The New Syzygy

The Newsletter of the Kern Astronomical Society No. 554 November 2021

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 regular monthly meeting will be held on November 5th 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

Important Messages from the Board

Membership: We are now collecting annual membership fees for 2022. New members can join for our annual fee which will cover the remaining months of 2021 and year 2022. Annual membership is $25. There is an application form at the end of the newsletter.

Election of Club Officers: Our annual election of club officers will be postponed until after the first of the year. So far, most of the current officers have been contacted and have confirmed that they will remain in their positions until a new election is held. However, we are in need of someone to fill the club secretary position. If interested, please e-mail Gregg Pytlak at gpytlak@yahoo.com. Here is a description of the duties:

Secretary Position Duties from the Club Bylaws:

Section 4: The Secretary shall keep records, submit notices, and make reports to the members and Board of Directors, and perform such duties as are incidental to the office. The secretary must assist the treasurer in record keeping of the KAS membership list updated by administrating sign in sheets at all meetings.

Upcoming Star Parties

New moon star party / dark sky trip on November 6th at Panamint Springs. Last quarter moon star party on November 27th at Chuchupate. Check the KAS Facebook page or your e-mails for updates. More on the Panamint Springs star party below.

Upcoming Meetings

November – Telescope Talk - Darren Bly

December – Christmas Party

Panamint Springs Dark Sky Trip

KAS has reserved the Group Camp Site at Panamint Springs Resort for the nights of November 5th and 6th. Most of us will arrive on Saturday (November 6th) but there are a few that may arrive on Friday. Take a look at the site's website for more information about it. https://www.panamintsprings.com/. This is a very dark site, MUCH darker than our normal site. Panamint Springs is located about 200 miles away in the desert just this side of Death Valley. The best place to "gas up" on the way is at the Shell station in Pearsonville on Hwy 395. Gas in Panamint Springs is very expensive.

Congratulations to Darren Bly

The Board would like to recognize Darren Bly for over 40 years of participation and service in the Kern Astronomical Society. Darren has served in many different club positions over the years and currently coordinates our outreach events and star parties. In recognition, the Board has approved Darren for a complementary lifetime membership.

Thank you for all your years of service Darren.

KAS Annual Christmas Party

We will be holding our annual Christmas Party on Friday, December 3rd, at our regular meeting place at Round Table Pizza at 4200 Gosford Road. Similar to our meetings, we cannot bring "meals" into the restaurant but pizza, salad, etc. may be ordered at the counter. Round Table is OK with us bringing in desserts so we will have a table set up as a "dessert bar". The party starts at 6:30 pm just like our regular meetings.

Curious Minds in Tanzania

by: Walter Albrecht

Eliatosha Maleko, a Standard 6 school teacher of English, geography, and science has a science club every Friday at the Ilboru Primary School in Arusha, Tanzania. Maleko plays the Eyes in the Skies podcast in Swahili to his students using his cell phone. Thanks to a donation of a rechargeable bluetooth speaker he is able to play the podcast for the entire club of approximately 60 students. He also has a laptop but the screen is difficult to see in a large class.

The students are learning about lenses and after listening to the podcast the students go outside and try to make lenses with pieces of glass and sticks. They want to make an instrument that will help them understand the universe. The students have a lot of questions about what they have learned. Maleko is a member of Astronomers Without Borders (AWB) and he posted his students' questions for other members to answer. Here is a sample of their inquiries and my responses:

Dear Students from the Science Club, I trust that you are doing well. I am pleased to answer your great questions.

Clara Elirehema asked: Here in the world there are a variety of minerals that are very important in the production of various substances, do not experts see the importance of using solar gases such as Hydrogen gas which is more than 92 percent, Helium 83 percent that make up the sun?

Dear Clara Elirehema, There has been a lot of research in making cars that run on hydrogen. The problem is that making the hydrogen consumes more energy than it creates. Scientists are also working on creating nuclear fusion reactors that convert hydrogen to helium thus releasing huge amounts of energy. This is how the sun works. Tokamak Energy a company in Britain is working on making a fusion reactor. They have to create temperatures as high as 100 million degrees celsius for it to work. That is 7 times hotter than the center of the sun.

Emperor Abasi asked: What effect does solar wind have on living organisms or what effects if it reaches the earth?

Dear Emperor Abasi, The Earth's magnetic field protects us from solar wind. If the wind is strong it can cause auroras in the sky with bright colors you can see at night. But you need to be near the South Pole or North Pole.

Be thankful for our magnetic field because if the Earth had no magnetic field the solar wind would blow away our atmosphere making it difficult for life to exist. Mars lost its magnetic field long ago so its atmosphere is very thin.

Peter Elieta asked: What are the benefits of meteors in the lives of humans or other living things? How big are meteors? And why do the burning particles not fall to the ground as the mineral contains what minerals? Why do meteor showers occur in December each year and not other months? What is the secret in that month?

