

STARSCAN
Volume 23, No. 3

**FORTY YEARS
AND
COUNTING!**



Table of Contents

Message from EI Presidente

Observing Solar System Objects in March

By Paul Maley

JSCAS Library Looking For a New Home

By Lisa Lester

Moody Gardens Star Party

By Ed Malewitz

Obituary

By Barbara Wilson

Invitation to HAS Observing Site

By George Stradley

Charlie's Challenge

By Charles Hudson

An Examination of Halton Arp's Idea of an Intrinsic Redshift

By Charles Hudson

Star Party Dates

Member's Gallery

Observing for March 2007

By Chris Randall

Meeting Agenda

List of Officers and SIGs

Hiya folks!!

I want to thank everyone who attended the 40th anniversary dinner and celebration last Friday night. It was my extreme honor to present a mere fraction of our history in a setting befitting our organization. It was especially meaningful to me to have so many of our elders attend and enjoy an evening together. We would not have this wonderful society without their efforts.

This group has been an inspiration to so many over the years. We share what we know, teach what we've learned and strive to portray astronomy as a window to the universe. I feel certain that we'll continue to ensure our organization stays active and entertaining for our future members.

I want to thank those at my table for not eating my cake whilst I presented the slideshow. That was really good cake!! See ya at the Fort next week!!!!

Bob
El Jeffe DeJour



OBSERVING SOLAR SYSTEM OBJECTS IN MARCH

By Paul Maley

There are several opportunities this month to watch interesting occultations and the passage of other solar system events. The first event involves a close approaching asteroid but the others involve much dimmer targets. So, the big question remains as to how can you spot stars when you don't have large aperture optics? Say you have an 8-inch scope or larger, you can improve your response by perhaps 1.5-2 magnitudes by getting a focal reducer. I recommend the f/3.3 version which can be obtained from at least two sources, Meade or Mogg.



The above is the Mogg version and sells for about \$150.-200. Improved performance depends on your sky, the spectral class of the star, elevation of the star above the horizon as well as sky clarity.

Rather than just watching, if you migrate to video recording, I strongly suggest you consider the small and rather inexpensive PC164C shown below which sells for about \$120. from Supercircuits in Austin, TX. The illustration below shows the tiny camera attached to a lens. Normally the camera is sold without the lens and is powered from a separate 12V battery source. I use a gel cell or a battery pack with the appropriate connector.

**Super Low Light B/W Camera
480 lines w/ 0.0003 Lux**



**See in virtual
darkness**

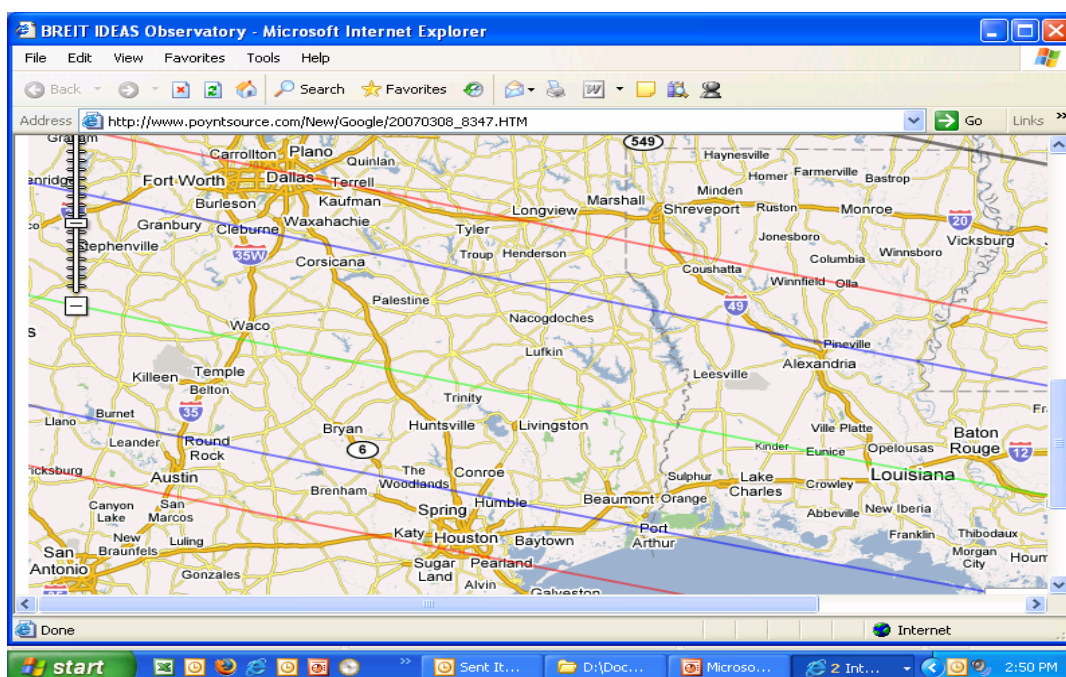
You can then connect the camera to the focal reducer using a T to C adapter available on line for about \$30.



Now that you know this, what can you watch this month?

