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Astronomical Acronyms By Mike Simonsen, Simostronomy

Acronyms, acronyms...doesn't anybody know how to spell any more? Every article or blog I read, every conference I attend, even watching the cable news channels, I am constantly bombarded with acronyms for everything. I rattle them off in conversation all the time without thinking, and yet I'm sure there are people listening, nodding their heads knowingly, who haven't got a clue what the heck I am talking about.

I do the same thing. My boss, a PhD astronomer, throws these things around as if they were real words and I should know what they are. I nod my head knowingly and scrape by as best I can until I have time to research them later. I usually spend about an hour or so investigating each set of mystery letters, divining the meaning of it all, so next time it comes up I can make an intelligent comment, or at least not stand there with a dumb look on my face.

This blog was inspired by recent discussions about all sky surveys, which naturally all have acronyms for names. My guess is that this will turn into a series of blogs on acronyms related to various aspects of astronomy. If you have a suggestion, leave it in the comments section, please.

Without further ado, here are Simointerpre-

tations of popular acronyms related to astronomical surveys.

2MASS The *Two Micron All Sky Survey* is an all sky survey in the near infrared performed by twin 1.3 meter telescopes, one at Whipple Observatory in Arizona and the other at Cerro Tololo Inter-American Observatory in Chile. The University of Massachusetts lead this project. They were responsible for developing the cameras, telescopes and on-site computing systems. The project was funded by NASA and the National Science Foundation. It ran from 1997 to completion in 2001. The resulting 2MASS All Sky Catalog was released in 2003.



2MASS

The reason it isn't called TMASS is because there was already an all sky survey in the infrared named TMASS done in the 1960's. 2MASS canvassed the sky with about 50,000 times the sensitivity of TMASS. They were able to study galaxies and objects typically hidden from view in optical wavelengths by dust in our galaxy and survey the sky for brown dwarfs and other oddball objects that emit most of their feeble light in the infrared.

To summarize, 2MASS, run by U Mass, funded by NASA and NSF, replaced TMASS by surveying the sky with twin 1.3M telescopes in the near-IR from Mt.

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What Happened to Comet Holmes?

by Dr. Tony Phillips

One year after Comet 17P/Holmes shocked onlookers by exploding in the night sky, researchers are beginning to understand what happened.

“We believe that a cavern full of ice, located as much as 100 meters beneath the crust of the comet’s nucleus, underwent a change of phase,” says Bill Reach of NASA’s Spitzer Science Center at the California Institute of Technology. “Amorphous ice turned into crystalline ice” and, in the transition, released enough heat to cause Holmes to blow its top.

Anyone watching the sky in October 2007 will remember how the comet brightened a million-fold to naked-eye visibility. It looked more like a planet than a comet—strangely spherical and utterly lacking a tail. By November 2007, the expanding dust cloud was larger than Jupiter itself, and people were noticing it from brightly-lit cities.

Knowing that infrared telescopes are particularly sensitive to the warm glow of comet dust, Reach and colleague Jeremie Vaubaillon, also of Caltech, applied for observing time on the Spitzer Space Telescope—and they got it. “We used Spitzer to observe Comet Holmes in November and again in February and March 2008,” says Reach.

The infrared glow of the expanding dust cloud told the investigators how much mass was involved and how fast the material was moving. “The energy of the blast was about 10^{14} joules and the total mass was of order 10^{10} kg.” In other words, Holmes exploded like 24 kilotons of TNT and ejected 10 million metric tons of dust and gas into space.

These astonishing numbers are best explained by a

subterranean cavern of phase-changing ice, Reach believes. “The mass and energy are in the right ballpark,” he says, and it also explains why Comet Holmes is a “repeat exploder.”

Another explosion was observed in 1892. It was a lesser blast than the 2007 event, but enough to attract the attention of American astronomer Edwin Holmes, who discovered the comet when it suddenly brightened.

Two explosions (1892, 2007) would require two caverns. That’s no problem because comets are notoriously porous and lumpy. In fact, there are probably more than two caverns, which would mean Comet Holmes is poised to explode again.

When?