Dear Peter Eliata, People long ago used the iron in meteorites to make weapons and tools. Nowadays people smelt iron ore to make iron and steel. A meteorite can be anywhere between the size of a grain of sand to one meter in

diameter. Anything larger is considered to be an asteroid. Larger meteors will land on the ground but they can be hard to find. A desert is a good place to look. The tiny particles will not fall to the ground right away but they can be attracted to rain drops and reach the ground that way. Actually there are meteor showers all year long. Here is a link to find out about the meteor showers.

https://www.amsmeteors.org/meteor-showers/meteor-shower-calendar/

Thank you for your excellent questions. I wish you all the best in the future.

Walter Albrecht

Bakersfield

Maleko is an Astronomy Ambassador for the Mount Meru Astronomical Observatory. Mount Meru (14,968 feet) is about an hour from Arusha. It is dwarfed by its famous neighbor Mount Kilimanjaro. Students and teachers visit the observatory for a chance to experience the wonders of the universe.

The Mount Meru Astronomical Observatory can be traced back to the summer of 2010 when Sue and Chuck Ruehle traveled from Wisconsin to Tanzania bringing along three 50mm Galileoscopes. They donated the scopes to local secondary schools in the foothills of Mount Meru. The schools received the telescopes, eyepieces, and additional gear. They instructed the teachers on how to use the equipment, held star parties for the community, and shared their passion for amateur astronomy. Sue and Chuck got together with AWB to get support for the Telescopes to Tanzania project. In 2013 Chuck met filmmaker Kai Staats who helped in the design and construction of an observatory in the foothills of Mount Meru. After Chuck died in 2016 Kai took over the project. In 2019 AWB and generous supporters completed a roll off roof observatory with a 1969 12″ Cave-Cassegrain telescope lovingly restored by members of the Racine, Wisconsin Astronomy Club. Today the observatory works with local teachers like Eliatosha Maleko to be astronomy ambassadors who share their love of astronomy with their students and communities.

The Evening Sky Map

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

WWW.SKYMAPS.COM

NORTHERN HEMISPHERE
NOVEMBER 2021

Sky Calendar – November 2021

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

2 **Mercury 4.1° NNE of Spica** at 7h UT (16° from Sun, morning sky). Mags. –0.8 and 1.0.

3 **Moon near Spica** at 17h UT (17° from Sun, morning sky).

4 **New Moon** at 21:14 UT. Start of lunation 1223.

5 **Uranus at opposition** at 0h UT. Mag. 5.6.

5 **Moon at perigee** (closest to Earth) at 22:28 UT (distance 358,844 km; angular size 33.3').

6 **Venus at southernmost declination** (–27.2°) at 16h UT.

6 **Moon near Antares** at 18h UT (evening sky).

8 **Moon near Venus** at 6h UT (evening sky). Mag. –4.5.

10 **Moon near Saturn** at 17h UT (evening sky). Mag. 0.6.

11 **First Quarter Moon** at 12:47 UT.

11 **Moon near Jupiter** at 21h UT (evening sky). Mag. –2.4.

17 **Leonid meteor shower peaks** at 10h UT. Arises from debris ejected by Comet Tempel-Tuttle. Produces very fast meteors (71 km/sec). Expect 10–15 meteors per hour under dark skies. Bright moonlight will interfere with visual observations.

19 **Full Moon** at 8:58 UT.

19 **Partial Eclipse of the Moon** from 7:19 to 10:47 UT, mid-eclipse at 9:03 UT. Visible from the Americas, northern Europe, east Asia, Australia and the Pacific.

19 **Moon near the Pleiades** at 17h UT (midnight sky).

20 **Moon near Aldebaran** at 11h UT (morning sky).

21 **Moon at apogee** (farthest from Earth) at 2h UT (distance 406,279 km; angular size 29.4').

22 **Moon at northernmost declination** (26.3°) in 2021 at 23h UT.

25 **Moon near Beehive cluster M44** at 8h UT (morning sky).

26 **Dwarf planet 1 Ceres** at opposition at 21h UT. Mag. 7.2.

27 **Moon near Regulus** at 3h UT (morning sky).

27 **Last Quarter Moon** at 12:29 UT.

29 **Mercury at superior conjunction** with the Sun at 4h UT. The innermost planet passes into the evening sky.

