The New Syzygy

The Newsletter of the Kern Astronomical Society No. 567 December 2022

KAS Open Meeting

First Friday of

Every Month

Round Table Pizza,
4200 Gosford Road,
Suite 101, Bakersfield, CA

Dinner & Social 6:30 pm
Meeting/Program 7:30 pm

Our annual Christmas Party will be held on December 2nd at Round Table Pizza at 4200 Gosford Road.

Join us on Facebook: https://www.facebook.com/groups/syzygy/

Visit our Web Page at https://www.kernastro.org

Contact us at kernastronomicalsociety@gmail.com

Reach for the Stars

Upcoming Meetings

December – Annual Christmas Party
January – Goldstone
February – TBD
March – The Winter Sky – Tim Stoner

December Events

December 17 – Last quarter moon star party at Chuchupate.

December 21 – Winter Solstice for Northern Hemisphere

December 25 – Happy Holidays

KAS Annual Christmas Party

We will be holding our annual Christmas Party on Friday, December 2nd, at our regular meeting place at Round Table Pizza at 4200 Gosford Road. Bring a dessert to share. We will have a table set up for a "dessert bar". Pizza and drinks can be ordered as usual. The party starts at 6:30 pm just like our regular meetings.

Membership Renewal

We thank you once again for taking this extraordinary journey with us! We sincerely hope that you will continue exploring the Universe with us by renewing your membership! There is so much more to discover! Renew your membership and renew your commitment to science!

Thank you,

Diane Franco

It's time for membership renewal. Just $25 gets you and your family membership in the Kern Astronomical Society for the following year. Renewing now really helps us budget for next year's activities and future speakers. You can renew at the meetings (cash or check) or use the form at the end of the newsletter and send it with a check to our mailbox address. The benefits of membership are listed in the InfoShare section at the end of the newsletter.

The Winter Solstice

On December 21st the Sun reaches the point in the sky farthest south of the celestial equator marking the start of winter in the Northern Hemisphere and summer in the Southern Hemisphere. December 21st is also our shortest day with 9 hrs 46 min of daylight, but it is not the date of our earliest sunset or latest sunrise. Our earliest sunset occurs on December 5th at 4:43 pm and out latest sunrise occurs on January 5th at 7:05 am. By New Year's Day the evenings will have lengthened out by 11 minutes with the sun setting at 4:54 pm and by the end of January, the evenings will have lengthened out to 5:23 pm, 40 minutes later than the earliest sunset back in December. In stark contrast, by the end of January the sun has gained only 9 minutes (rising at 6:56 am) on its latest sunrise. To understand why our daylight hours seem "skewed" towards the evening as the new year gets underway, read about the "Analemma" on the www.

On Dec 21 the sun will be at a declination of -23.5 degrees in the constellation of Sagittarius, just above the spout of the Teapot. Look for Venus and Mercury low in the southwest just after sunset.

The Evening Sky Map

FREE* EACH MONTH FOR YOU TO EXPLORE, LEARN & ENJOY THE NIGHT SKY

WWW.SKYMAPS.COM

NORTHERN HEMISPHERE
DECEMBER 2022

Sky Calendar – December 2022

Get Sky Calendar on Twitter
http://twitter.com/skymaps

2 **Moon near Jupiter** at 4h UT (evening sky). Mag. –2.6.

5 **Moon near Uranus** at 18h UT (evening sky). Mag. 5.7. Occultation visible from western Europe, the Middle East, and north Asia.

6 **Moon near the Pleiades** at 23h UT (evening sky).

8 **Full Moon** at 4:09 UT.

8 **Moon near Mars** at 5h UT (midnight sky). Mag. –1.9. Occultation visible from USA, Canada, Greenland and western Europe.

8 **Mars at Opposition** at 6h UT. Mag. –1.9.

12 **Moon at apogee** (farthest from Earth) at 0h UT (distance 405,869km; angular size 29.4').

12 **Moon near Beehive cluster M44** at 12h UT (morning sky).

14 **Moon near Regulus** at 10h UT (morning sky).

14 **Geminid Meteor Shower** peaks in a broad maximum centred at 13h UT. Produces bright, medium-speed meteors at its peak (up to 80 meteors/hour). Most reliable meteor shower. Moonlight will interfere once the Moon rises.

16 **Last Quarter Moon** at 8:58 UT.

18 **Moon near Spica** at 18h UT (morning sky).