OCCULTATION OF A 11.3 MAGNITUDE STAR BY THE ASTEROID LORELEY MARCH 8

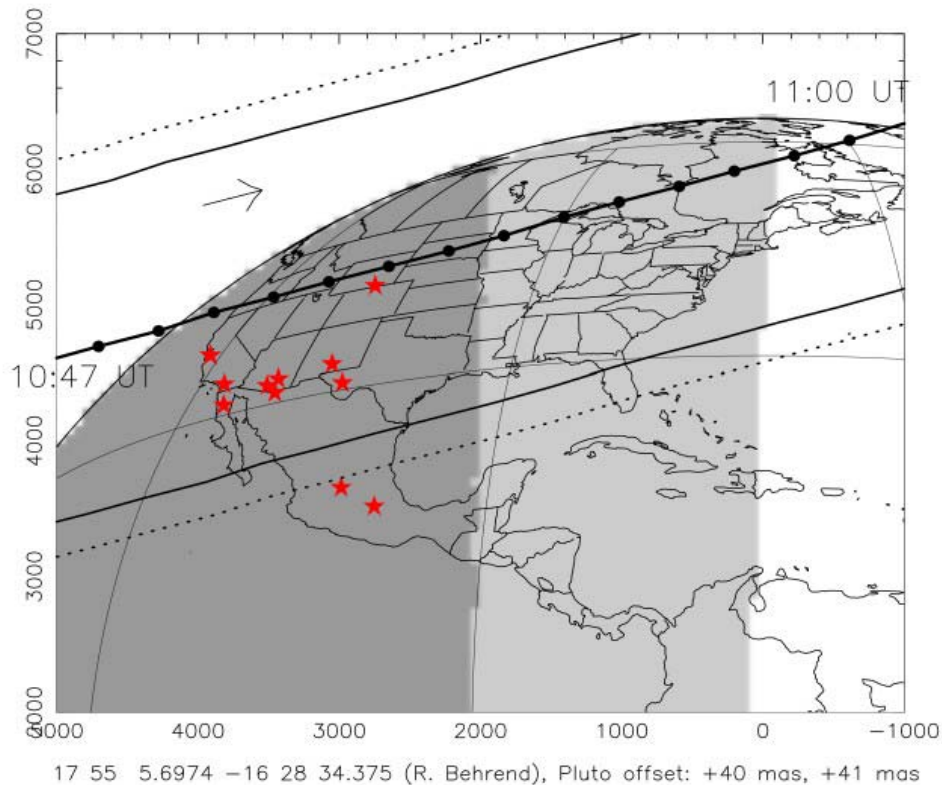
The map below shows the predicted path of the occultation of a faint star by the minor planet Loreley.



The visibility is predicted to be between the two parallel blue lines with the red lines being indicators of the estimated error in the prediction. For more details please see my web page <http://www.eclipsetours.com/events>

OCCULTATION OF A STAR BY PLUTO MARCH 18

The most interesting occultation event involves a 14th magnitude star eclipsed by Pluto. This extremely rare event is poised to occur over the south and southwestern USA on Sunday morning March 18 shortly before 5am local time. The map below is an example of one prediction.



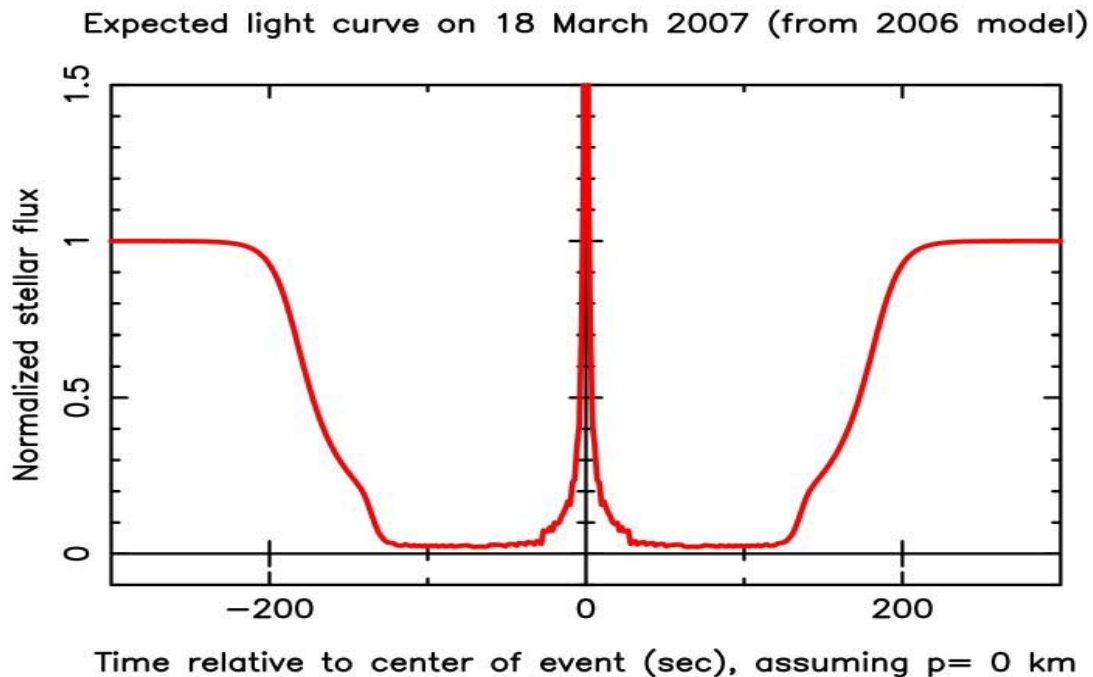
Here is the important data:

- ***Sunday morning: 10h56m34s UT***
- ***Duration 6 minutes!***
- ***Magnitude drop: 0.53 (V)***
- ***r.a.= 17h 55mn 5.6974 sec***
dec.= -16d 28' 34.375" (ICRF J2000)
- ***Uncertainty +/-5minutes in time; 600 miles***
- ***Elevation 38, azimuth 150***

Because the uncertainty is rather high in the time, the time to begin the watch should be about 448am and finish about 5:04am. In the visual spectrum, because the magnitude of Pluto and that of the star are nearly the same, the star's brightness should only drop by a half magnitude. This is recognizable provided the seeing is stable. However, it will take a fairly good size scope to detect it.

