Snake River Skies

The Monthly Newsletter of the Magic Valley Astronomical Society

December Highlights

Dec. 7th **Family Night Telescope Viewing** at 7:00 p.m. Centennial Observatory-Telescope viewing (weather permitting). Admission: $1.50, kids 6 and under free. Free to all with paid admission to the 7:00pm program in the Faulkner Planetarium. Call the Herrett Center at 208-732-6655 for more information.

Dec. 11th **Members Christmas Party** 7:00 p.m. at the Herrett Center and **Monthly Star Party** Telescope viewing (weather permitting). We will be targeting Jupiter, waxing crescent Moon, double stars, star clusters, nebulae and galaxies.

Dec. 20th **Total Lunar Eclipse—**Join us at the Centennial Observatory at the Herrett Center for Idaho's first total lunar eclipse in nearly two years. The most dramatic (umbral) phase is from 11:33 PM to 3:01 AM, See inside for more details.

Dec 21st. **Family Night Telescope Viewing** at 7:00 p.m. Centennial Observatory-Telescope viewing (weather permitting).

Notes from the Editor

Once again our Family Fun Night and Christmas Party is upon us. Due to popular demand Chris Anderson will present his Astro version of - "Who wants to be a Millionaire" join us at the Herrett Center for this annual event.

This months sky feature is the total Lunar Eclipse on the 20th of the month. On page 4 there is some data on the eclipse. Times are listed in the left hand highlights column please join the Society at the Centennial Observatory.

Discover the highest point on the moon see page 5 for details.

Results of the EPOXI mission on November 4th are found on page 6.

NASA Space Place returns to the newsletter for more details see page 7.

Colder weather is upon us once again and this can present some problems for your telescope. Be sure to check out the article on page 8 that provides some maintenance and care tips for your telescope.

Looking through the eyepiece and view the wonders of Taurus on page 10.

Visit Jupiter's Ghost on page 12.

Have an idea for an article? The editor is always looking for ideas and submissions e-mail him at editor@mvastro.org

MVAS Memberships

MVAS Mission

The Magic Valley Astronomical Society was founded in 1976, the Society is a non-profit [501(c) 3] educational and scientific organization dedicated to bringing together people with an interest in astronomy. The society serves as a source of astronomical phenomena, history and lore by providing educational and observing opportunities and information for its members and the general public and promotes viewing of celestial objects with special events for adults and children in south central Idaho.

Welcome to the Magic Valley Astronomical Society

Welcome to the society and hello. We hope you have a good time, enjoy the hobby, & bring good skies with you.

We hold indoor meetings each month at the Herrett Center for Arts & Science College of Southern Idaho campus in Twin Falls, ID, USA . Our meetings start at 7:00 pm on the second Saturday of the month. There will always be a very interesting program, class or presentation at these meetings, as well as good fellowship. There is always something new to learn.

Following our meetings we have a star party (weather permitting) at the Centennial Observatory, also at the Herrett Center.

Our star parties are free and you don't have to bring your own telescope. Telescopes are also set up outside on the stargazer's deck. Star Parties are held year round, so please dress accordingly as the Observatory is not heated, nor air conditioned.

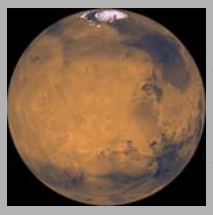
Wishing you dark skies and clear nights!

MVAS Board

December Observing Highlights

Mercury will be in the very low on the southwestern horizon during the evening twilight early in this month. It will be tough to spot without binoculars and a good view of the horizon. On the 13th a much dimmer Mars will sit 1º below Mercury.

Venus will be hard to miss this month. At midmonth it will be more than 30º above the horizon at dawn. It will be shinning at its brightest, nearly magnitude -4.9. This makes it the brightest object in the sky after the Sun and the Moon.

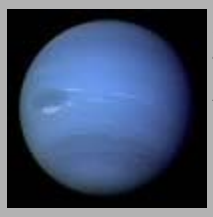


Mars will be all but invisible low on the sunset twilight horizon. It may be visible through a telescope or binoculars. You need a low horizon, clear skies and some luck. For hardcore observers there are two times this month that present some help to spot Mars.

Jupiter will be very big and bright in the sky as it gets dark. It will be well placed high in the southern sky as it gets dark so this will be a good time to observe it. It will be shining around magnitude -2.4.

Saturn will be climbing higher every morning in the predawn sky. It will rise around 2AM in Virgo. The best time to observe it will be when it has risen higher in the sky which will be a few hours before dawn. For the first time in years Saturn's famous rings will not appear edge on.

Uranus will still be close to the brighter Jupiter all month. Uranus will be a good target. This will be a good time to look. Jupiter will be around 3º southwest of Uranus early in the month.



Neptune will be in the southwest when it gets dark. This will be a good time to look for it. It will be in eastern Capricornus Aquarius border. It will be roughly halfway down between Jupiter/Uranus and the horizon.

Moon Phases for December

5 New Moon at 10:36 hours
13 First Quarter at 6:59 hours
13 Moon at Apogee
20 Total Lunar Eclipse begins at 22:29 hrs
21 Full Moon at 1:13 hours
25 Moon at Perigee
27 Last Quarter at 21:18 hours.
Lunar Cycle: 29 Days 15 Hours 27 min.