21 **Mercury at greatest elongation** east at 15h UT (20° from Sun, evening sky). Mag. –0.5.

21 **December solstice** at 21:48 UT. The time when the Sun reaches the point farthest south of the celestial equator marking the start of winter in the Northern Hemisphere and summer in the Southern Hemisphere.

23 **New Moon** at 10:17 UT. Start of lunation 1237.

24 **Moon at perigee** (closest to Earth) at 8:34 UT (distance 358,270km; angular size 33.4').

24 **Moon, Mercury and Venus** within a circle of diameter 4.9° at 16h UT (about 18° from Sun, evening sky). Mags. –0.3 and –3.9.

26 **Moon near Saturn** at 19h UT (evening sky). Mag. 0.8.

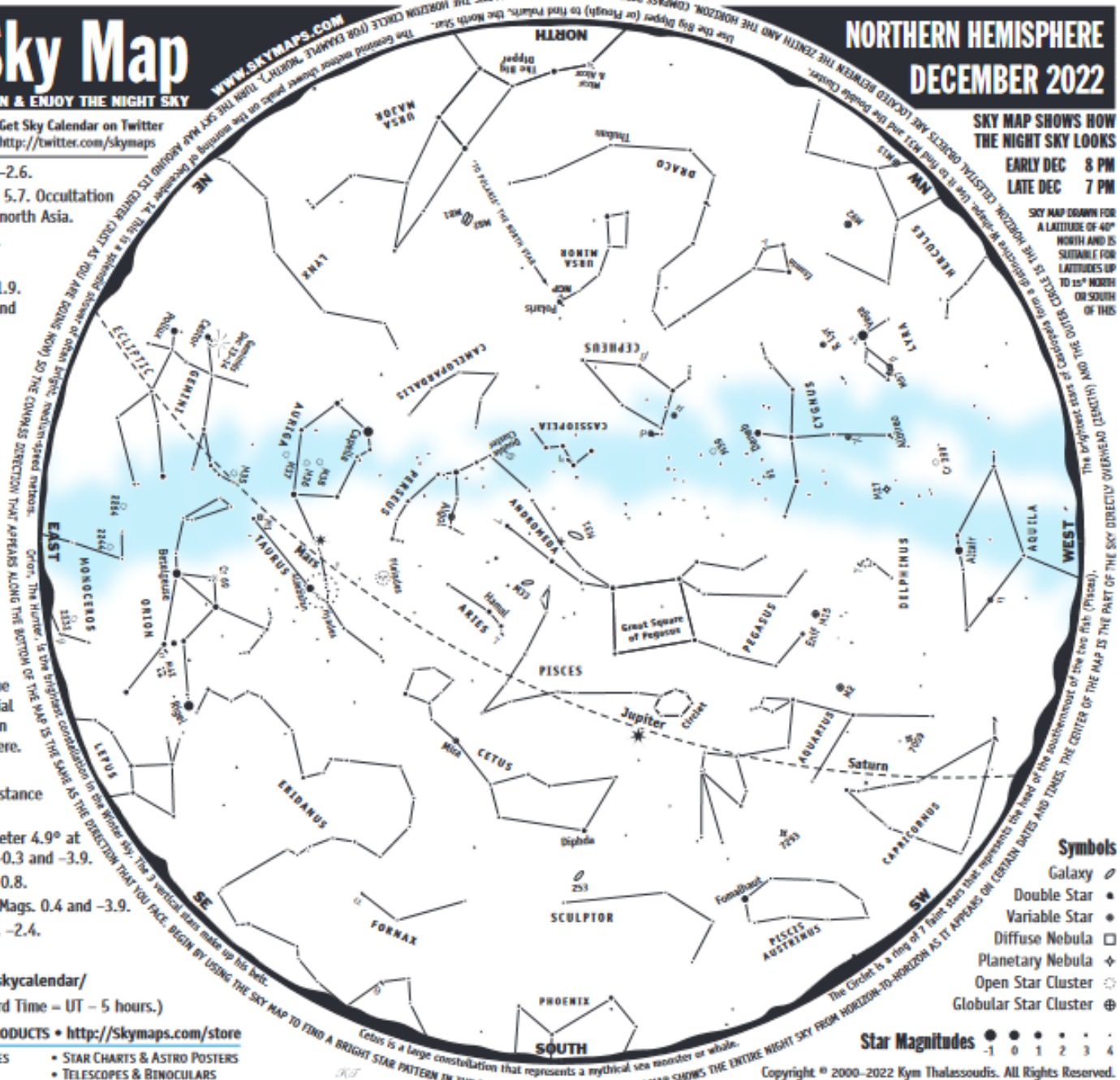
29 **Mercury 1.4° N of Venus** at 8h UT (evening sky). Mags. 0.4 and –3.9.

