

Big Bear Valley Astronomical Society



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14 July 2016 Agenda and Minutes

- ✓ Welcome:
 - New members or 1st time visitors?
 - Members present: Stan and Joan, Claude, Teresa, John V., Bill H., John D., Wes, Dick, Lydia, Randy, Deanna, Tim, Matt, Bill Y.
- ✓ Announcements : none
- ✓ Treasurer/Membership Report: 47 members, \$698.00
- ✓ Comments, reports, discussions, reviews:
 - Virtual Lecture, Dr Steve Saar. "Super Flares in Solar Type Stars", June 23rd.
 - Very good. Good balance between science and technical
 - Discovery Center Campfire Talk June 24th – Vatch speaking on Planets.
 - Well attended, lots of kids with parents
 - Discovery Center Campfire Talk July 9th – Teresa on general Astronomy.
 - 130 visitors... the place was packed with interested folks
 - 4 telescopes... could have used more.
 - BBSO Tour 6/23?
 - Randy and Wes, 15 people, good questions from visitors
 - High Chaparral Star Party June 2.
 - Small but interested group attended... 4 telescopes
 - We voted that HC is a good star party site.
 - Dick Stanton's "Dome Warming".
 - Scope is a work in progress... great potential
 - September for viewing the 3 outer planets?
 - NASA/JPL presentation at Camp Oaks
 - Sarah Marcotte, JPL PR person for Mars project gave presentation to "Camp Nesem" attendees. She brought scale RC model of Curiosity rover. Bill Y. assisted her.
 - Bill Y. will contact her to see if a BBSO Live/Virtual presentation is possible.
- ✓ Activities
 - Virtual Lecture July 28th, Dr Jay Pasachoff on Eclipses!!! He's a well-known expert on the field, and an author of many books on Astronomy. *Possibly* may be here live!
 - Friday Night in the Village! This Friday Corner of Village and Pine Knot at the old gas station.
 - August Virtual Lecture Dr. Erick Young on SOFIA!! He's the Science Mission and Operations Director for SOFIA (Stratospheric Observatory for Infrared Astronomy) – that big telescope that flies on a jet out of Edwards!
- ✓ Chief observer report.
 - What's up this month? See attachment "The Evening Sky" for July
- ✓ Scheduling:
 - Next Star Party, July 30? Where to go?
 - We voted on High Chaparral (HC) as the preferred site

- Next Farmer's Market SunDay Aug 16? ... agreed
 - Try for a weekend SunDay at DC in Aug? ... agreed... date TBD
 - Next beginner talk? Bill Y. on photographing the night sky
 - Next Discovery Center Campfire Date 8/26 –Need a Speaker! Speaker TBD
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- ✓ Smart Phone/Astronomy apps: John Day
 - Good presentation on a handful of smart phone Astro apps
 - ✓ General Discussion
 - Telescope swap meet... location/discussion/ideas tossed around

-30-

BeYoung

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.

Global 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 JULY 2016

Easily Seen with the Naked Eye

- Altair
- Arcturus
- β Cephei
- Deneb
- α Herculis
- Vega
- Antares
- Polaris
- Spirax
- Aql
- Brightest star in Aquila. Name means "the flying eagle". Dist=16.7 ly.
- Orange, giant K star. Name means "bear watcher". Dist=36.7 ly.
- Cepheid prototype. Mag varies between 3.5 & 4.4 over 5.366 days. Mag 6 companion.
- Brightest star in Cygnus. One of the greatest known supergiants. Dist=1,400±200 ly.
- Semi-regular variable. Magnitude varies between 3.1 & 3.9 over 90 days. Mag 5.4 companion.
- The 5th brightest star in the sky. A blue-white star. Dist=25.0 ly.
- Red, supergiant star. Name means "rival of Mars". Dist=135.9 ly.
- The North Pole Star. A telescope reveals an unrelated mag 8 companion star. Dist=431 ly.
- Latin name means "ear of wheat" and shown held in Virgo's left hand. Dist=250 ly.