Sky Calendar - December 2010

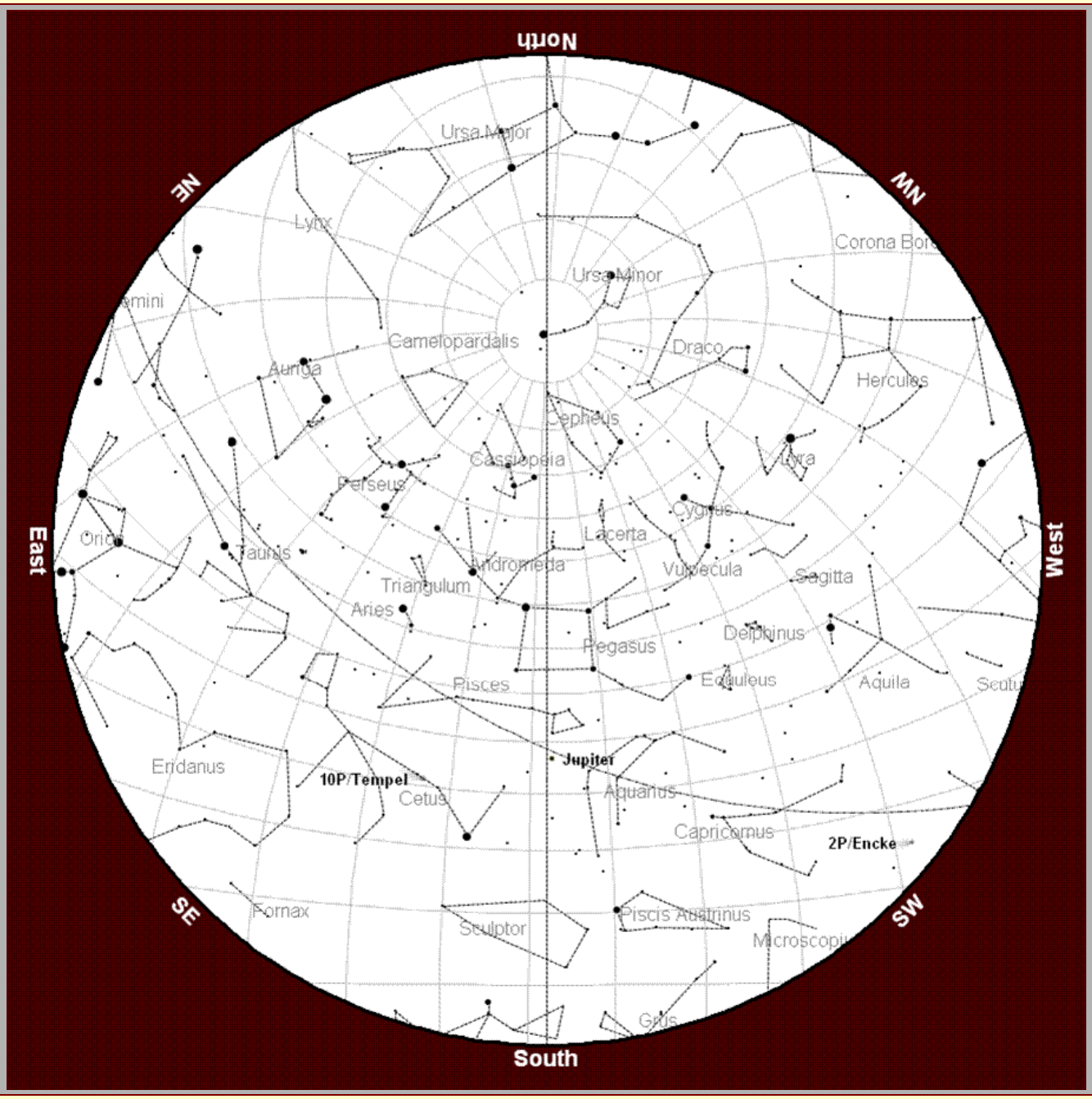
1 Moon near Saturn (morning sky). Mag. +0.9.
1 Mercury at greatest elongation, 22° east from Sun (evening sky) Mag. -0.4
2 Moon near Spica (morning sky)
2 Venus at its brightest (morning sky) Mag. -4.7.
2 Moon near Venus (morning sky).
7 Moon near Mercury (19° from Sun). Mag. -0.1.
13 Moon near Jupiter Mag. -2.5.
19 Moon near Aldebaran (evening sky)
20 Mercury at inferior conjunction with the Sun Mercury passes into the morning sky.
21 Total Eclipse of the Moon The Moon will appear red-orange in color during totality (the Earth's shadow). Entire eclipse will be visible from North America, and eastern Pacific Ocean.
21 December solstice The time when the Sun reaches the point farthest south of the celestial equator marking the start of winter in the Northern Hemisphere and summer in the Southern Hemisphere.
24 Moon near Beehive cluster M44 (morning sky)
25 Moon near Regulus (morning sky)
29 Moon near Spica (morning sky)
31 Moon near Venus (morning sky).

Meteor Showers for December

There are two meteor showers this month, the Geminids and the Ursids. The Geminid meteor shower spans from December 7 to 15 and peaks the evening of December 13.(up to 80 meteors/hour). Very favorable viewing conditions this year. The meteors appear to come from the direction of the constellation Gemini, which is in the east in the evening hours. This shower can produce up to 80 meteors at its peak, so it's definitely worth bundling up from December's chill and going out to have a look.

The Ursid meteors appear to come from is located within the constellation Ursa Minor, also known as the "Little Dipper". This meteor shower is active during the period spanning December 17 to 25, but it peaks on December 22/23. At maximum, rates can normally reach 10 per hour. The meteor shower is produced by the periodic comet 8P/Tuttle and can occasionally experience short-lived outbursts of up to 100 meteors per hour.

Planisphere for December



Did You Know?

Of the 439 astronauts that entered space up to the end of December 2004, 11 have died in training incidents and 18 have died in in-flight accidents. Of those 18, only the crew of Soyuz 11 in 1971 actually died in space. The USA sets the space-boundary at 50 miles high while the Fédération Aéronautique Internationale defines space as starting at a height of 100 km. Challenger's last flight in 1986 never reached this height.

Columbia broke apart on re-entry. The crew of Soyuz 11, Georgi Dobrovolski, Viktor Patsayev and Vladislav Volkov, were killed after undocking from space station Salyut 1 after a three-week stay. A valve on their spacecraft had accidentally opened when the service module separated, which was only discovered when the module was opened by the recovery team. Technically the only fatalities in space. Image: Soyuz-11 on the 1971 USSR commemorative stamp.