29 **Moon near Jupiter** at 13h UT (evening sky). Mag. –2.4.

30 **First Quarter Moon** at 1:21 UT.

More sky events and links at http://Skymaps.com/skycalendar/

All times in Universal Time (UT). (USA Eastern Standard Time = UT – 5 hours.)



SKY MAP SHOWS HOW THE NIGHT SKY LOOKS

EARLY DEC 8 PM
LATE DEC 7 PM

SKY MAP DRAWN FOR A LATITUDE OF 40° NORTH AND IS SUITABLE FOR LATITUDES UP TO 15° NORTH OR SOUTH OF THIS

Symbols

- Galaxy
- Double Star
- Variable Star
- Diffuse Nebula
- Planetary Nebula
- Open Star Cluster
- Globular Star Cluster

Star Magnitudes -1 0 1 2 3 4

About the Celestial Objects

Listed on this page are several of the brighter, more interesting celestial objects visible in the evening sky this month (refer to the monthly sky map). The objects are grouped into three categories. Those that can be easily seen with the naked eye (that is, without optical aid), those easily seen with binoculars, and those requiring a telescope to be appreciated. **Note, all of the objects (except single stars) will appear more impressive when viewed through a telescope or very large binoculars.** They are grouped in this way to highlight objects that can be seen using the optical equipment that may be available to the star gazer.

Tips for Observing the Night Sky

When observing the night sky, and in particular deep-sky objects such as star clusters, nebulae, and galaxies, it's always best to observe from a dark location. Avoid direct light from street lights and other sources. If possible observe from a dark location away from the light pollution that surrounds many of today's large cities.

You will see more stars after your eyes adapt to the darkness—usually about 10 to 20 minutes after you go outside. Also, if you need to use a torch to view the sky map, cover the light bulb with red cellophane. This will preserve your dark vision.

Finally, even though the Moon is one of the most stunning objects to view through a telescope, its light is so bright that it brightens the sky and makes many of the fainter objects very difficult to see. So try to observe the evening sky on moonless nights around either New Moon or Last Quarter.

Astronomical Glossary

Conjunction – An alignment of two celestial bodies such that they present the least angular separation as viewed from Earth.

Constellation – A defined area of the sky containing a star pattern.

Diffuse Nebula – A cloud of gas illuminated by nearby stars.

Double Star – Two stars that appear close to each other in the sky; either linked by gravity so that they orbit each other (binary star) or lying at different distances from Earth (optical double). Apparent separation of stars is given in seconds of arc (").

Ecliptic – The path of the Sun's center on the celestial sphere as seen from Earth.

Elongation – The angular separation of two celestial bodies. For Mercury and Venus the greatest elongation occurs when they are at their most angular distance from the Sun as viewed from Earth.

Galaxy – A mass of up to several billion stars held together by gravity.

Globular Star Cluster – A ball-shaped group of several thousand old stars.

Light Year (ly) – The distance a beam of light travels at 300,000 km/sec in one year.

Magnitude – The brightness of a celestial object as it appears in the sky.

Open Star Cluster – A group of tens or hundreds of relatively young stars.

Opposition – When a celestial body is opposite the Sun in the sky.

Planetary Nebula – The remnants of a shell of gas blown off by a star.

Universal Time (UT) – A time system used by astronomers. Also known as Greenwich Mean Time. USA Eastern Standard Time (for example, New York) is 5 hours behind UT.

Variable Star – A star that changes brightness over a period of time.