Pluto will be 14.4 magnitude and the star 14.9. If one has a red filter, the drop in brightness should be more than 1 magnitude.

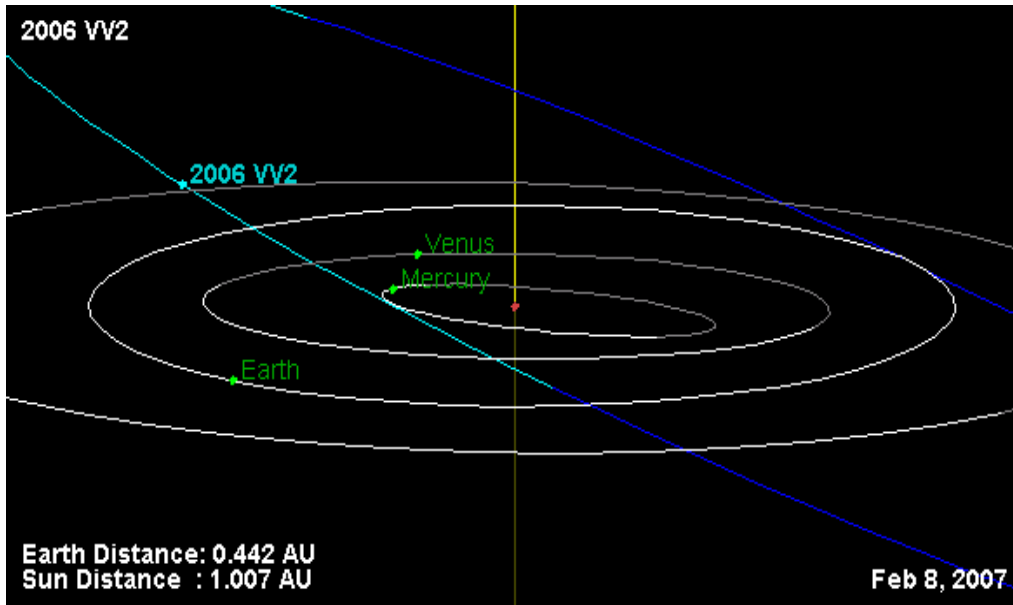
There is also a phenomenon that is expected to happen for some lucky observers midway during the eclipse process. This is called the central flash and is depicted graphically below.



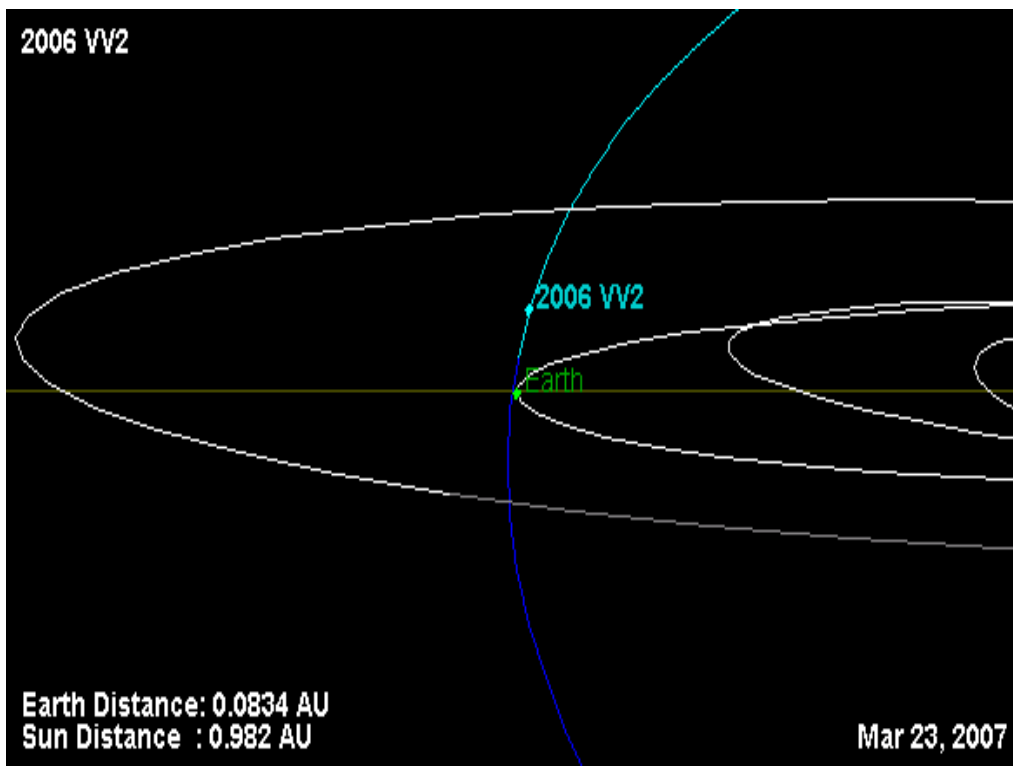
The brightness of the star is predicted to increase sharply perhaps a full magnitude for up to 30 seconds or so within 100km of the center of the actual shadow path. At present the path uncertainty is about 600 miles but it is believed that Houston will experience at least part if not all of the occultation.