Easily Seen with Binoculars

- η Aquilae
- M3
- μ Cephei
- Mel 111
- χ Cygni
- M39
- v Diacotis
- M13
- M92
- ε Lyrae
- R Lyrae
- M12
- M10
- IC 4665
- M15
- M8
- M25
- M22
- M4
- M6
- M7
- M5
- Mizar & Alcor
- C 399
- Aql
- Bright Cepheid variable. Mag varies between 3.6 & 4.5 over 7.166 days. Dist=1,200 ly.
- Easy to find in binoculars. Might be glimpsed with the naked eye.
- Herschel's Garnet Star. One of the reddest stars. Mag 3.4 to 5.1 over 730 days.
- Coma Berenices. 80 mag 5-6 stars in 5 deg. Dist=283 ly. Age=400 million years.
- Long period pulsating red giant. Magnitude varies between 3.3 & 14.8 over 407 days. May be visible to the naked eye under good conditions. Dist=900 ly.
- Wide pair of white stars. One of the finest binocular pairs in the sky. Dist=100 ly.
- Best globular in northern skies. Discovered by Halley in 1714. Dist=21,000 ly.
- Fainter and smaller than M13. Use a telescope to resolve its stars.
- Famous Double. Binoculars show a double star. High power reveals each a double.
- Semi-regular variable. Magnitude varies between 3.9 & 5.0 over 46.0 days.
- Close to the brighter M10. Dist=18,000 ly.
- 3 degrees from the fainter M12. Both may be glimpsed in binoculars. Dist=14,000 ly.
- Large, scattered open cluster. Visible with binoculars.
- Scattered open cluster. Visible with binoculars.
- Only globular known to contain a planetary nebula (Mag 14, $\delta=1^\circ$). Dist=30,000 ly.
- Lagoon Nebula. Bright nebula bisected by a dark lane. Dist=5,200 ly.
- Bright cluster located about 6 deg N of "teapot's" lid. Dist=1,900 ly.
- A spectacular globular star cluster. Telescope will show stars. Dist=10,000 ly.
- A close globular. May just be visible without optical aid. Dist=7,000 ly.
- Butterfly Cluster. 30+ stars in 7x binoculars. Dist=1,960 ly.
- Superb open cluster. Visible to the naked eye. Age=260 million years. Dist=780 ly.
- Fine globular star cluster. Telescope will reveal individual stars. Dist=25,000 ly.
- Good eyepiece or binoculars reveals 2 stars. Not a binary. Mizar has a mag 4 companion.
- Carabinger asterism or "Brooch's Cluster". Not a true star cluster. Dist=218 to 1,140 ly.

Telescopic Objects

- 7099
- e Boötis
- M94
- M51
- M64
- Albireo
- 61 Cygni
- γ Cephei
- β Lyrae
- M57
- M23
- M20
- M21
- M11
- M16
- M81
- M82
- M27
- Aqr
- Saturn Nebula. Requires 8-inch telescope to see Saturn-like appendages.
- Red giant star (mag 2.5) with a blue-green mag 4.9 companion. Sep=2.8". Difficult to split.
- Compact, nearly face-on spiral galaxy. Dist=15 million ly.
- Whirlpool Galaxy. First recognised to have spiral structure. Dist=25 million ly.
- Black-Eye Galaxy. Discovered by J.E. Bode in 1775 – "a small, nebulous star".
- Beautiful double star. Contrasting colours of orange and blue-green. Sep=34.4".
- Attractive double star. Mags 5.2 & 6.1 orange dwarfs. Dist=11.4 ly. Sep=28.4".
- Apparent yellow & white. Mags 4.3 & 5.2. Dist=100 ly. Struve 2725 double in same field.
- Eclipsing binary. Mag varies between 3.3 & 4.3 over 12.940 days. Farther mag 7.2 blue star.
- Ring Nebula. Magnificent object. Smoke-ring shape. Dist=4,100 ly.
- Elongated star cluster. Telescope required to show stars. Dist=2,100 ly.
- Trifid Nebula. A telescope shows 3 dust lanes transcribing nebula. Dist=5,200 ly.
- A fine and impressive cluster. Dist=4,200 ly.
- Omega Nebula. Contains the star cluster NGC 6618. Dist=4,900 ly.
- Wild Duck Cluster. Resembles a globular through binoculars. V-shaped. Dist=5,600 ly.
- Eagle Nebula. Requires a telescope of large aperture. Dist=8,150 ly.
- Beautiful spiral galaxy visible with binoculars. Easy to see in a telescope.
- Close to M81 but much fainter and smaller.
- Dumbbell Nebula. Large, twin-lobed shape. Most spectacular planetary. Dist=975 ly.



CELESTIAL OBJECTS

