

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.



The **Double-Double** (ϵ 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.



R Leporis, or Hind's Crimson Star, contains lots of carbon in its outer atmosphere, which dims and reddens its starlight. Changing amounts of carbon cause the star to vary in color and brightness, sometimes making it one of the reddest stars in the sky.



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.



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!



"Double Cluster" (NGC 884 and NGC 869): These two star clusters are a treat for binoculars and telescope alike. Each is a congregation of many hundred stars around 70 light years in diameter. These clusters are between 5000 to 7000 light years away.



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.



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!



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.



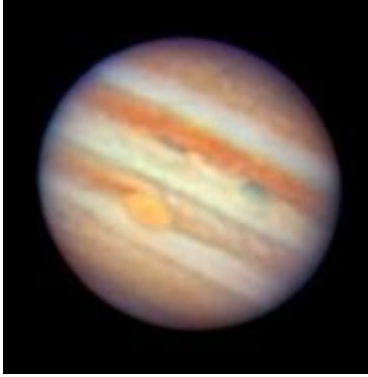
M81: A small spiral galaxy, seven million lightyears away. It is a disk of 50 billion suns or so, only a stone's throw (100,000 lightyears) from M82.



M82: This lumpy streak of an irregular galaxy is seven million lightyears away, and perhaps 30,000 lightyears across. There are vast gas clouds here, where suns are being born at an incredible rate.



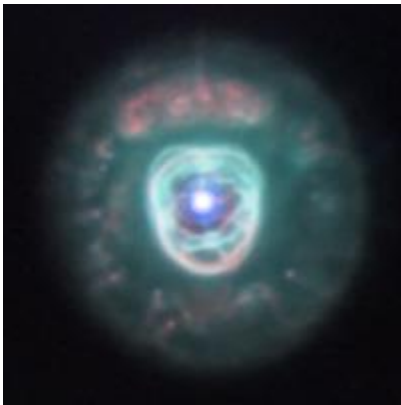
Venus, the second planet, is the brightest natural object in the sky other than the Sun and Moon and is often erroneously called the “morning star” or “evening star.” It is completely wrapped in sulfuric acid clouds and its surface is hot enough to melt lead.



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.



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.



NGC 2392: The "Eskimo Nebula." A round cloud of gas ejected by a dying star. Since this sort of object always appears round, William Hershel named them "planetary nebulae" (he discovered this one in 1787).



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!



Quick streaks of light in the sky called **meteors**, shooting stars, or falling stars are not stars at all: they are small bits of rock or iron that heat up, glow, and vaporize upon entering the Earth's atmosphere. When the Earth encounters a clump of many of these particles, we see a **meteor shower** lasting hours or days.



Satellites: Human technology! There are almost 10,000 of these in Low Earth Orbit (we can't see the higher ones). We see these little "moving stars" because they reflect sunlight.



Zodiacal Light: A faint, smooth glow marking the ecliptic (the plane of the solar system). It is sunlight scattered off of the gas and dust that orbits the sun. Congratulations; this is a rare sight!

Bob Martino

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

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>.

Copyright © 2008 Kitt Peak Visitor Center