CELESTIAL OBJECTS

NORTHERN HEMISPHERE
DECEMBER 2022

Skymaps.com

Easily Seen with the Naked Eye

Altair	Aql	•	Brightest star in Aquila. Name means "the flying eagle". Dist=16.7 ly.
Capella	Aur	•	The 6th brightest star. Appears yellowish in color. Spectroscopic binary. Dist=42 ly.
δ Cephei	Cep	◔	Cepheid prototype. Mag varies between 3.5 & 4.4 over 5.366 days. Mag 6 companion.
Deneb	Cyg	•	Brightest star in Cygnus. One of the greatest known supergiants. Dist=1,400±200 ly.
Castor	Gem	◔	Multiple star system with 6 components. 3 stars visible in telescope. Dist=52 ly.
Pollux	Gem	•	With Castor, the twin sons of Leda in classical mythology. Dist=34 ly.
Vega	Lyr	•	The 5th brightest star in the sky. A blue-white star. Dist=25.0 ly.
Rigel	Ori	•	The brightest star in Orion. Blue supergiant star with mag 7 companion. Dist=770 ly.
Betelgeuse	Ori	•	One of the largest red supergiant stars known. Diameter=300 times that of Sun. Dist=430 ly.
Algol	Per	•	Famous eclipsing binary star. Magnitude varies between 2.1 & 3.4 over 2.867 days.
Fomalhaut	PsA	•	Brightest star in Piscis Austrinus. In Arabic the "fish's mouth". Dist=25 ly.
Pleiades	Tau	○	The Seven Sisters. Spectacular cluster. Many more stars visible in binoculars. Dist=399 ly.
Hyades	Tau	○	Large V-shaped star cluster. Binoculars reveal many more stars. Dist=152 ly.
Aldebaran	Tau	•	Brightest star in Taurus. It is not associated with the Hyades star cluster. Dist=65 ly.
Polaris	UMi	◔	The North Pole Star. A telescope reveals an unrelated mag 8 companion star. Dist=433 ly.

Easily Seen with Binoculars

M31	And	⬭	The Andromeda Galaxy. Most distant object visible to naked eye. Dist=2.5 million ly.
M2	Aqr	●	Resembles a fuzzy star in binoculars.
η Aquilae	Aql	•	Bright Cepheid variable. Mag varies between 3.6 & 4.5 over 7.166 days. Dist=1,200 ly.
M38	Aur	○	Stars appear arranged in "pi" or cross shape. Dist=4,300 ly.
M36	Aur	○	About half size of M38. Located in rich Milky Way star field. Dist=4,100 ly.
M37	Aur	○	Very fine star cluster. Discovered by Messier in 1764. Dist=4,400 ly.
μ Cephei	Cep	•	Herschel's Garnet Star. One of the reddest stars. Mag 3.4 to 5.1 over 730 days.
Mira	Cet	•	Famous long period variable star. Mag varies between 3.0 & 10.1 over 332 days.
χ Cygni	Cyg	•	Long period pulsating red giant. Magnitude varies between 3.3 & 14.2 over 407 days.
M39	Cyg	○	May be visible to the naked eye under good conditions. Dist=900 ly.
ν Draconis	Dra	◔	Wide pair of white stars. One of the finest binocular pairs in the sky. Dist=100 ly.
M35	Gem	○	Fine open cluster located near foot of the twin Castor. Dist=2,800 ly.
M92	Her	●	Fainter and smaller than M13. Use a telescope to resolve its stars.
ε Lyrae	Lyr	◔	Famous Double Double. Binoculars show a double star. High power reveals each a double.
R Lyrae	Lyr	•	Semi-regular variable. Magnitude varies between 3.9 & 5.0 over 46.0 days.
Cr 69	Ori	○	Lambda Orionis Cluster. Dist=1,630 ly.
M42	Ori	□	The Great Orion Nebula. Spectacular bright nebula. Best in telescope. Dist=1,300 light years.
M15	Peg	●	Only globular known to contain a planetary nebula (Mag 14, d=1"). Dist=30,000 ly.
Double Cluster	Per	○	Double Cluster in Perseus. NGC 869 & 884. Excellent in binoculars. Dist=7,300 ly.
253	Scl	⬭	Fine, large, cigar-shaped galaxy. Requires dark sky. Member of Sculptor Group.
Cr 399	Vul	○	Coathanger asterism or "Brocchi's Cluster". Not a true star cluster. Dist=218 to 1,140 ly.