APPROACH OF A NEAR EARTH OBJECT (NEO) March 30/31

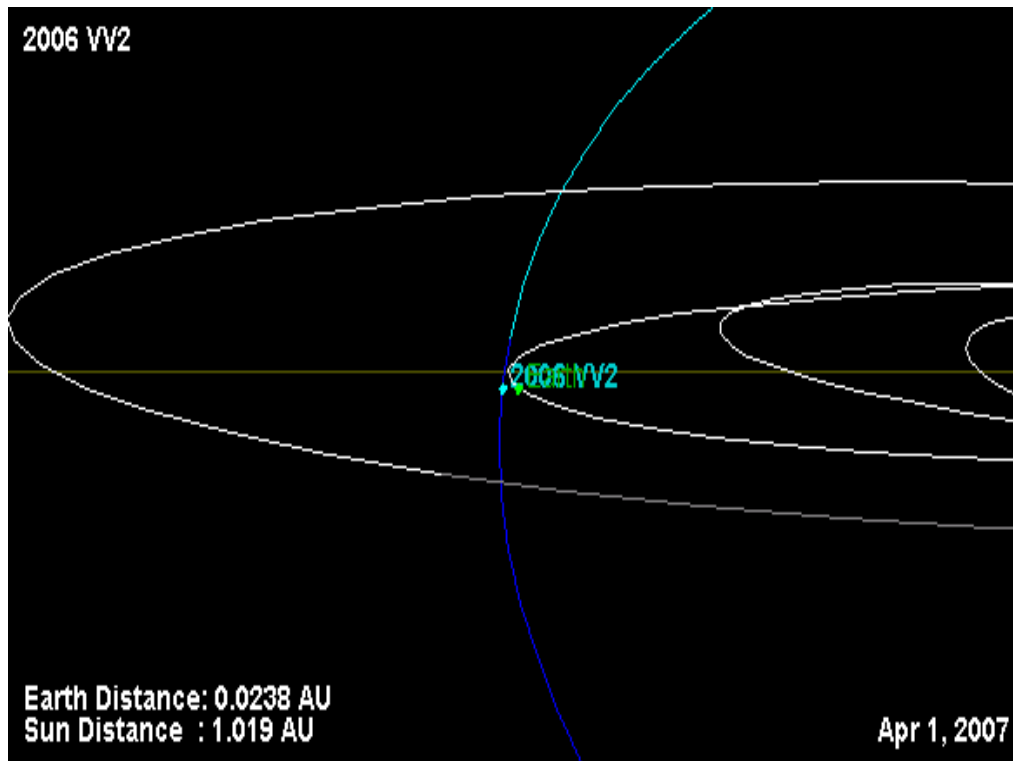
A fun experiment is to spot the fast moving asteroid 2006VV as it is headed by the earth. This is a 2km wide object passing 2,000,000 miles away (or about 8.8 lunar distances). 2006VV brightens to 10th magnitude object when it passes closest to us on the nights of March 30 and March 31 (a weekend!). On Friday night March 30 it passes directly overhead, while on Saturday it is visible in the evening rising in the east and setting in the southwest during a 7 hour crossing period.



The above graphic shows an angular approaching the earth in its inclined orbit on February 8.



The above view shows a side view of the asteroid approaching the earth only 8 days before it achieves its closest approach. The orbits of Mars (left white arc) and Venus (closest white arc on the right to earth) are also depicted.



Finally this view shows it on April 1 at closest approach.

JSCAS Library Looking For a New Home

By Lisa Lester

Hi everyone! I hope you haven't all washed away in the lovely weather we've been having lately! I've been going through closets, cabinets & bookcases trying to get things sorted out for the big move to Fort McKavett.

I've talked to two club members about taking the JSCAS library but since I first mentioned the idea in the fall other items have filled their spaces. So, we need someone else to step in and take over. The library fit on a 3 shelf bookcase in our house. I pulled it out & boxed it up the other day as I've got painters redoing all the rooms inside. There are some duplicates and a few old books that could be donated to a hospital library in an effort to reduce the volume if necessary.

Also, one of our club members has 24 years of Astronomy Magazine, bound by year in Kalmbach Publishing binders, from 1980 through 2004. He has 2005 and 2006 as well, but they're not bound.

I told him I didn't know whether we wanted them for the club library or not.

I brought it up at the meeting earlier this month and one person pointed out that the magazines are available online so he didn't think we needed to keep them in the club library.

Please let me know what you think about the Astronomy Magazines and let me know if you could house the library. I can deliver the books or bring the boxes to the next meeting. We'd like to get our house on the market in March so the library needs a new home fairly soon!

MOODY GARDENS STAR PARTY

By Ed Malewitz

We had a very successful and surprisingly pleasant time last night at Moody Gardens. The Gardens has substantially improved the site by paving pathways, planting gardens, installing playground equipment and shrubbery and moving our viewing site to a well light-blocked spot near parking with paved areas, benches and tables.

I got there around 5:30 and, with the kind assistance of the Moody Gardens staff, was able to park just down a paved path from the observing area. Imagine being able to set up on a smooth, level paved area! We had 8 or 9 scopes ranging from 60mm refractors to a CPC 11 Celestron.

The night was visually outstanding. Saturn was the star (or planet) of the evening and the seeing was good enough for 200X through my 8" SCT. We heard lots of "wow-it really has rings" from the moderate crowds. Mardi Gras had detracted from huge turnouts, but the audience was big enough and really well behaved.

OBITUARY

By Barbara Wilson

Vic Winter owner of Daystar has passed on. He was an owner of ICSTARS Astronomy, www.icstars.com, and DayStar Filters, as well as being *Astronomical League Reflector Magazine* editor.

