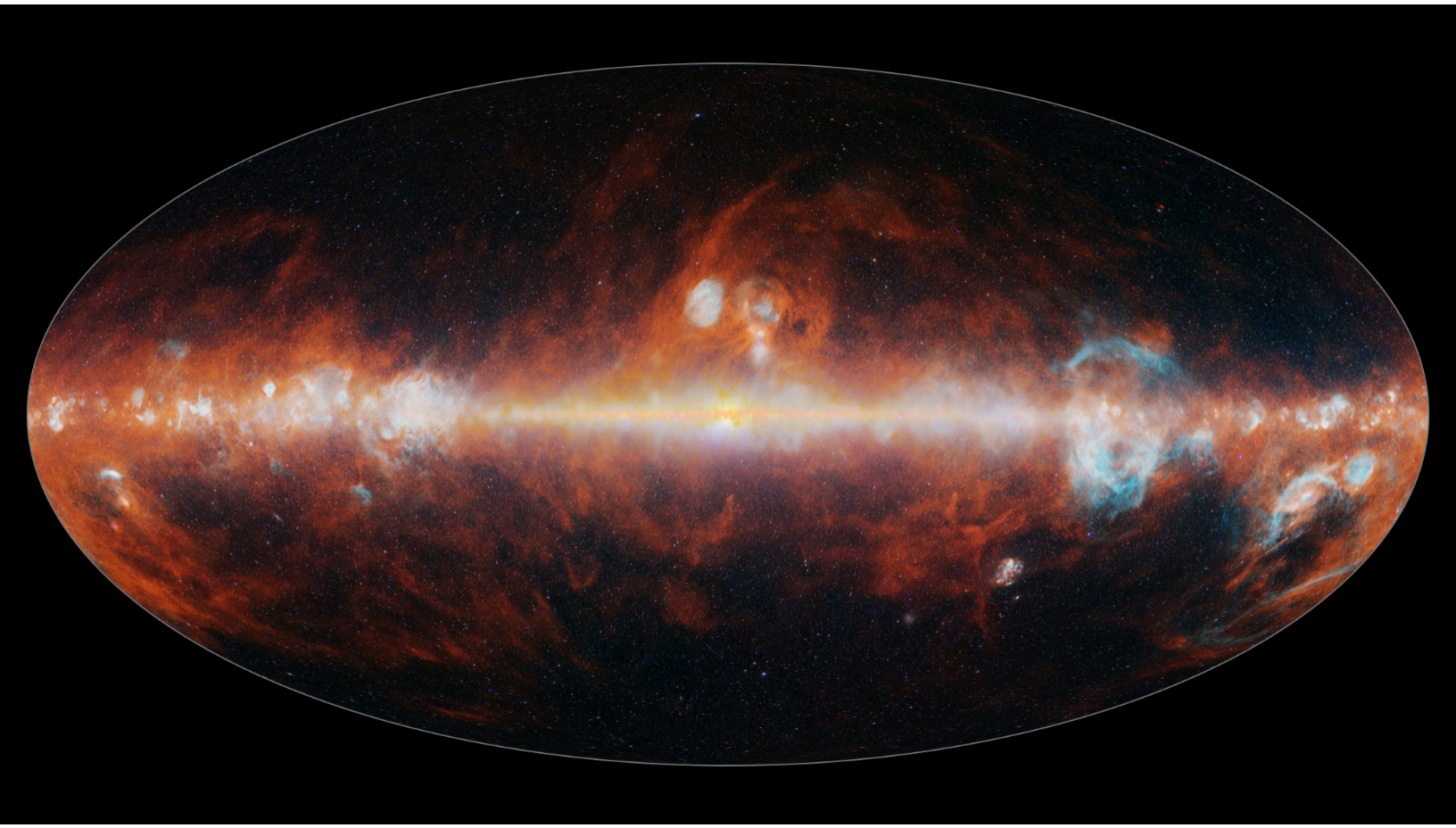
SPHEREx, continued

merging those maps together will increase the sensitivity of the measurements. The entire dataset is freely available to scientists and the public.

"SPHEREx is a mid-sized astrophysics mission delivering big science," said JPL Director Dave Gallagher. "It's a phenomenal example of how we turn bold ideas into reality, and in doing so, unlock enormous potential for discovery."