“The astronomer who can answer that question will be famous!” laughs Vaubaillon.

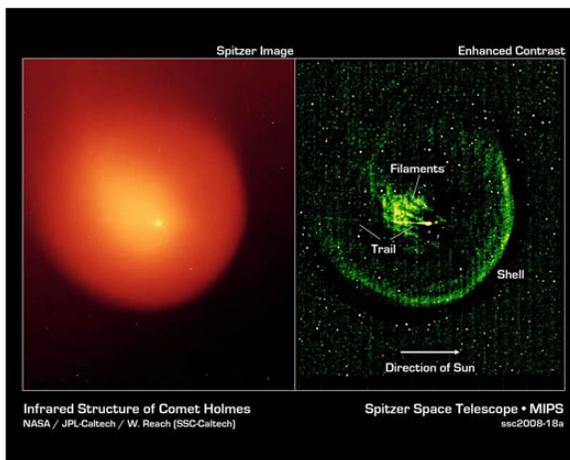
“No one knows what triggered the phase change,” says Reach. He speculates that maybe a comet-quake sent seismic waves echoing through the comet’s

caverns, compressing the ice and changing its form. Or a meteoroid might have penetrated the comet’s crust and set events in motion that way. “It’s still a mystery.”

But not as much as it used to be.

See more Spitzer images of comets and other heavenly objects at www.spitzer.caltech.edu. Kids and grownups can challenge their spatial reasoning powers by solving Spitzer infrared “Slyder” puzzles at <http://spaceplace.nasa.gov/en/kids/spitzer/slyder>.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

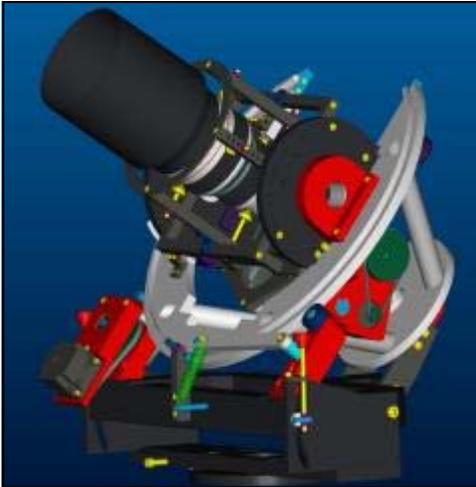


Comet Holmes as imaged by the multiband imaging photometer (MIPS) on the Spitzer Space Telescope. The enhanced contrast image at the right shows the comet’s outer shell and mysterious filaments of dust.

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Hopkins and CTIO.

Sorry, I couldn't resist.

ASAS The *All Sky Automated Survey* is an ongoing effort. Four small telescopes in Chile survey the southern sky, from +28 degrees to the south pole, down to about 14th magnitude every clear night in V and I bands. ASAS North, covering the northern sky, should be online soon.



HAT: The HAT acronym stands for *Hungarian-made Automated Telescope*, because it was developed by a small group of Hungarians who met through the Hungarian Astronomical Association (HAA) back in 1999. The scientific

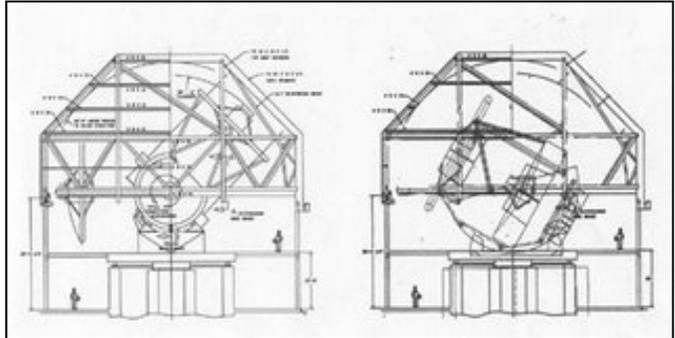
goal of the project is to detect and characterize extrasolar planets and bright variable stars. The HAT and ASAS telescopes are very similar in size and appearance, since both are the brainchild of Bohdan Paczynski. The telescope pictured here is the HAT model.