Eclipse Information

Total Lunar Eclipse of 2010 Dec 21

Ecliptic Conjunction = 08:14:33.5 TD (= 08:13:26.5 UT)
Greatest Eclipse = 08:18:04.2 TD (= 08:16:57.1 UT)

Penumbral Magnitude = 2.2807 P. Radius = 1.2538° Gamma = 0.3214
Umbral Magnitude = 1.2561 U. Radius = 0.7118° Axis = 0.3119°

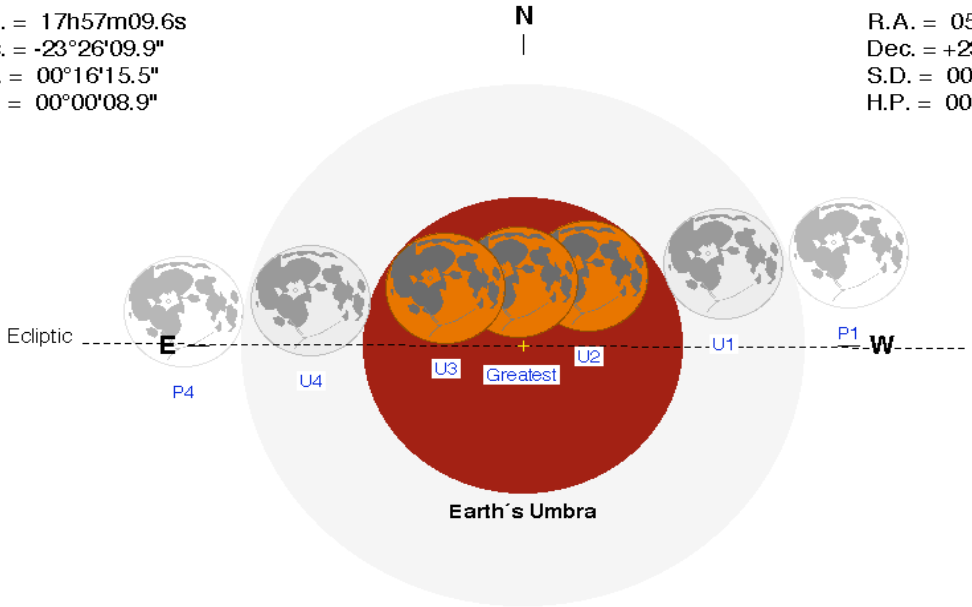
Saros Series = 125 Member = 48 of 72

Sun at Greatest Eclipse
(Geocentric Coordinates)

R.A. = 17h57m09.6s
Dec. = -23°26'09.9"
S.D. = 00°16'15.5"
H.P. = 00°00'08.9"

Moon at Greatest Eclipse
(Geocentric Coordinates)

R.A. = 05h57m17.3s
Dec. = +23°44'47.8"
S.D. = 00°15'52.1"
H.P. = 00°58'14.2"



Eclipse Durations

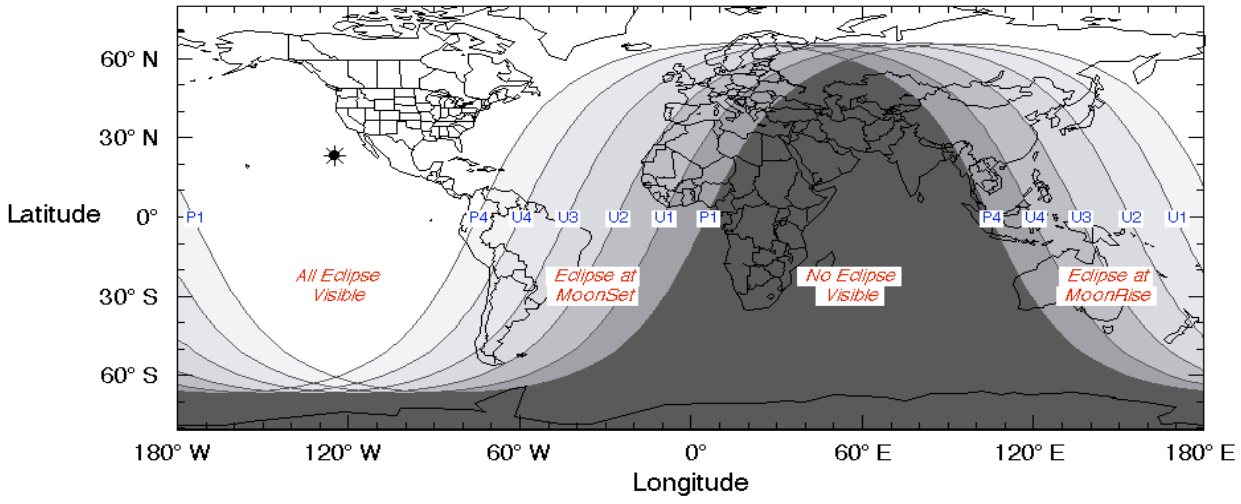
Penumbral = 05h35m07s
Umbral = 03h28m41s
Total = 01h12m21s

ΔT = 67 s
Rule = CdT (Danjon)
Eph. = VSOP87/ELP2000-85

F. Espenak, NASA's GSFC
eclipse.gsfc.nasa.gov/eclipse.html

Eclipse Contacts

P1 = 05:29:21 UT
U1 = 06:32:38 UT
U2 = 07:40:48 UT
U3 = 08:53:09 UT
U4 = 10:01:19 UT
P4 = 11:04:28 UT

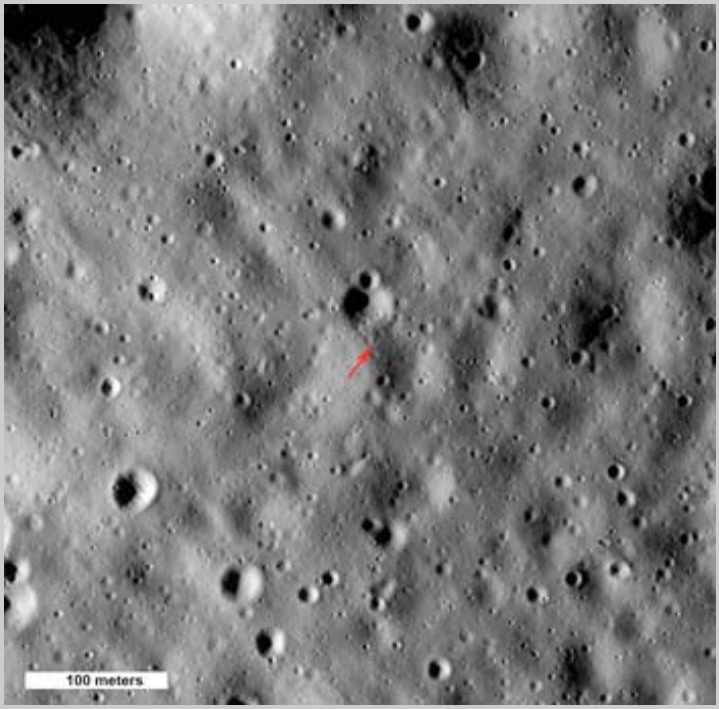


2009 Apr 29

Highest Point on the Moon

by Mark Robinson, Lunar Reconnaissance Orbiter Camera / Lunar Reconnaissance Orbiter.