I spoke with Vic a few weeks before Christmas when I sent him the observatory's daystar filter for repairs. He had just returned from Africa where he had been on a meteorite hunting trip. He was ill from the trip and thought he had caught a "bug"

Vic was a great guy, so I thought those of you who knew him from TSP and ALCON conventions would like to know.

Invitation to HAS Observing Site

By George Stradley

Field Trip/Observing Program Coordinator
Houston Astronomical Society
stradley@sbcglobal.net

What: HAS invitation to ASSET, FBAC, JSCAS and NHAC

When: March 10th

Where: HAS Observing Site

The Houston Astronomical Society invites members of the local area clubs to experience the dark skies of our observing site near Columbus on March 10.

Our facility comprises an observing field with 38 concrete pads; bring an extension cable and a power strip and you can connect your scope to 115vac power at almost any place on the field.

Other amenities include two fully equipped restrooms complete with hot water and shower; camping and picnic areas; and a temperature-controlled bunkhouse. The site also has an observatory building which houses three telescopes permanently.

The entrance gate will remain unlocked from 3:30p to 6:00p allowing ample time for setup. The night will offer total darkness from 7:34p to 12:39a (March 11) during which time darkout rules will be in effect.

For those interested, we will do a laser tour of the constellations. The observatory will also be staffed with telescope operators who will be on hand to take us on a telescope tour of nights' objects of interest.

Of course, visitors are free to follow their personal observing agenda with their own equipment if they so wish.

White light will be permitted after 12:45a and the exit gate will be unlocked from that time to 1:15a allowing everyone to leave safely.

Bring your favorite equipment with observing list, snacks, drinks and appropriate clothing and enjoy this opportunity to observe under skies far darker than your backyard!

Please e-mail me by March 03 that you will attend and let me know your club affiliation. (I do need a rough head count as space could be at a premium).

The following was inadvertently left off of February's Starscan
Charlie's Challenge
Radiation Question (Feb. answer for Jan. question)

By Charles Hudson

According to Halter's son, if given an alpha source a beta source, a gamma source, and a neutron source and required to eat one, hold one in your hand, put one in your pocket, and throw away the other, the safest course would be:

Throw away the neutron source. It is too dangerous.

Eat the gamma source. It is so penetrating that the pocket gives no protection.

Hold the alpha source. The outer layer of the skin, which consists of dead cells, is sufficient to protect you.

Put the beta source in your pocket. The layer of cloth is sufficient to protect you.

I was slow to answer on this question, so Mr. Halter told me.

Gradients Question (Feb. question for March answer)

By Charles Hudson

There is a feeling on the part of some that Charlie's Challenge was a forum for me to show off. The proper use is to try to get the members to think about science. Therefore, I shall endeavor to present problems that I have had difficulty with and may not have resolved to my own satisfaction.

The question for February is: What are the gradients that Dennis Webb has labored so hard to remove from photographs of the Arp Galaxies?

I will not give the answer to this question, because I do not know. I hope the membership will explain it to me.

An Examination of Halton Arp's Idea of an Intrinsic Redshift

By Charles Hudson

Starting with the discovery that quasars were exceptional objects back in the 1960s there have been questions about them. If the quasars are as remote as

their redshifts imply, what powers them? If they are not remote, why are their redshifts so large?

Because many quasars are found at small angular separations from galaxies, Halton Arp suggested that those quasars that were close to galaxies had been ejected by those galaxies. I don't know who pointed out that a high velocity of ejection ought to imply the existence of some blue-shifted quasars, but I do not think it was Arp. (Dennis Webb can correct me if I am mistaken about this). This objection caused Arp to forcefully advocate the idea that newly created matter has different spectroscopic properties from the ancient matter here on Earth that spectroscopists use to calibrate redshifts.

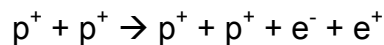
I will begin with a brief explanation of how redshifts are measured. The spectrum of an element is measured in a terrestrial laboratory. The spectra of atoms consist of emission at several specific wavelengths. The spectrum depends upon the type of atom, the number of electrons remaining in the atom (ionization state of the atom), and the initial and final states that the emission connects. There are only a finite number of such lines in the wavelength range that the atmosphere will transmit. The wavelengths from some astronomical source are compared to those observed terrestrially. If they wavelengths are not exactly the same from the two sources, then the terrestrial wavelengths are multiplied by a factor to make them be the same as the astronomically observed wavelengths. When the same factor causes at least two (ideally more) wavelengths to match exactly, then this is the shift of the astronomical object under observation. If this factor is greater than 1, it is called a redshift; if less than 1, it is a blue shift. Redshifts are usually interpreted as the result of the source receding from us, while blue shifts are usually interpreted as originating from an approaching source. Stars within the Milky Way can have either kind of shift. With rare exceptions, objects outside the Milky Way are redshifted. However, there is no "redshift" if the type of atom, ionization state, and initial and final states involved in the emission are not the same in the astronomical and terrestrial sources being compared. There are a few states that are so long lived that their emissions cannot be observed terrestrially. The excited atoms would collide with the walls of the vessel (quenching the excited state) before they would emit any light. For these emissions their terrestrial wavelengths can be calculated by quantum mechanics.