Telescopic Objects

γ Andromedae	And	◔	Attractive double star. Bright orange star with mag 5 blue companion. Sep=9.8".
7009	Aqr	✧	Saturn Nebula. Requires 8-inch telescope to see Saturn-like appendages.
7293	Aqr	✧	Helix Nebula. Spans nearly 1/4 deg. Requires dark sky. Dist=300 ly.
γ Arietis	Ari	◔	Impressive looking double blue-white star. Visible in a small telescope. Sep=7.8".
η Cassiopeiae	Cas	◔	Yellow star mag 3.4 & orange star mag 7.5. Dist=19 ly. Orbit=480 years. Sep=12".
Albireo	Cyg	◔	Beautiful double star. Contrasting colours of orange and blue-green. Sep=34.4".
61 Cygni	Cyg	◔	Attractive double star. Mags 5.2 & 6.1 orange dwarfs. Dist=11.4 ly. Sep=28.4".
γ Delphini	Del	◔	Appear yellow & white. Mags 4.3 & 5.2. Dist=100 ly. Struve 2725 double in same field.
θ Eridani	Eri	◔	Striking blue-white double star. Mags 3.2 & 4.3. Visible in a small telescope. Sep=8.2".
β Lyrae	Lyr	◔	Eclipsing binary. Mag varies between 3.3 & 4.3 over 12.940 days. Fainter mag 7.2 blue star.
M57	Lyr	✧	Ring Nebula. Magnificent object. Smoke-ring shape. Dist=4,100 ly.
σ Orionis	Ori	◔	Superb multiple star. 2 mag 7 stars one side, mag 9 star on other. Struve 761 triple in field.
M1	Tau	□	Crab Nebula. Remnant from supernova which was visible in 1054. Dist=6,500 ly.
M33	Tri	⬭	Fine face-on spiral galaxy. Requires a large aperture telescope. Dist=2.3 million ly.
M81	UMa	⬭	Beautiful spiral galaxy visible with binoculars. Easy to see in a telescope.
M82	UMa	⬭	Close to M81 but much fainter and smaller.
M27	Vul	✧	Dumbbell Nebula. Large, twin-lobed shape. Most spectacular planetary. Dist=975 ly.

Kern Astronomical Society InfoShare

Since 1956, the Kern Astronomical Society has promoted community awareness of current events in astronomy, and provides a forum for sharing of knowledge and experiences among amateur astronomers. Annual membership is $25.00 which also provides membership in the Amateur Astronomical League, access to their newsletter (Reflector Magazine), and participation in observational programs.

Star Parties and Outreach

The Kern Astronomical Society typically has two Club Star Parties each month depending on the weather. Our Club Parties are held on Saturdays nearest the New Moon. We also host Public Star Parties at various locations around town during April - October. These parties are held on Saturdays nearest the first quarter Moon. In addition, we also host Lunar, Solar, and Planetary viewing for Public Schools. Requests may be directed to our Star Party Coordinator.

Club Equipment

The Kern Astronomical Society has telescopes and accessories (listed below) available for loan to Club Members in good standing. Members are encouraged to borrow the different types of telescopes in stock (especially if you are considering purchasing one). Trying out different sizes and types of telescopes can help you make an informed decision about purchases. If you have a Club telescope in your possession, you will be expected to participate in at least one public star party.

- 6” f/6, 8” f/6, 10” f/5.6, 13” f/4.5 Dobsonian telescopes, Parks Jovian 90, 3 ½” f/13 Maksukov-Cassegrain, 4” f/15 Unitron Refractor
- 8” Solar Filter
- Assorted eyepieces

Privileges and Benefits of Membership in the Kern Astronomical Society

1) Hold an elected position as an Officer or Board Member in the Society
2) Vote in the election process and on business at meetings
3) Go on sponsored field trips to various astronomy related events (i.e. Mt Wilson Observatory, Panamint Springs Dark Sky, etc.)
4) Membership in the Astronomical League which includes subscription to Reflector Magazine
5) Discount for Sky and Telescope Magazine
6) Access/use of club telescopes and related equipment / Help with use of equipment by members
7) You are covered under the Society's insurance at related events

KAS Club Officers/Board Members

President:	Gregg Pytlak	ggpytlak@yahoo.com
Vice President:	Diane Franco	dianef02@yahoo.com
Treasurer	Ron Church	
Secretary	Rod Guice	stargazer10000@gmail.com
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Kern Astronomical Society

New Membership/Renewal 2023

Date: _____

Name: _____

Family Members: _____

Address: _____

City, State, Zip: _____

Phone: _____

Email:** _____

My check # _____in the amount of $ _____ is enclosed.

Yearly Membership $25

Make checks payable to: KAS (or) Kern Astronomical Society

You can also mail this form and check to:

Kern Astronomical Society
5501 Stockdale Hwy #10241
Bakersfield, CA 93389

** Please provide the email address where you wish to receive the KAS newsletter (if different than above)

"SYZYGY": _____