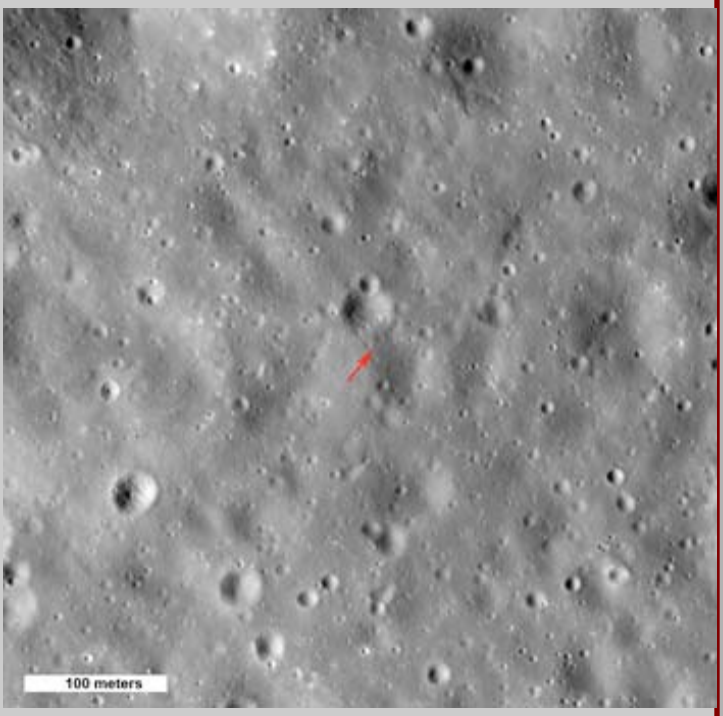
Over the course of the Lunar Reconnaissance Orbiter mission, the LOLA team has diligently watched as the highest point on the Moon got higher and higher. No, the Moon is not expanding, but rather the LOLA profile coverage increases each month so the chances increase that a ground track will pass directly over, or very near to the highest point. Once the LOLA team had the spot narrowed down to a small area, the LROC team commanded a NAC stereo pair (12 August 2010) to get an even higher resolution measurement of the elevation and coordinates of the highest point. Once the stereo pair was on the ground, the LROC team processed the images into a digital elevation model (DEM), or topographic map.



Arrow shows highest point on the Moon, 10,786 meters (35,387 feet) above the mean radius. North is up, Sun elevation is 16° from the horizon, image 500 meters wide, from M133865651L,R mosaic [NASA/GSFC/Arizona State University].

The highest point on the Earth is at the summit of Mount Everest, which is 8,848 meters (29,029 feet) above sea level. The lunar high point is 1938 meters higher than that of the Earth! However there are several major differences between the two points. Mt Everest is a relatively new feature on the Earth. It was formed as tectonic plates collided and pushed up to astonishing heights what was once seafloor, over the course of about 60 million years. The lunar high point is very ancient, and was possibly formed as ejecta from the enormous South Pole Aitken basin piled up during this cataclysmic event, in a matter of minutes, more than 4 billion years ago. Another key difference between the two highest points is slope. The flanks of Mt Everest are very steep, while on the Moon the approach to the summit has slopes of only about 3°, assuming you skirt around impact craters. This difference is due to the two very different formation mechanisms.

As the LRO mission progresses, knowledge of the spacecraft position improves so the accuracy of the elevation and coordinates (latitude 5.4125°, longitude 201.3665°, 10,786 meters) of the highest point will improve a small amount.



Another view of the highest point with the Sun further above the horizon (Sun angle 48°). Image is 500 meters wide, image M136226953 [NASA/GSFC/Arizona State University].

NASA Mission Successfully Flies by Comet Hartley 2

PASADENA, CALIF. - NASA's EPOXI mission successfully flew by comet Hartley 2 at about 7 a.m. PDT (10 a.m. EDT) today, and the spacecraft has begun returning images. Hartley 2 is the fifth comet nucleus visited by a spacecraft.

Scientists and mission controllers are currently viewing never-before-seen images of Hartley 2 appearing on their computer terminal screens.

"The mission team and scientists have worked hard for this day," said Tim Larson, EPOXI project manager at NASA's Jet Propulsion Laboratory, Pasadena, Calif. "It's good to see Hartley 2 up close."

Mission navigators are working to determine the spacecraft's closest approach distance. Preliminary estimates place the spacecraft close to the planned-for 700 kilometers (435 miles). Eight minutes after closest approach, at 6:59:47 a.m. PDT (9:59:47 a.m. EDT), the spacecraft's high-gain antenna was pointed at Earth and began down linking vital spacecraft health and other engineering data stored aboard the spacecraft's onboard computer during the encounter. About 20 minutes later, the first images of the encounter made the 37-million-kilometer (23-million-mile) trip from the spacecraft to NASA's Deep Space Network antennas in Goldstone, Calif., appearing moments later on the mission's computer screens.

"We are all holding our breath to see what discoveries await us in the observations near closest approach," said EPOXI principal investigator Michael A'Hearn of the University of Maryland, College Park.
EPOXI is an extended mission that utilizes the already "in-flight" Deep Impact spacecraft to explore distinct celestial targets of opportunity. The name EPOXI itself is a combination of the names for the two extended mission components: the extrasolar planet observations, called Extrasolar Planet Observations and Characterization (EPOCh), and the flyby of comet Hartley 2, called the Deep Impact Extended Investigation (DIXI). The spacecraft has retained the name "Deep Impact."

JPL manages the EPOXI mission for NASA's Science Mission Directorate, Washington. The University of Maryland is home to the mission's principal investigator, Michael A'Hearn. Drake Deming of NASA's Goddard Space Flight Center, Greenbelt, Md., is the science lead for the mission's extrasolar planet observations. The spacecraft was built for NASA by Ball Aerospace & Technologies Corp., Boulder, Colo.

