

Public Session Viewing for Fall 2009

www.physics.unh.edu/observatory

2009 is the International Year of Astronomy (IYA). One of the goals of this year's event is to bring astronomy awareness to as many people as possible. It also gives anyone who enjoys astronomy a chance to spread their enthusiasm. So, if you've been to the observatory before, we'd love to have you back. If you've never been, please come to any of our free public viewing sessions this semester – they are held on the first and third Saturday of each month. Bring your family and friend too! Additionally, to help celebrate IYA2009, we will be hosting a series of special IYA 2009 lectures from September through December. See website for more details.

To be viewed this fall...

Planets

Jupiter is the highlight for planet viewing this semester. The gas giant was at opposition on August 14th – shining at its brightest (magnitude -2.9), visible all night, and at its highest point around midnight. Jupiter will offer us spectacular views until early 2010. As the fall starts, **Venus** rises around 3:30 AM and shines brilliantly with a magnitude of -3.8 . Known as either a Morning or Evening Star, Venus will be hanging around in the early morning skies until late February when it reemerges above the Western horizon after sunset. After **Saturn's** rings pulled a disappearing act for observers here on Earth last spring and summer, the planet will disappear into the Sun's glare for the sessions during the entire semester – it will be rising around midnight on Christmas night and very early morning we get later into the fall. Check back during 2010 for some nice views of the ringed planet. **Mars**, which has been absent for the last few months, will start to make its way into public sessions on November 21st. Its first appearance will show as a reddish object shining at a magnitude of $+0.2$. Mars will be at opposition on January 29th 2010 and will increase its brightness to -0.8 . **Mercury** is notorious for being a difficult object to view – most professional astronomers have never had the joy of viewing this planet. It is most easily visible when it reaches greatest elongation, angle between Earth and Sun is at a maximum. Mercury was brilliant and low in our Western skies at the start of the year, but now will only be viewable in the pre-dawn skies. **Neptune** reached opposition on August 17th. This distant planet is best for viewing in early September but will only appear as a tiny bluish dot in the UNH telescope, shining at a meager $+7.8$. **Uranus** reaches opposition on September 17th and will shine at a magnitude of $+5.9$.

Keep your eyes peeled for...

Close Encounter of the Planet Kind

During the early morning of October 7th and 8th, Mercury, Saturn, and Venus will all lie very close to each other as they creep above the eastern horizon at around 5:30AM.

The Harvest Moon

Normally occurring in September, happens this year on October 4th. The **Harvest Moon** is the full moon closest to the **Autumnal Equinox**, which occurs on September 22nd at 4:18PM. The

moon normally rises around 45 minutes to an hour later from night to night, but the full moon nearest the first day of fall rises around the same time each night (only ~25 minutes later). This allowed farmers to work late into the night before the winter neared aided only by the bright moon.

Meteor Showers

The **Orionids** peak during the nights of October 21st and 22nd. The moon will not be the problem that it was for this past August's Perseids shower. Emanating from the Orion (the Hunter in Greek mythology) constellation, look overhead after midnight.

The **Leonids** peak during the nights of November 17th and 18th. Again the moon will cooperate and set early on these nights. Look for meteors emanating from the constellation of Leo (Latin for the Lion) after midnight.

The **Geminids** peak during the nights of December 13th and 14th. For the final major meteor shower of 2009, the nearly new moon will not be an issue. This shower should provide a great showing out of the Gemini (Latin for the Twins) constellation.

Stars

You will may able to learn about the seasonal constellations from one of the staff members at each public session.

A few interesting stars to look at through the telescope are...

Herschel's Garnet Star (**Mu Cephei**) in Cepheus (the King of Aethiopia in Greek mythology). As the name suggests, this stars most appealing quality to the aided eye is its deep red color. It is one of the largest and most luminous stars in the galaxy. **Mizar** is the second star in the handle of the asterism known as the Big Dipper in the constellation Ursa Major (Latin for the Great Bear). If you stare at this star long enough, or look at it through the telescope, a second star, known as Alcor, can be distinguished. The binary star **Albireo** in the constellation Cygnus (Greek for Swan). Although this appears as a single star to the unaided eye, Albireo's binary nature is revealed when observed through a telescope. This binary system is special due to the color of each star – Albireo A is an amber color while Albireo B is slightly dimmer and a bluish-green color. Colors of stars represent a sort of stellar thermometer – the surface temperature of stars that are white or blue are higher than those that are red or orange. Counterintuitive to what we may think from our everyday experience! **Gamma Andromedae** is a bright double star in the constellation Andromeda (Princess of Aethiopia in Greek mythology). Like Albireo, the binary consists of two stars with markedly different colors. **Epsilon Lyrae**, a.k.a, The Double Double star, is located in the constellation Lyra (Greek for the Little Harp). At a distance of 162 light years from the Earth, binoculars will split this object into a binary system. Upon closer inspection through a telescope, each binary is further resolved to be another binary pair.

Moon

Our nearest celestial neighbor will be visible during selected viewing sessions. Check the lunar schedule next to each public session to see which phase the **Moon** will be in that night. The full moons this fall occur on: September 4th, October 4th, November 2nd, December 2nd and December 31st. Since December will have two full moons in the same month, the full moon on the 31st is known as a **Blue Moon**.

Some nice deep sky objects for telescopes and binoculars this fall are...

Planetary Nebula

M57, the Ring Nebula in Lyra & **M27**, the Dumbbell Nebula in Vulpecula (Latin for the Little Fox), will be great for viewing for the rest of the fall and into very early winter. These objects offer observers a glance at our Sun's future. Planetary nebula have nothing to do with planets, but are in fact the result of the star around the size of the Sun coming to the end of its life. The term planetary derives from early observations made with less sophisticated telescopes; when you look at this object through a telescope and see its round shape, the connection should come into view.

Open Star Clusters

Open clusters are sparse collections of young stars, typically less than a few hundred million years old. Listed below are the ones best for viewing this fall:

-**NGC 869/884**, the Double Cluster in Perseus (the Greek mythical hero)

...to be seen in the late fall

-**M36, 37, and 38** in Auriga (Latin for the Charioteer)

-**M45**, the Pleiades in Taurus (Latin for the Bull)

-**M35**, in Gemini

Globular Star Clusters

M13, the Great Globular Cluster in Hercules (the Roman mythical hero) will be stunning into the late fall. Globulars are dense grouping of gravitationally bound stars that all formed out of the same molecular cloud of hydrogen. They reside in the halo of our Milky Way galaxy and consist of older Population II stars around 20,000–30,000 light years away. Other nice globular clusters are **M92** also in Hercules, **M15** in Pegasus (the mythical Greek Winged Horse), and **M2** in Aquarius (Latin for the Water Bearer).

Galaxies

M31, the Great Andromeda Spiral Galaxy in Andromeda. At *only* 2.5 million light years, this sister galaxy to our own Milky Way galaxy can be spotted with the naked eye. M31 can be viewed throughout the entire fall semester. **M81 & 82** a.k.a. Bode's Nebula, in Ursa Major. M81 is a large spiral galaxy at a distance of 12 million light years. Most visible when viewing this object is its bright central galactic bulge. M82 is a bit more conspicuous. It is an irregular galaxy that has the distinct shape of a cosmic cigar. **M51**, the Whirlpool Galaxy, is a large spiral galaxy located below the last star in the Big Dipper's handle in the constellation of Canes Venatici (Latin for the hunting dogs).

Emission Nebula

M42, the Great Orion Nebula in Orion, is a large star forming region that will be easily seen during the last few sessions of the fall. This is arguably one of the finest objects that can be viewed and should not be missed.