Superpowered telescope

Each of the 102 colors detected by SPHEREx represents a wavelength of infrared light, and each wavelength provides unique information about the galaxies, stars, planet-forming regions, and other cosmic features therein. For example, dense clouds of dust in our galaxy where stars and planets form radiate brightly in certain wavelengths but emit no light (and are therefore totally invisible) in others. The process of separating the light from a source into its



NASA's SPHEREx has mapped the entire sky in 102 infrared colors, which are invisible to the human eye but can be used to reveal different features of the cosmos. This image features a selection of colors emitted primarily by stars (blue, green, and white), hot hydrogen gas (blue), and cosmic dust (red). Credit: NASA/JPL-Caltech

SPHEREx, continued

component wavelengths is called spectroscopy.

And while a handful of previous missions has also mapped the entire sky, such as NASA's Wide-field Infrared Survey Explorer, none have done so in nearly as many colors as SPHEREx. By contrast, NASA's James Webb Space Telescope can do spectroscopy with significantly more wavelengths of light than SPHEREx, but with a field of view thousands of times smaller. The combination of colors and such a wide field of view is why SPHEREx is so powerful.

"The superpower of SPHEREx is that it captures the whole sky in 102 colors about every six months. That's an amazing amount of information to gather in a short amount of time," said Beth Fabinsky, the SPHEREx project manager at JPL. "I think this makes us the mantis shrimp of telescopes, because we have an amazing multicolor visual detection system and we can also see a very wide swath of our surroundings."

To accomplish this feat, SPHEREx uses six detectors, each paired with a specially designed filter that contains a gradient of 17 colors. That means every image taken with those six detectors contains 102 colors (six times 17). It also means that every all-sky map that SPHEREx produces is really 102 maps, each in a different color.

The observatory will use those colors to measure the distance to hundreds of millions of galaxies. Though the positions of most of those galaxies have already been mapped in two dimensions by other observatories, SPHEREx's map will be in 3D, enabling scientists to measure subtle variations in the way galaxies are clustered and distributed across the universe.

Those measurements will offer insights into an event that took place in the first billionth of a trillionth of a trillionth of a second after the big bang. In this moment, called inflation, the universe expanded by a trillion-trillionfold. Nothing like it has occurred in the universe since, and scientists want to understand it better. The SPHEREx mission's approach is one way to help in that effort.

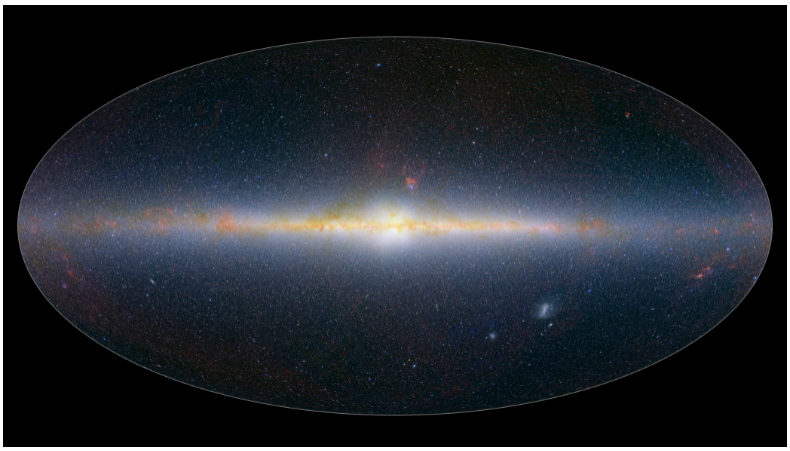
More about SPHEREx

The SPHEREx mission is managed by JPL for NASA's Astrophysics Division within the Science Mission Directorate in Washington. The telescope and the spacecraft bus were built by BAE Systems. The science analysis of the SPHEREx data is being conducted by a team of scientists at 10 institutions across the U.S., and in South Korea and Taiwan. Data is processed and archived at IPAC at Caltech in Pasadena, which