Jet Propulsion Laboratory
CALIFORNIA INSTITUTE OF TECHNOLOGY

Article Source: NASA Jet Propulsion Laboratory-California Institute of Technology, Pasadena, CA

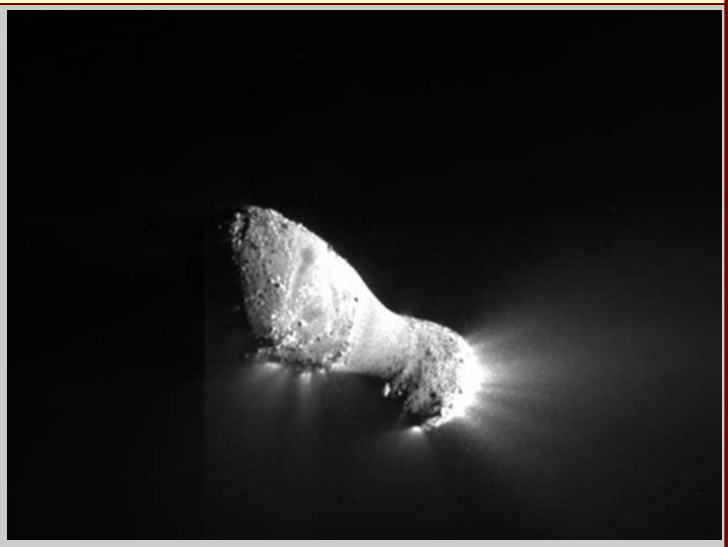


Image: Comet Hartley 2 can be seen in glorious detail in this image from NASA's EPOXI mission. It was taken as the spacecraft flew by around 6:59 a.m. PDT (9:59 a.m. EDT), from a distance of about 700 kilometers (435 miles). Jets can be seen streaming out of the nucleus.

NASA's EPOXI mission took this image of comet Hartley 2 on Nov. 2, 2010 from a distance of 2.3 million kilometers (1.4 million miles).

Unusual jets have been discovered emanating from Comet Hartley 2. The EPOXI spacecraft imaged the jets in unprecedented detail during its flyby of the comet earlier this month. Pictured above, sun-illuminated jets shoot away from the two-kilometer long decaying iceberg that orbits the Sun between Earth and Jupiter. Comet Hartley 2 became active recently as it neared the Sun and sunlight warmed the comet.

Images Credit: NASA/JPL-Caltech/UMD

Blue Rings around Red Galaxies

by Trudy E. Bell and Dr. Tony Phillips

Beautiful flat rings around the planet Saturn are one thing—but flat rings around entire galaxies?

That is the astonishing discovery that two astronomers, Samir Salim of Indiana University at Bloomington and R. Michael Rich of UCLA described in the May 10, 2010, issue of *The Astrophysical Journal Letters.* "For most of the twentieth century, astronomers observing at visible wavelengths saw that galaxies looked either 'red and dead' or 'blue and new,'" explained Salim. Reddish galaxies were featureless, shaped mostly like balls or lentils; bluish ones were magnificent spirals or irregular galaxies.

Elliptical galaxies looked red, astronomers reasoned, because they had mostly old red giant stars near the end of their life cycles, and little gas from which new stars could form. Spiral and irregular galaxies looked blue, however, because they were rich in gas and dust that were active nurseries birthing hot, massive, bluish stars.

At least, that's how galaxies appear in visible light. As early as the 1970s, though, the first space-borne telescopes sensitive to ultraviolet radiation (UV) revealed something mysterious: a few red elliptical galaxies emitted "a surprising ultraviolet excess," said Rich. The observations suggested that some old red galaxies might not be as "dead" as previously supposed.

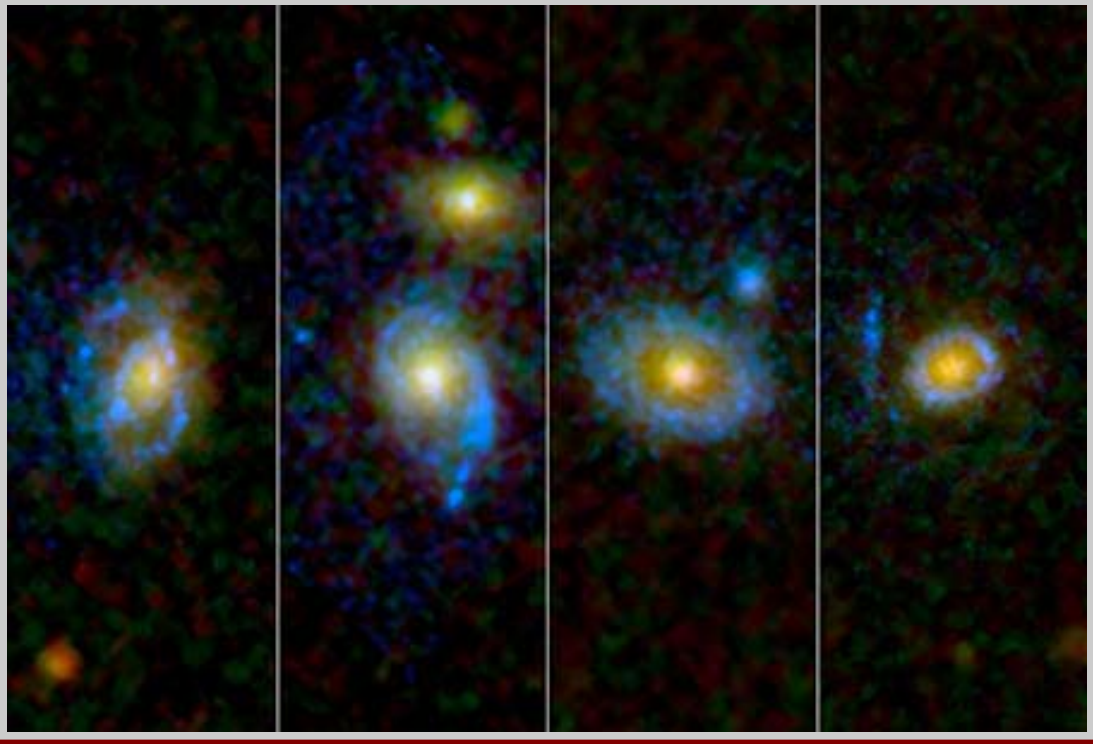
To investigate, Salim and Rich used NASA's Galaxy Evolution Explorer satellite to identify 30 red elliptical galaxies that also emitted the strongest UV. Then they captured a long, detailed picture of each galaxy using the Hubble Space Telescope. "Hubble revealed the answer," says Salim. The UV radiation was emitted by enormous, flat bluish rings that completely surrounded each reddish galaxy, reminiscent of the rings of Saturn. In some cases, the bluish rings even showed a faint spiral structure!

Because the bluish UV rings looked like star-forming spiral arms and lay mostly beyond the red stars at the centers of the elliptical galaxies "we concluded that the bluish rings must be made of hot *young* stars," Salim continued. "But if new stars are still being formed, that means the red and dead galaxies must have acquired some new gas to make them."