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

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

Skymaps.com

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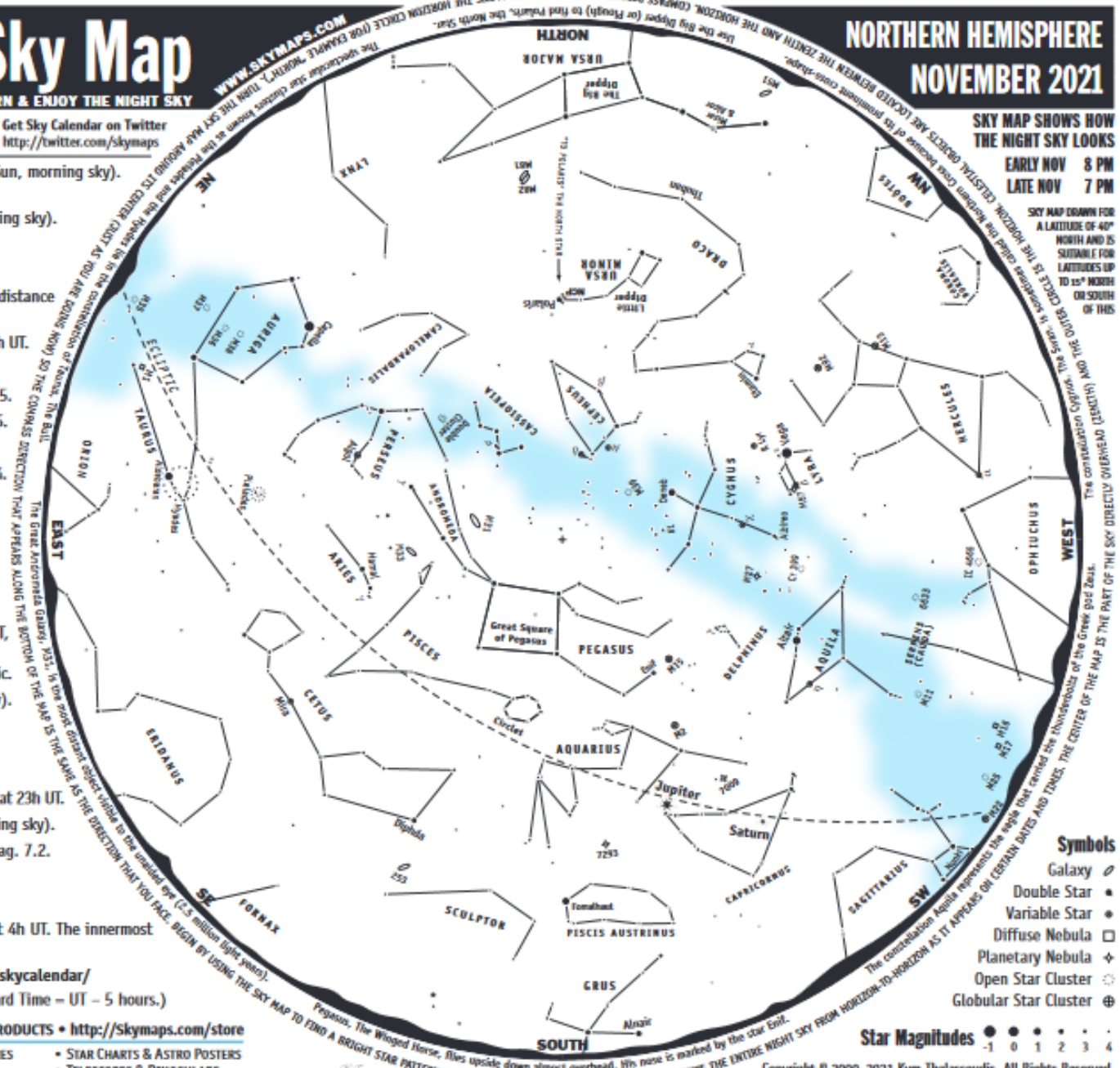
- Star Atlases & Planispheres
- Star Charts & Astro Posters
- Books for Sky Watchers
- Telescopes & Binoculars

All sales support the production and free distribution of The Evening Sky Map.



SKY MAP SHOWS HOW THE NIGHT SKY LOOKS

EARLY NOV 8 PM
LATE NOV 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

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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.

NORTHERN HEMISPHERE
NOVEMBER 2021

CELESTIAL OBJECTS

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.
α Herculis	Her	◔	Semi-regular variable. Magnitude varies between 3.1 & 3.9 over 90 days. Mag 5.4 companion.
Vega	Lyr	•	The 5th brightest star in the sky. A blue-white star. Dist=25.0 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=66.7 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.
M13	Her	●	Best globular in northern skies. Discovered by Halley in 1714. Dist=23,000 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.
IC 4665	Oph	○	Large, scattered open cluster. Visible with binoculars.
6633	Oph	○	Scattered open cluster. Visible with binoculars.
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.
M25	Sgr	○	Bright cluster located about 6 deg N of "teapot's" lid. Dist=1,900 ly.
253	Scl	⌀	Fine, large, cigar-shaped galaxy. Requires dark sky. Member of Sculptor Group.
Mizar & Alcor	UMa	◔	Good eyesight or binoculars reveals 2 stars. Not a binary. Mizar has a mag 4 companion.
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=0.8".
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.
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.
M17	Sgr	□	Omega Nebula. Contains the star cluster NGC 6618. Dist=4,900 ly.
M11	Sct	○	Wild Duck Cluster. Resembles a globular through binoculars. V-shaped. Dist=5,600 ly.
M16	Ser	□	Eagle Nebula. Requires a telescope of large aperture. Dist=8,150 ly.
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.

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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

KAS Club Officers and Support Staff

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Vice President:	Diane Franco	dianef02@yahoo.com
Treasurer	Pam Miller	dgmpsm2@yahoo.com
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Educational Committee Chair		
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Kern Astronomical Society

Membership New/Renewal 2022

Date: _____

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Email:* _____

My check# _____for (or cash) 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:

KAS

5501 Stockdale Hwy #10241

Bakersfield, CA 93389

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“SYZYGY”: _____