Arp has proposed that the wavelengths emitted by an object depends upon the age of that object. However, these wavelengths also depend in an entirely predictable way on the fundamental constants of nature. For example, the energy levels of the H atom (which is the most abundant element in the universe, and the element whose spectrum was first measured for a quasar) can be predicted with high accuracy by quantum mechanics. They are, with charges (for simplicity) in electrostatic units:

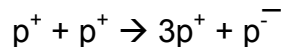
$$E = \frac{-4\pi^2\mu e^4}{N^2h^2}$$

Where π is the familiar constant from the geometry of circles, μ is the reduced mass (only slightly different from the electron mass) of the electron and nucleus, e is the charge on the electron, N is a quantum integer identifying the state, and h is Planck's constant. The zero of energy is chosen with the electron and nucleus at rest and infinitely separated from each other. For more complicated atoms the energy depends upon the same things, as well as the nuclear charge, but in more complex ways. In other words, THE ONLY WAY NEWLY CREATED MATTER CAN HAVE A SPECTRUM DIFFERENT FROM THAT OF TERRESTRIAL ANCIENT MATTER IS TO HAVE DIFFERENT FUNDAMENTAL CONSTANTS.

The point of this article is that the physicists, engineers, and technicians that operate particle accelerators create new matter all the time. For example, when a proton is accelerated to high energy and collided with another proton, the collision may produce an electron and its antimatter counterpart, the positron:



The collision can also produce a proton and an antiproton:



As far as I am aware, the matter (protons and electrons) produced in these collisions have not been collected and analyzed to see if their fundamental constants are the same as that of the ancient matter all around us. However, the antimatter (positrons and antiprotons) that are also produced in such collisions have been collected and analyzed. At the Stanford Linear Accelerator and at Europe's Large Electron Positron Collider positrons were collected, accelerated to high energy, and collided with electrons for over a decade. At Fermilab outside Batavia, Ill., antiprotons have been collected, accelerated, and collided with protons for something like a decade. The operation of these accelerators depends sensitively on the charge to mass ratios of the particles. If these ratios were different for the newly created antiparticles and for the ancient matter they are collided with, the fact would surely be known.

The actual charges and masses of the newly created antimatter are harder to measure than the mass to charge ratios. Wikipedia gives the masses and uncertainties identical to seven places for the positron and the electron. The charges of the positron and the electron are opposite in sign, but given by Wikipedia as identical to seven places. I have not followed the methodologies used in measuring these properties enough to know to what degree the measurements are truly independent. However, if they are independent, then

ancient matter and newly created antimatter will have no intrinsic redshift attributable to variations in mass or charge.

It is conceivable that newly created matter would have a different value of Planck's constant than ancient matter. If there were any substantial difference, I think it would be known. "Atoms" of positronium (a positron bound to an electron) have been exhaustively studied, and I believe it is true that the spectrum of these "atoms" is understood without any need to postulate that any of the fundamental constants of the system are not the same as those of the ancient matter that we are composed of and are surrounded by.

Since quantum mechanics predicts the energies of the electronic states of atoms that are connected by the emission of light, and what is actually measured is the wavelength of the light, rather than the energy, one might argue that the speed of light, c , which is used in the conversion of energy to wavelength might be different for newly created matter and for ancient matter. This seems unlikely to be correct. The speed of light depends upon the electric and magnetic properties of empty space. Once the light has left the source, I don't see any way that space can remember how old the source was.

It might be argued that newly created antimatter is identical (except for having oppositely signed charges) to ancient matter, but not to newly created matter. This implies an asymmetry between matter and antimatter that is not widely thought to exist, but as far as I know, it cannot be ruled out on experimental grounds. This argument does, however, present the scientist who would tackle the broader question involved with a choice: 1. He can accept Arp's hypothesis and think about why matter and antimatter are different, or 2. He can think about why there are such a large proportion of quasars in improbably high (according to Arp's principal argument) angular proximity to galaxies. The vast majority of scientists will select the latter choice, because it is closer to the facts.

Bill Leach recently addressed the Houston Astronomical Society on this very question. He expressed skepticism about Arp's probability calculations concerning the likelihood of some of the galaxy-quasar alignments. Galaxies are very interesting things to professional astronomers, who have studied them intensively. Being the thorough experimentalists they are, they might measure the redshifts of things in the same field as the galaxy they are primarily interested in. They might want to know whether a given object is a foreground star, a globular cluster associated with the galaxy, or a quasar in the background. This process would naturally lead to more discoveries near an object of interest than in blank regions of the sky. Some years ago a Canadian speaker at one of the JSCAS meetings showed a map of the world with the locations of the known meteor craters marked on it. He then asked why there were such a high proportion of them in North America. His answer was that that is where the geologists are, and his basic point was the same: More discoveries are made near where people look.

It is common for a scientist, in seeking to understand some new fact he has discovered, to formulate a working hypothesis about it to relate the new fact to the others which are known. An essential skill in such a scientist is to examine the working hypothesis critically to see whether it is consistent with the other information that is available, and to reject the hypothesis, if it is not. I feel that Arp has not engaged this skill of criticism sufficiently with his hypothesis that newly created matter has an intrinsic redshift. That makes him little different from a crank. That is exactly the way the professional astronomers have been treating him. It is sad to see a man whose scientific achievements are as substantial as Arp's act this way. I almost want to tell him: "Come off it, Dr. Arp, and get back to real science."

Star Party Dates 2007

March 15 – 18, 2007 Fort McKavett

April 14, 2007 Haak Winery

May 13 – 19, 2007 Texas Star Party

August 11, 2007 Moody Gardens

September 8, 2007 Haak Winery

September 15, 2007 Moody Gardens

October 11 – 14, 2007 Fort McKavett

October 19, 2007 All Clubs Meeting

October 20, 2007 Astronomy Day at the George Observatory

November 10, 2007 Haak Winery

Member's Gallery

The following images were provided courtesy of Al Kelly.