How does a galaxy "acquire some gas?" Salim speculates that it was an act of theft. Sometimes galaxies have close encounters. If a gas-rich irregular galaxy passed close to a gas-poor elliptical galaxy, the gravity of the elliptical galaxy could steal some gas.

Further studies by Galaxy Evolution Explorer, Hubble and other telescopes are expected to reveal more about the process. One thing is certain, says Rich: "The evolution of galaxies is even more surprising and beautiful than we imagined."

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration. Image: The Galaxy Evolution Explorer UV space telescope helped to identify red elliptical galaxies that also emitted the strongest UV.



These are detailed, long-exposure Hubble Space Telescope images of four of these galaxies that capture the UV-emitting rings and arcs indicative of new star formation.

Image Credit: NASA/ESA/JPL-Caltech/STScI/UCLA

Caring for Your Telescope After Use

Telescopes are made to be used outdoors, obviously. But even made that way, the worst thing that can happen to them (unless you are careless) is the effect of outdoor conditions.

MOISTURE is the biggest natural enemy of a telescope. TEMPERATURE is the second. HUMAN USE is a close third to numbers One and Two.

Outdoor Moisture: Every time we take our scope outdoors we are subjecting it to moisture; I correspond with one nice fellow from Scotland who actually observed the moon (for a project) while it was raining on his balcony. Not a particularly good idea for most of us....Don't do that.

Normal moisture, collecting somewhere on the telescope, will happen nearly every time you take the it out. You will have either DEW or FROST; they are both the same and form when the AIR TEMPERATURE drops to, or below, the "dew point" that the weather man always mentions on your local forecast. Expect dew or frost; it's one of those necessary evils of the hobby. Note that dew nor frost rarely form when a brisk breeze is blowing at night.

Below are some common-sense care tips for dealing with outdoor condensation:

1) NEVER wipe off your optics no matter how much dew or frost gets on them; bring your scope in or cover it up (with a pillow case or sheet) if it gets that bad.

2) Always monitor your objective lens to see if dew is forming; never let it get so bad as in 1), above. The best way to monitor is with a flashlight aimed ACROSS, not directly in front of, the glass. If you see a cloudy film, then you may as well quit unless it is a special event such as an eclipse.

3) If the OUTSIDE parts (the fork arms, tube, tripod, etc. - NON OPTICAL) get moist, don't worry about it until you bring it in...you'll drive yourself crazy wiping it off.

4) Keep eyepieces covered in their little cases until ready to use, and once done replace them back into the cases.

5) All of your charts and sky maps should be covered for protection from dew as well; they will form dew quicker than your telescope.

6) Keep moisture AWAY from all electronic components, such as your hand controller and DC or AC inverter if you are using one. Even the electrical plug connection should be raised above ground level if the grass is beginning to get wet.

7) When you wish to come in from a night of observing *and dew or frost HAS FORMED on your lens,* DON'T COVER UP THE FRONT LENS! However, ALWAYS plug up the eyepiece holder so that moisture cannot condense INSIDE the telescope! *Note:* A 35mm film canister works beautifully for this purpose.

8) In winter months, *if moisture HAS NOT formed on your lens,* cap it up securely (do not over tighten the lens cap) and bring indoors with all optics covered. Condensation will immediately form on the outside of the telescope and mount; don't worry about this right now.

Let your telescope sit indoors, with all caps on, until the telescope dries. This can take a few hours. Do not peek at the corrector plate! Go take a nap, play with your kids, or watch a movie and leave it alone. Once the telescope has warmed up and reached the temperature of everything else indoors, you can take off the lens caps, check out your telescope, and then begin the process of putting it away.

9) During other (non-winter) months, *if moisture DOES form on the lens,* bring it in uncovered and let it evaporate NATURALLY and slowly indoors. If you can see any significant - *and I mean significant* - spotting from the moisture after the optics have had time to dry completely, clean the lens carefully using the cleaning method described elsewhere on this web site.

Continued on the next page.

Caring for Your Telescope After Use

10) No matter whether the moisture forms outdoors or indoors, after bringing in the telescope, use a soft cloth (I prefer Terrycloth) towel and gently wipe down all metal and plastic parts (NOT OPTICS) until free of water.

11) Electronic components outdoors - Your electronic components are temperature-sensitive and must be protected from extreme heat and cold. In very cold weather, electronic hand controls can do strange things and they should be kept warm whenever possible. Many people keep them (yes they do) in small can coolers when not in use, and carry them in their pockets if going inside for an extended time.

12) "Parking the Telescope" - if you are at a star party, camping, or even at home and know the weather is going to be nice again tomorrow night and do not want to bring the telescope indoors, follow these rules to protect the telescope:

a) if it is not going to be raining, or if the winds are not excessive, it is perfectly okay to leave the scope out, provided you have run all the burglars away first.
b) Make sure your power connections are undone and your off-on switch is "off".
c) Cover the telescope with a soft, clean pillow case or cotton sheet.
d) Cover the sheet or pillow case with a small plastic tarp with elastic "tie downs". Attach those to something firm on the ground. DO NOT tie the plastic tightly around the telescope or moisture will condense during daylight hours!
e) Uncover telescope about 1-2 hours prior to use to equalize for the evening.

13) Optics on a hot day - if you are going camping or getting ready for a night-long star party and want to set up early there is a very important rule: NEVER LEAVE YOUR TELESCOPE in direct sunlight for a long period of time. Just like in a closed car, the inside of your optical tube assembly is capped off from ventilation and will become VERY hot! The baffle on the secondary uses adhesives to hold it in place and there are cements used in various places throughout your telescope. Always protect it from HEAT outdoors.

When transporting in an automobile USE THE CHILD-CARE RULE: "Would I leave an infant in conditions like this?"

STORING YOUR TELESCOPE

To me, the worst treatment that a telescope gets is NO treatment at all....not ever using it. This allows dust to accumulate, and - yes - dust does settle inside of the fork arms and the drive base, causing problems in motion over long periods of time.
In addition, a stored telescope tends to redistribute its lubricants (the drive gear, the bearings, the fork arm drives in the ETX EC, and even the focus mechanism) when it sits in one position for a while. Gravity - a very strong force over time - will take the lubricant and put it where IT wants it. You are left with a very dry driving system, except in one spot.
Even if you do not use your telescope to observe with for an extended period of time, go in where you have it stored and move it around occasionally....turn on the motors and slew around. Focus on nothing in particular. Let the telescope know it is still loved.