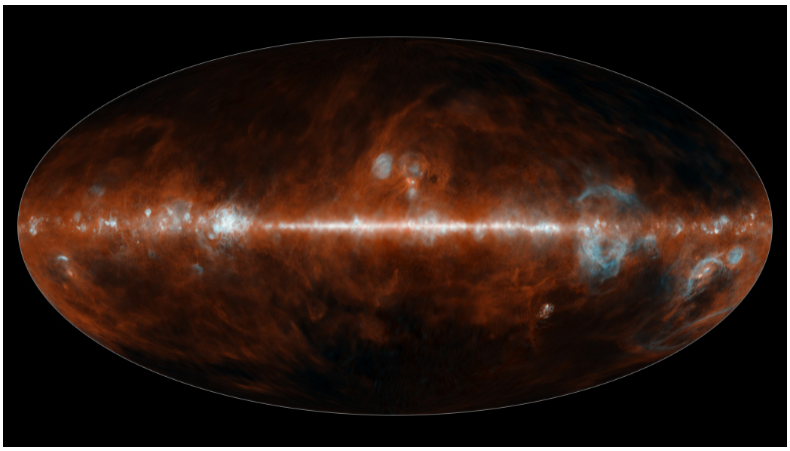
SPHEREx, continued

manages JPL for NASA. The mission's principal investigator is based at Caltech with a joint JPL appointment. The SPHEREx dataset is publicly available.

For more information about the SPHEREx mission visit: https://science.nasa.gov/mission/spherex/