NGC2207 and IC2163



SH2-311L



Thor's Helmet, NGC2359



March 2007





By Chris Randall

★ *SSO: (Solar System Objects) Summary for the 15 March 07*

<i>Object</i>	<i>Const</i>	<i>Mag</i>	<i>% Ill</i>	<i>Rise Time</i>	<i>Transit</i>	<i>Set Time</i>
<i>Sun</i>	<i>Psc</i>	<i>-26.7</i>	<i>100</i>	<i>06:30</i>	<i>12:29</i>	<i>18:27</i>
<i>Moon</i>	<i>Cap</i>	<i>----</i>	<i>13</i>	<i>04:15</i>	<i>09:34</i>	<i>14:52</i>
<i>Mercury</i>	<i>Aqr</i>	<i>0.4</i>	<i>43</i>	<i>05:17</i>	<i>10:50</i>	<i>16:24</i>
<i>Venus</i>	<i>Psc</i>	<i>-4.0</i>	<i>83</i>	<i>08:05</i>	<i>14:31</i>	<i>21:01</i>
<i>Mars</i>	<i>Cap</i>	<i>1.2</i>	<i>94</i>	<i>04:34</i>	<i>09:54</i>	<i>15:14</i>
<i>Jupiter</i>	<i>Oph</i>	<i>-2.1</i>	<i>99</i>	<i>00:54</i>	<i>06:02</i>	<i>11:10</i>
<i>Saturn</i>	<i>Leo</i>	<i>0.5</i>	<i>100</i>	<i>15:35</i>	<i>22:19</i>	<i>04:59</i>
<i>Uranus</i>	<i>Aqr</i>	<i>5.9</i>	<i>100</i>	<i>06:08</i>	<i>11:55</i>	<i>17:42</i>
<i>Neptune</i>	<i>Cap</i>	<i>8.0</i>	<i>100</i>	<i>04:54</i>	<i>10:22</i>	<i>15:49</i>
<i>Pluto</i>	<i>Sgr</i>	<i>14.0</i>	<i>99</i>	<i>01:21</i>	<i>06:45</i>	<i>12:08</i>

Highlighted times denote daylight events.

Lunar phases for March 07

Full 	Third 	New 	First 
3rd 17:17	11th 21:54	18th 20:43	25th 12:16

Central Standard Time

★ **BSO: (Bright Sky Objects)**

NGC 3031 (M-81) – Galaxy in Ursa Major, Magnitudes 8, Size 27' x 14'.

**NGC 2682 (M-67) – Open Cluster in Cancer, Magnitudes 6.9, Size 29',
200 Stars**

**NGC 2910 (Cr 209) – Open Cluster in Vela, Magnitudes 5, Size 5', 30
Stars**

**NGC 2925 (Cr 210) – Open Cluster in Vela, Magnitudes 8.3, Size 12',
40 Stars**

★ **DSO: (Dark Sky Objects)**

NGC 2903 – Galaxy in Leo, Magnitude 9.7, Size 12' x 6'

**NGC 2867 (C-90) – Planetary Nebula in Carina, Magnitude 9.7, Size
24"**

NGC 2775 (C-48) – Galaxy in Cancer, Magnitude 11, Size 4.2' x 3.4'.

NGC 2683 – Galaxy in Lynx, Magnitude 10.6, Size 10.5' x 2.5'.