Dust

Dust needs to be kept off of your telescope; you bought a beautiful instrument, keep it that way! Remove dust gently and ALWAYS with a soft damp cloth. Do not use "Pledge" or any other dusting compound! Use water, and only a little bit of that. NEVER use window cleaner on ANY part of your telescope! Use only the optical solution described on the web site for your optics and only use water for the rest of the telescope. Water will restore the brilliant shine and color to your tube assembly. Once the dust has been removed from the telescope, gently buff it with a soft towel to make it shine like new (I use an old diaper).
REMEMBER.....the more you take care of your telescope, the more it will take care of YOU in the future. You have made a great investment, so always treat the telescope with my "baby rule:"

TREAT THE TELESCOPE EXACTLY AS YOU WOULD A SIX-WEEK OLD BABY in all respects. Make sure that the foam inside of your telescope case is TOTALLY DRY before putting your telescope in and closing her up! The fungus and rust that could result will make you wish for the days when all you had to worry about was a little dew!

This article was contributed by Dr. Clay Sherrod of the Arkansas Sky Observatory via OPT Corp. Image Credit: Page 8 Meade Maksutov-Cassegrain Telescopes by Meade and page 9 Williams Optics in storage case. Creative Commons license used.

Looking through the Eyepiece - Taurus

The most favorable time to observe Taurus in the night sky is during the months of December and January. By March and April the constellation will appear to the west during the evening twilight. During November, the Taurid meteor shower appears to radiate from the general direction of this constellation. The Beta Taurid meteor shower occurs during the months of June and July in the daytime, and is normally observed using radio techniques. The brightest star of this constellation is **Aldebaran**, an orange-hued, spectral class K5 III giant star. Aldebaran has the appearance of being the brightest member of the more scattered Hyades open star cluster that makes up the bull's head shaped asterism. However; Aldebaran, is merely located by chance in the line of sight between the Earth and the Hyades; the star cluster is actually more than twice as far away, at about 150 light years. Aldebaran forms the bull's bloodshot eye, which has been described as "glaring menacingly at the hunter Orion."

Observational Data for Aldebaran:
Right ascension $04^h\ 35^m\ 55.239^s$
Declination +16° 30′ 33.49″
Apparent magnitude (V) 0.75-0.95

The Hyades is the nearest open cluster to the Solar System and one of the best-studied of all star clusters. At a distance of 151 light years, it consists of a roughly spherical group of 300 to 400 stars that share the same age, place of origin, chemical content, and motion through space. The Hyades lies within the distinct **V** in the constellation.

Observational Data for The Hyades:
Right ascension $04^h\ 27^m$
Declination +15° 52′
Distance 151 (ly) (46.34 Pc)

In the northeastern quadrant of the Taurus constellation lie the **Pleiades**, one of the best known open clusters, easily visible to the naked eye. The seven most prominent stars in this cluster are at least visual magnitude six, and so the cluster is also named the "Seven Sisters".
However, many more stars are visible with even a modest telescope. The name of the star Aldebaran comes from الدبران*al-dabarān*, Arabic for 'the follower' (of the Pleiades) As Aldebaran follows the Pleiades during the nightly motion of the celestial sphere across the sky.

The cluster is dominated by hot blue and extremely luminous stars that have formed within the last 100 million years. Dust that forms a faint reflection nebulosity around the brightest stars was thought at first to be left over from the formation of the cluster (hence the alternate name **Maia Nebula** after the star Maia), but is now known to be an unrelated dust cloud in the interstellar medium that the stars are currently passing through. Astronomers estimate that the cluster will survive for about another 250 million years, after which it will disperse due to gravitational interactions with its galactic neighborhood.

Observational Data for the Pleiades:
Right ascension $3^h\ 47^m\ 24^s$
Declination +24° 7′

A degree to the northwest of Zeta Tau is the **Crab Nebula** (M1), a supernova remnant. This expanding nebula was created by a Type II supernova explosion, which was seen on Earth, July 4, 1054. It was bright enough to be observed during the day, and is mentioned in Chinese and Arabic historical texts. At its peak the supernova reached magnitude −4, but the nebula is currently magnitude 8.4 and requires a telescope to observe.

Observational Data for the Crab Nebula:
Right ascension $05^h\ 34^m\ 31.97^s$
Declination +22° 00′ 52.1″
Distance 6.5 ± 1.6 kly

Looking through the Eyepiece - Taurus

The star **Lambda Tauri** (λ Tau, λ Tauri) is a triple star system in the constellation Taurus. The primary component, Lambda Tauri A, is a blue-white B-type main sequence dwarf with a mean apparent magnitude of +3.41. It has a luminosity of about 4,000 times that of the Sun and a radius of 6.6 times solar.

Observational Data for Lambda Tauri:
Right ascension $04^h\ 00^m\ 40.8^s$
Declination +12° 29' 25"
Apparent magnitude (V) +3.41
Distance 370 ± 42 ly

Located about 1.8° west of Epsilon (ε) Tauri is T Tauri, the prototype of a class of variable stars called T Tauri stars. This star undergoes erratic changes in luminosity, varying between magnitude 9 to 13 over a period of weeks or months. This is a newly formed stellar object that is just emerging from its envelope of gas and dust, but has not yet become a main sequence star. The surrounding reflection nebula NGC 1555 is illuminated by T Tauri, and thus is also variable in luminosity.

Observational Data for T Tauri and NGC 1555:
Right ascension $4^h\ 21^m\ 57.1^s$
Declination +19° 32′ 7″
Apparent magnitude (V) 9.6

The Constellation includes part of the Taurus-Auriga complex, a star forming region of sparse, filamentary clouds. This spans a diameter of 30 parsecs and contains 3.5×10^4 solar masses of material, which is both larger and less massive than the Orion Nebula. At a distance of 150 parsecs, this is one of the nearest active star forming regions.

The identification of the constellation of Taurus with a bull is very old, certainly dating to the Chalcolithic, and perhaps even to the Upper Paleolithic. Michael Rappenglück of the University of Munich believes that Taurus is represented in a cave painting at the Hall of the Bulls in the caves at Lascaux (dated to roughly 15,000 BC), which he believes is accompanied by a depiction of the Pleiades.

