

# Kitt Peak Nightly Observing Program

## Splendors of the Universe on YOUR Night!

Many pictures are links to larger versions.

Click here for the [“Best images of the AOP” Gallery](#) and more information.

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**Almach** ( $\gamma$  Andromedae) appears as a golden and blue double star in small telescopes. The blue star itself is actually three stars, too close together to see as individuals, making Almach a four-star system. It is about 350 light-years away.

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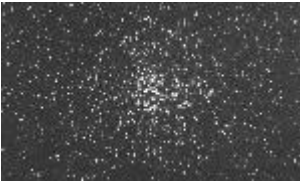
The **Double-Double** ( $\epsilon$  Lyrae) looks like two stars in binoculars, but a good telescope shows that each of these two stars is itself a binary, making this a four-star system. The distant pairs are about 0.16 light-years apart and take about half a million years to orbit one another. The Double-Double is about 160 light-years from Earth.

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**M36:** One of three bright open star clusters in the constellation of Auriga. It lies about 4,000 ly away, is about 14 ly across, contains about 60 stars, and is about 25 million years old.

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**M37:** The second of three bright open star clusters in the constellation of Auriga. It is the brightest and richest of the three. It lies about 4,400 ly away, contains about 150 stars with a diameter of about 25 ly, and is an old cluster at 300 million years old.

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**M38:** The third of three bright open star clusters in the constellation of Auriga. It lies about 4,200 ly away, a diameter of about 25 ly, and is 220 million years old.

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M45: The Pleiades Star Cluster. A bright, nearby star cluster in the last stages of star formation. It has six to seven bright stars along with hundreds of fainter stars. It lies about 380 lightyears away and is around 100 million years old.

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Coathanger Cluster: Also called Cr 399, or Brocchi's Cluster, this close open cluster reminds me of my hall closet. Chaotic stellar orbital motion can sometimes make interesting shapes!

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M42: The Great Orion Nebula. This is a region of star formation about 1,500 ly away. It is 30 ly across and contains enough material to make 10,000 stars the size of our sun.

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M15: A distant globular cluster, 40,000 lightyears away. It has a few hundred thousand suns, and like most globular clusters, it is over 10 billion years old!

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M31: The Andromeda Galaxy, our nearest major galactic neighbor. It is a spiral galaxy, lies 2,200,000 lightyears away and has a diameter of 180,000 lightyears. This galaxy contains as much material as 300 billion suns.

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M32: A small but bright companion galaxy to M31. It orbits M31 much like the Moon orbits the Earth. It lies at the same distance as M31 but is much smaller (8,000 lightyears across).

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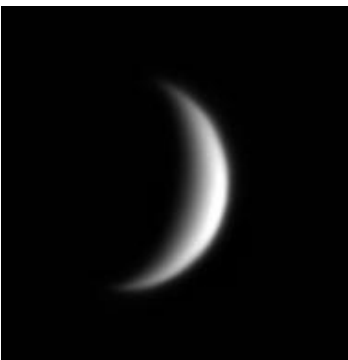
M33: The Triangulum galaxy. It, like M31, is a prominent member of our local group of galaxies. It lies at a distance of 3,000,000 ly and is approximately 60,000 ly across.

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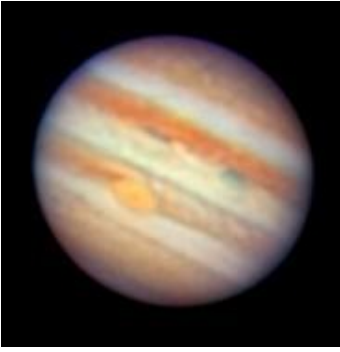
M110: The last Messier object, and the more distant of the Andromeda Galaxy's two companions. M110 is a tiny elliptical galaxy, about 7,000 lightyears across, containing a billion suns.

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**Venus**, the second planet, is the brightest natural object in the sky other than the Sun and Moon and is often erroneously called the “morning star” or “evening star.” It is completely wrapped in sulfuric acid clouds and its surface is hot enough to melt lead.

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**Jupiter** is the largest planet in the Solar System, a “gas giant” 11 Earth-diameters across. Its atmosphere contains the Great Red Spot, a long-lived storm larger than Earth. The 4 large Galilean satellites and at least 59 smaller moons orbit Jupiter.

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M1: The explosion that created this nebula was seen by Chinese astronomers in 1054 A.D. This explosion was bright enough to be seen in the daytime for almost a month. The nebula is 10 lightyears in diameter and is expanding at the rate of 1,800 km per second.

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Milky Way: That clumpy band of light is evidence that we live in a disk-shaped galaxy. Its pale glow is light from billions of suns!

**David Watson** Your Telescope Operator and Guide. Thank you for joining me this evening! See you soon!!

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The web page for the program in which you just participated is

<http://www.noao.edu/outreach/nop>. Most of the above images were taken as part of the all-night observing program. For more information on this unique experience please visit

<http://www.noao.edu/outreach/aop>.

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