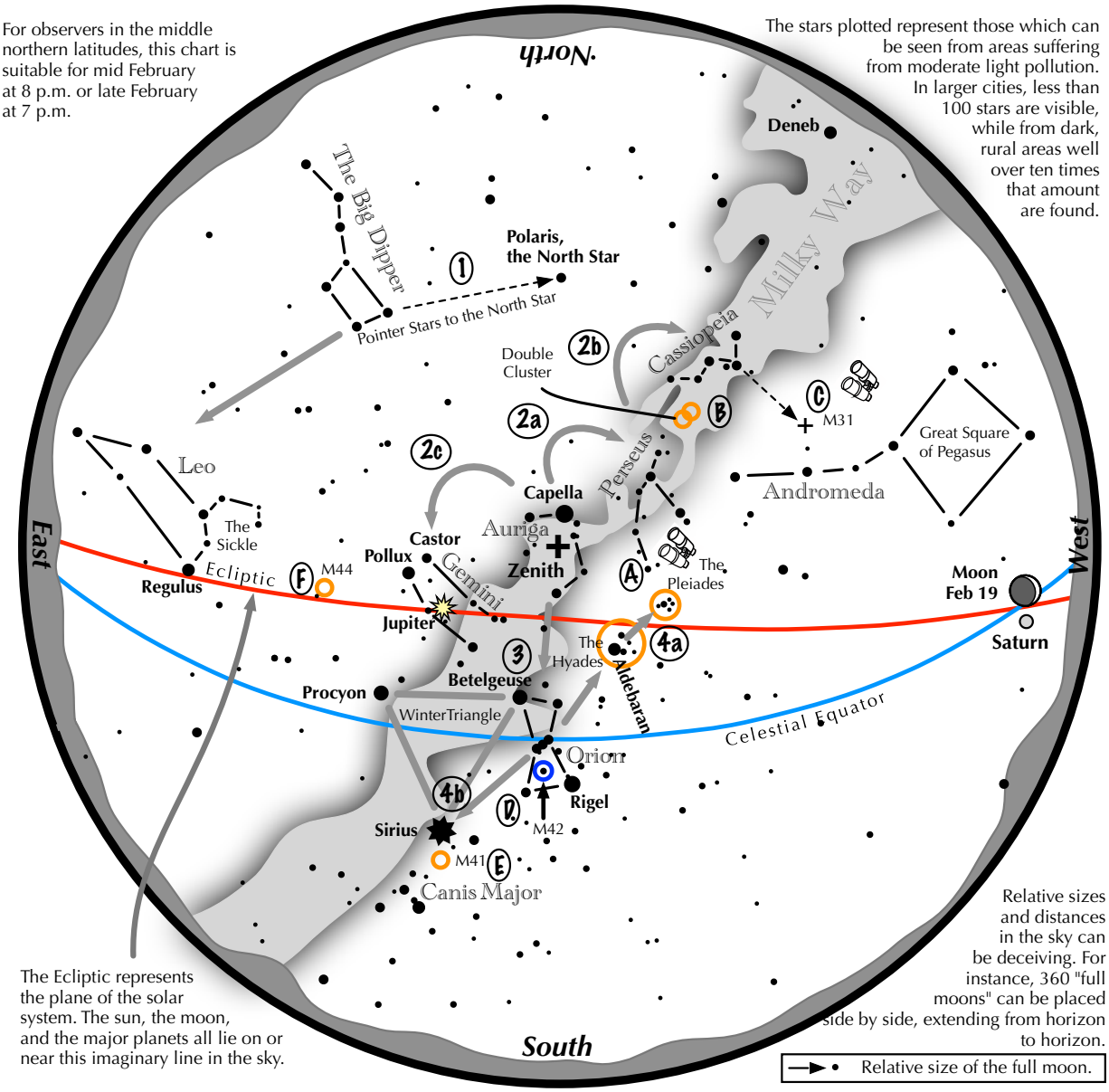


This SPHEREx image shows a selection of the infrared colors primarily emitted by stars and galaxies. The space telescope is observing hundreds of millions of distant galaxies across the sky. Its multiwavelength view will help astronomers measure the distance to those galaxies.. Credit: NASA/JPL-Caltech



The infrared colors emitted primarily by dust (red) and hot gas (blue), key ingredients for forming new stars and planets, are seen in this SPHEREx image. Though these clouds of material cover a massive portion of the sky, they are invisible in most wavelengths of light including those the human eye can detect. Credit: NASA/JPL-Caltech

Navigating the February Night Sky



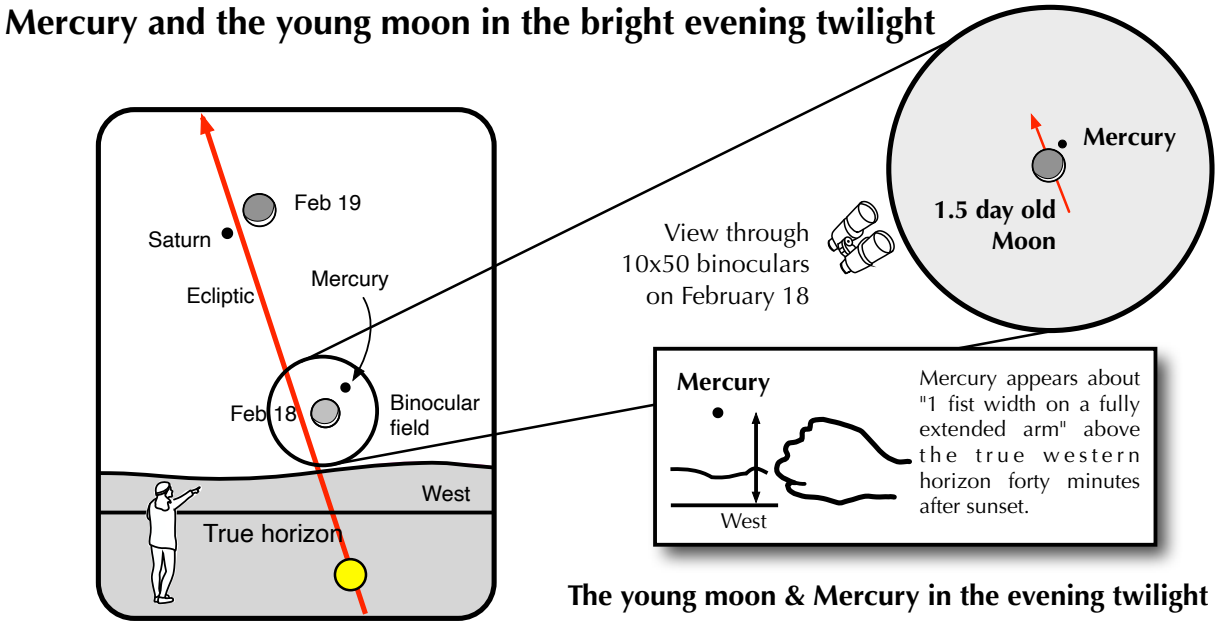
Navigating the February night sky: Simply start with what you know or with what you can easily find.

1. Above the northeast horizon rises the Big Dipper. Draw a line from its two end bowl stars upwards to the North Star.
2. Face south. Overhead twinkles the bright star Capella in Auriga. Jump northwestward along the Milky Way first to Perseus, then to the "W" of Cassiopeia. Next jump southeastward from Capella to the twin stars of Castor and Pollux in Gemini.
3. Directly south of Capella stands the constellation of Orion with its three Belt stars, its bright red star Betelgeuse, and its bright blue-white star Rigel.
4. Use Orion's three Belt stars to point northwest to the red star Aldebaran and the Hyades star cluster, then to the Pleiades star cluster. Travel southeast from the Belt stars to the brightest star in the night sky, Sirius, a member of the Winter Triangle.