LINEAR *Lincoln Near Earth Asteroid Research* is a Massachusetts Institute of Technology (MIT) Lincoln Laboratory program devoted to detecting and cataloging Near Earth Objects (NEOs) that threaten Earth. As of the end of 2007, LINEAR had discovered 225,957 asteroids. The twin telescopes located at the White Sands Missile Range in New Mexico also manage to serendipitously discover their fair share of comets, 236 at the end of 2007, which has discouraged many amateur comet hunters. These comets all get the unfortunate, unromantic name of comet LINEAR.

LSST The *Large Synoptic Survey Telescope* isn't even online yet, but I hear news about it and its development every week. This survey will utilize an 8.4 meter telescope with a 10 square degree field of view to survey the entire night sky visible from Chile once every three nights. The LSST camera will be 1.6 by 3 meters and weigh 2800 kilograms! It will just sit there night after night, cooled to -100C, endlessly shooting 15 second exposures, tracking objects that change or move on rapid timescales, like supernovae, near-Earth asteroids, and as yet to be discovered Kuiper Belt Objects. It will

also be used to study faint, distant galaxies and dark matter.

NEAT *Near Earth Asteroid Tracking*, another program designed to detect and track NEOs, both asteroids and comets. This survey uses two 48" telescopes, one in Hawaii and one on California.



NSVS The *Northern Sky Variability Survey* is approximately one years worth of data from the **ROTSE** experiment (yet ANOTHER survey acronym!) used to detect and classify variable stars in the northern sky.

OGLE The *Optical Gravitational Lensing Experiment* project's main science goal was to search for dark matter using microlensing phenomena.

The cameras basically stare at the Large and Small Magellanic Clouds and the galactic bulge, because that's where the most background stars appear from Earth. This experiment has to be considered a smashing success as they have not only detected microlensing phenomena, but discovered thousands of variable stars, dozens of exoplanetary transits, performed precision astrometry and photometry on thousands of stars, and mapped interstellar extinction from dust in our galaxy. By the way, this experiment was also proposed by Bohdan Paczynski. I guess you'd have to call him the father of astronomical surveys, eh?



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Call For Observations–Lacerta

By A.J. Crayon

Our review of Lacerta, the Lizard, has shown there are open clusters and galaxies, yet none of our selection was real show pieces. None the less there are some interesting objects to add to our knowledge.

The first entry is the bright cluster **NGC7209** that is in both the *110 Best NGC* and *Herschel 400* lists. It has about 25 stars from 9th mag. Do you see it as scattered or compressed? After reading the observations for this cluster note the differences amongst star counts. The introduction has 25, yet every observation that gives a count has more than 25. Why? My guess is the difference is due to not knowing *exactly* which stars are part of the cluster and which are field members. Regardless of the counts or field boundaries, this is an interesting object.

9X50 finder; Charlie Whiting: this cluster was visible as a light gray patch of dim fuzz.

8" f6 Newtonian at 38X; Charlie Whiting: clearly visible and identifiable as an open cluster. Difficult to figure out where the cluster ends and the rich background begins. There's a bright yellow star due north of the cluster. It is the variable star, HT Lacertae, mag 6.08 to 6.36. At **60X** I counted about 25 to 30 stars in the brighter level and another 30 to 40 stars in the fainter level. Even so the difference in magnitudes was only slight. I don't see this cluster as compressed. But my estimate of the number of stars for the given area is certainly not scattered. I'd rate this cluster mid-way between scattered and compressed.

8" f6 Newtonian at 80x; Rick Tejera: Very large and rich cluster, well detached from the surrounding Milky way. Somewhat irregular in shape with the brighter stars concentrated near the center. Counted about 50 stars in all. The Custer is surrounded by 4 bright stars (~6-9 Mag) in a trapezoidal shape.

8" f6, Newtonian at 100X; AJ Crayon: 20', 7th mag; 40 stars from 7th to 13th mag in a Draco like chain in northerly position. The field has 200 stars 5th to 14th mag limit of the telescope.