Taurus marked the point of vernal equinox in the Chalcolithic and the Early Bronze Age (the "Age of Taurus"), from about 4,000 BCE to 1,700 BCE. The Pleiades were closest to the Sun at vernal equinox around the 23rd century BC. In Babylonian astronomy, the constellation was listed in the MUL.APIN as GU_4.AN.NA, "The Heavenly Bull". As this constellation marked the vernal equinox, it was also the first constellation in the Babylonian zodiac and they described it as "The Bull in Front. The Akkadian name was *Alu* The Bull of Heaven was closely associated with Inanna in early Mesopotamian art. One of the earliest depictions shows the bull standing before the goddess' standard, as it has 3 stars depicted on its back (the cuneiform sign for 'star-constellation') there is good reason to regard this as the constellation later known as Taurus. Taurus also became an important object of worship among the Druids. Their Tauric religious festival was held while the Sun passed through the constellation. The same iconic representation of the Heavenly Bull was depicted in the Dendera zodiac, an Egyptian bas-relief carving in a ceiling that depicted the celestial hemisphere using a Planisphere. In these ancient cultures, the orientation of the horns was portrayed as upward or backward. This differed from the later Greek depiction where the horns pointed forward. To the Egyptians, the constellation Taurus was a sacred bull that was associated with the renewal of life in spring. About 4,000 years ago, the spring equinox entered Taurus. The constellation would become covered by the Sun in the western sky as spring began.

Finally Taurus contains the little-known nebula IRAS 05437+2502 close to the central plane of our Milky Way galaxy. Unlike many of Hubble's targets, this object has not been studied in detail and its exact nature is unclear. At first glance it appears to be a small, rather isolated, region of star formation and one might assume that the effects of fierce ultraviolet radiation from bright young stars probably were the cause of the eye-catching shapes of the gas.

Images: Page 10 - Taurus Constellation Credit: © T. Credner & S. Kohle, AlltheSky.com, All Rights Reserved. Used with permissions. Pleiades Credit: ©18 Feb 2010, Glen Knight, BAS (Kokopelli obs. Boise, ID) Crab Nebula (M1, NGC 1952, Taurus A) NASA/ESA/STScI. Page 11 T-Tauri and NGC 1555 in infrared 2MASS/Cal-Tech/NASA/NSF and IRAS 05437+2502 NASA/ESA/STScI. Article Reference - Wikimedia

Magic Valley Astronomical Society
P.O. Box 445
Kimberly, ID, USA 83341
http://www.mvastro.org/

Images on the front page: 1. Centennial Observatory courtesy of Chris Anderson, Observatory Manager. The Centennial Observatory is located at the Herrett Center for Arts and Science, College of Southern Idaho, Twin Falls, ID, USA.
2. Shoshone Falls is a major attraction to the Magic Valley and a prominent landmark on the Snake River. Falls image is used under “public domain;” unknown photographer.
3. M-51 on the front page was imaged with the Shotwell Camera and the Herrett Telescope at the Centennial Observatory by club members Rick Widmer & Ken Thomason. 4. Star explorers image is a open source photo, photographer unknown.

Membership Information

Membership is not just about personal benefits. Your membership dues support the work that the Magic Valley Astronomical Society does in the community to promote the enjoyment and science of astronomy.

Speakers, public star parties, classes and support for astronomy in schoolrooms, and outreach programs just to name a few of the programs that your membership dues support.

Annual Membership dues will be $20.00 for individuals, families, $10.00 for students.

Contact Treasurer Jim Tubbs for dues information via e-mail: jtubbs015@msn.com or home telephone: 736-1989 or mail directly to the treasurer at his home address. 550 Sparks Twin Falls, ID 83301

Donations to our club are always welcome and are even tax deductible. Please contact a board member for details.

Jupiter’s Ghost

The unfortunate name of "planetary nebula" for this class of celestial object is a historical legacy credited to William Herschel during the 18th century — a time when telescopes where small and objects like these, at least the central region, looked very similar to gas-giant planets such as Saturn and Jupiter. In fact, NGC 3242 has no relation to Jupiter or any other planet.

Telescopes and their detectors have dramatically improved over the past few centuries. Our understanding of what planetary nebulae truly are has improved accordingly. When stars with a mass similar to our sun approach the end of their lives by exhausting supplies of hydrogen and helium fuel in their cores, they swell up into cool red-giant stars. In a last gasp before death, they expel the layers of gas in their outer atmosphere. This exposes the core of the dying star, a dense hot ball of carbon and oxygen called a white dwarf. The white dwarf is so hot that it shines very brightly in the ultraviolet.

The ultraviolet light from the white dwarf, in turn, ionizes the gaseous material expelled by the star causing it to glow. A planetary nebula is really the death of a low-mass star. Although low-mass stars like our sun live for billions of years, planetary nebulae only last for about ten thousand years. As the central white dwarf quickly cools and the ultraviolet light dwindles, the surrounding gas also cools and fades.

In this image of NGC 3242 from the Galaxy Evolution Explorer, the extended region around the planetary nebula is shown in dramatic detail. The small circular white and blue area at the center of the image is the well-known portion of the famous planetary nebula. The precise origin and composition of the extended wispy white features is not known for certain. It is most likely material ejected during the star's red-giant phase before the white dwarf was exposed. However, it may be possible that the extended material is simply interstellar gas that, by coincidence, is located close enough to the white dwarf to be energized by it, and induced to glow with ultraviolet light.

Observational Data for NGC 3242:
Right ascension $10^h\ 24^m\ 46.1^s$
Declination -18° 38′ 32.6″

Image: This ultraviolet image from NASA's Galaxy Evolution Explorer shows NGC 3242, a planetary nebula frequently referred to as "Jupiter's Ghost." Credit: NASA/JPL-Caltech

Membership Benefits

Sky and Telescope group rates. Subscriptions to this excellent periodical are available through the MVAS at a reduced price of $32.95.

Astronomy Magazine group rates. Subscriptions to this excellent periodical are available through the MVAS at a reduced price of $34.00

Receive 10% discounts on other selected Astronomy Publications.

For periodical info. and subscriptions Contact Jim Tubbs, Treasurer

Lending Library: Currently we have no books to lend.

Lending Telescopes: The society currently has two telescopes for loan and would gladly accept others. Contact Rick Widmer, Secretary for more information.

Elected Board

Terry Wofford, President
terrywofford@hotmail.com

David Olsen, VP / Newsletter Ed.
editor@mvastro.org

Jim Tubbs, Treasurer
jtubbs015@msn.com

Rick Widmer, Secretary / Webmaster
rick@developersdesk.com