★ **CDMP: (Chris' Don't Miss Pick)**

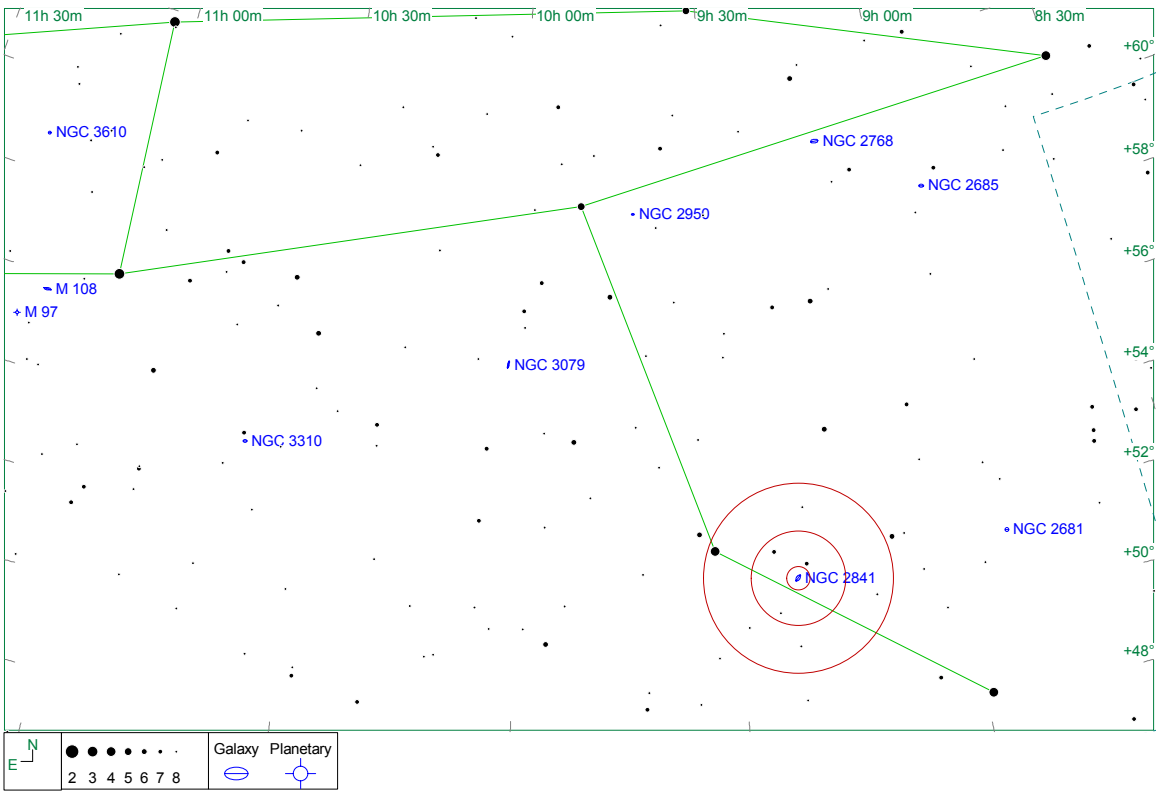
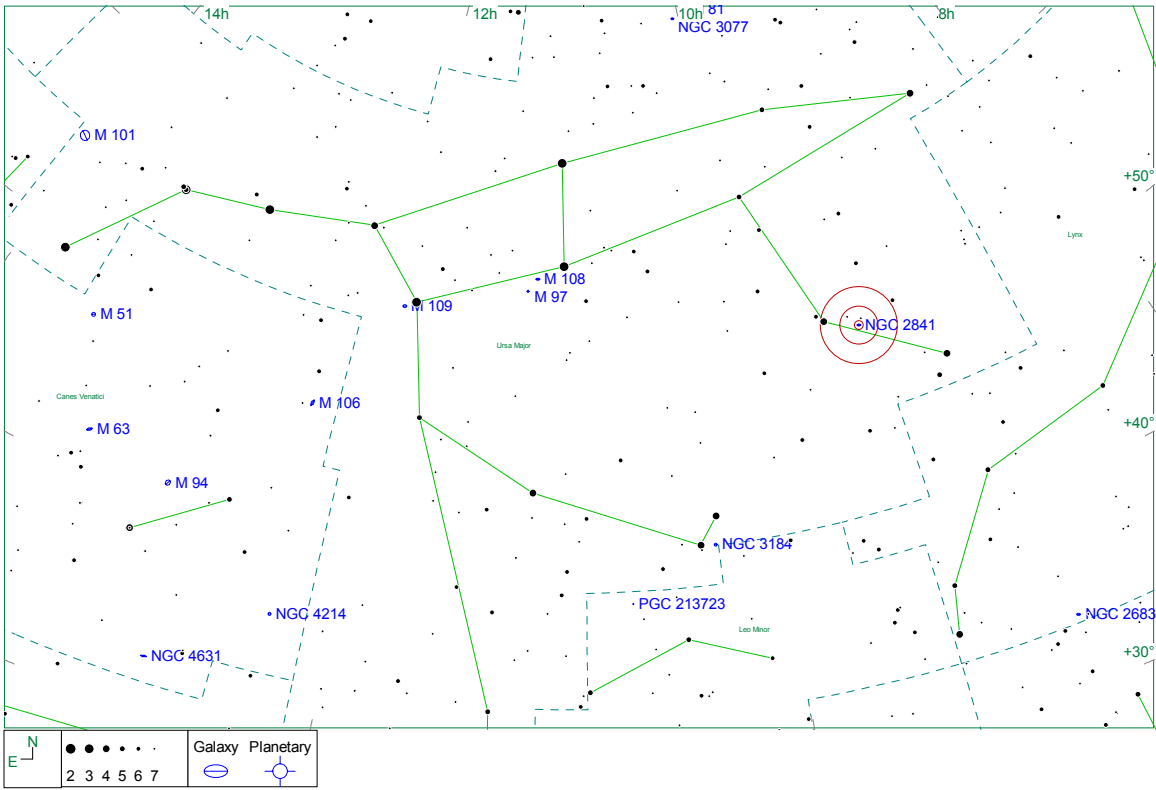
NGC 2841 – Galaxy in Ursa Major, Magnitude 10.1, Size 8' x 3.5'.

NGC 2841 is a well-known Spiral galaxy and the host of three past supernovae (1912A, 1957A, 1972R). It has a central region composed of a bright nucleus and an amorphous lens devoid of dust or spiral structure. The lens resembles an Elliptical or Lenticular galaxy. Multiple, thin dust lanes begin to spiral outward at the periphery of the amorphous lens. They appear to be separate luminous spiral filaments of very complex structure. At first glance the filaments look like complete spiral arms, but closer inspection shows that only thin broken segments are present which cannot be traced as individual arcs for more than 30 degrees.

Infrared observations show that a ring of intense star formation surrounds the nucleus. However, observations by radio astronomers show that the galaxy has a lot of cool hydrogen and molecular gas that is probably in the spiral arms.

Based on the published red shift, a rough distance estimate for NGC 2595 and supernova 1999by is: 34,000,000 light years, with the galaxy being 135,000 light years in diameter.

This and other information can be found at <http://www.seds.org>



March Meeting Agenda

There will be no official meeting in March. There will be a Star Party at Ft. McKavett, Tx, March 15-18th, 2007.

Club Officers	SIGS
President – Bob Taylor	<i>Observing Awards – Triple Nickel</i>
Vice President – David Haviland	<i>CCD Imaging – Al Kelly</i>
Secretary – David Haviland	<i>Binocular Observing – Leslie Eaton</i>
Starscan Editor – Ken Steele	<i>Telescope Making – Bob Taylor</i>
Starparty Chairperson – Lisa Lester	<i>Deep Sky Observing – Chris Randall</i>
Librarian – Lisa Lester	
Historian – Susan DeChellis	
Scientific Expeditions – Paul Maley	
Web Master – Chris Randall	