Binocular Highlights

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

Astronomical League Outreach



February 18 and 19, 2026: Mercury and the young crescent moon forty minutes after sunset in the west

The young moon & Mercury in the evening twilight

Have you ever spotted Mercury? Many stargazers have not. The early evening scene on February 18 presents a good opportunity to catch the elusive little planet. Look low into the western twilight forty minutes after sunset.

- Using binoculars, look on February 18 for the very thin crescent Moon floating either below or left of Mercury. Can you see Earthshine on the Moon's dark side or is the twilight too bright? The Moon may be difficult to spot appearing as a washed-out sliver. Some areas in the extreme southcentral US might see the moon occult the planet before the twilight brightens too much.
- On the next evening, Mercury is in the same place, but the moon has moved higher and next to Saturn.

Dragon Capsule Reentry

Dragon capsule with 4 astronauts re-enters over the West Coast, then lands in the ocean off San Diego! Submitted by John Reinert, these photos were taken by his friend Alex Van in the San Fernando Valley.

Astrophotography

M31 by Dave Churilla

This is a preliminary workup of Messier 31 (NGC 224) also known as the Andromeda Galaxy. It is approximately 2.5 million light years from earth and 152,000 light years across. It has 2 companion galaxies, Messier 110 and Messier 32. This image is a mosaic of 175 30 second images taken over an hour and 40 minutes stacked and processed in SeeStar. I plan at least 2 more sessions of 1.5 hours each to add images to this. It will be interesting, for me at least, to see the difference it makes. I thought showing the development might be interesting.

Astrophotography

The Flaming Star Nebula, The Tadpoles Nebula, M36 and M38.
By Brett Boller
22.5 hours total - 5 minute subs
Location: Friend, Nebraska on 1/11, 1/7, 1/6, 1/5, 12/27, 12/26,
Williams Optics Redcat 51mm / ZWO ASI2600 / ZWO AM5N
Pixinsight and Photoshop

From the Archives, January, 2000

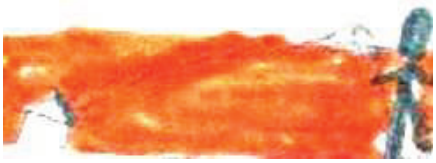
Telescope Making Marathon Part IV: "Are We There Yet?"
By Martin Gaskell

"How do you know when you're got to the right focal length?" is a very common question people ask me about making a mirror. There are several ways of checking. You can check the radius of curvature (twice the focal length) or the focal length itself. If you check the radius of curvature you can either do it optically by finding where you need to place a light source so that it reflects back to the same distance or you can do it mechanically by measuring the depth of the curve on the mirror.

Since we were working outside on a bright sunny day the obvious thing to do was to use the sun (a convenient source at "infinity") to make an image and measure the focal length. A rough-ground piece of glass does not reflect like a mirror on its own so, you need to wet the surface with water to make it smooth and reflective. The sun is so bright that even with no aluminum coating on the mirror the image is very bright. The quality of the image made by the wet rough-ground surface is very poor but even at this stage you can tell to the nearest inch what the focal length is.

Left: Liz Klimek holds the mirror blank while John Dowd wets the surface with water from a squirt bottle.

Right: Michael and Margaret Fairchild measure the distance from the wet mirror to the image of the sun on a piece of paper held by Martin Gaskell.



Drawing by Daniel Gaskell of how we measured the focal length.

MEMBERSHIP INFO

REGULAR MEMBER - $30.00 per year. Includes club newsletter, and 1 vote at club meetings, plus all other standard club privileges.

FAMILY MEMBER - $35.00 per year. Same as regular member except gets 2 votes at club meetings.

STUDENT MEMBER - $10.00 per year with volunteer requirement.

If you renew your membership prior to your annual renewal date, you will receive a 10% discount.

Club members are also eligible for special subscription discounts on Sky & Telescope Magazine.

CLUB TELESCOPES

To check out one of the club telescopes, please contact a club officer. Scopes can be checked out at a regular club meeting and kept for one month. Checkout can be extended for another month if there are no other requests for the telescope, but you must notify a club officer in advance.
100mm Orion refractor: Available
10 inch Meade Starfinder Dobsonian: Available.
13 inch Truss Dobsonian: Needs repair.
10 inch Zhumell: Needs mount.

Buy the book! The Prairie Astronomy Club: Fifty Years of Amateur Astronomy. Order online from Amazon or lulu.com.

ADDRESS

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