8" SCT at 65X; Dick Harshaw: Faint, requiring averted vision. There is a nice double 20 min NW (15" apart, pa90). A yellow star is to the N. The overall shape is round.

11" SCT at 115X; Dick Harshaw: Very large and loose group; I counted 57 stars (grabbed some field outliers too apparently). If the sun was the size of a baseball, its diameter would be 6,790 miles with stars 920 miles apart. It is 414 million years old. Its earliest stars are B9 and A0 types. There are 98 known members. The brightest star is 9th magnitude. This cluster lies 28,000

light years from the galactic center and 375 light years below the galactic plane.

14.5" f5.2, Dobsonian at 140X; AJ Crayon: about 20 bright stars situated mostly in a northerly position with another 40 fainter one. The fainter ones are mostly in straight lines forming angles to each other. Some of them seem to be imbedded in the glow of unresolved fainter stars. As expected there are dark lanes and bays that help to form the unique features of this cluster. It is not easy to determine the size and, as a result, it appears to be larger than the 20 arc minute field of view. Consequently **90X** was also used. At this setting it is clear this is a very rich cluster with a nice range of magnitudes.

16" f4.4 Newtonian, 50x; Rick Rotramel: OC - pL, B, pRich, with a scattered symmetrical pattern of stars.

16" f4.5 Dobsonian at 91x; Dave Hofland: ~3° W of 2 Lac, a conspicuous large bright ~30' diam wedge-shaped pretty evenly scattered concentration of 9+ mag stars, 6.2 mag amber tinted HT Lac on the north edge of the cluster. I counted about 70 stars total within the 30' area.

Moving about 5° south is the barred spiral **NGC7223**. We wanted to know if the bar and or spiral arms were detectable in your instrument.

8" f6 Newtonian at 80X; Rick Tejera: Seen with averted vision as small haze, elongated 4-1 N-S. Slightly brighter in the center. The surrounding star field was more interesting than the galaxy.

8" f6 Newtonian at 160X; Charlie Whiting: I had to go to the listed power in order to detect this faint galaxy. Using averted vision it appears to be a faint gray blob. I will need more apertures to see the bar and spiral arms. There are 3 very dim stars aligned roughly north-south on the western side of the galaxy.

8" SCT at 104X; Dick Harshaw: It is an extremely faint blob that was seen only with tube movement and averted vision.

8" SCT at 120X; AJ Crayon: just past the end, and off too northern side, of 3 stars; really small and really faint.

11" SCT at 127X; Dick Harshaw: Low surface brightness oblong hazy patch in a moderately rich star field. Not much brightening to the middle; no prominent nucleus. This is an asymmetric spiral with three (!) arms.

16" f4.5 Dobsonian at 261x; Dave Hofland: ~1.5 deg NW of mag 4.5/10.5 double HJ 1746. Very faint, barely detectable directly, AV still difficult, ~2.5'x2'

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asymmetrical oval aligned ~E-W as best I can tell. A little brighter in the middle but I can't make out details or see bar or spirals specifically. Impression is like a faint glow through a raindrop, its unevenly illuminated but with AV I can't resolve enough to describe it.

The next entry was a typo-graphical error. It was entered as IC1422 instead of **IC1442**, the former being a 15th mag galaxy in Pegasus and the latter an open cluster with about 25 stars. So far, only Dave Hofland made the appropriate correction.

16" f4.5 Dobsonian at 261X; Dave Hofland: ~ 2 deg NNW of 4.4 mag Beta Lac, a V shaped loose collection of about 20 stars mostly 11+ mag. The V extends to the NE and to the SE. The two brightest stars are 9th mag, one near the end of each tip of the ends of the V, both appear to have slight amber tints.

The second galaxy, **NGC7265**, is same magnitude as NGC7223 but is larger and has a lower surface brightness. The question is how would our illustrious observers note the differences?

8" f6 Newtonian at 80X; Rick Tejera: Seen with averted vision as a faint round haze at the end of an arcing chain of 4 stars. Slightly brighter to the middle. Several interesting asterisms in the FOV.

8" f6 Newtonian at 160X; Charlie Whiting: This galaxy, although very faint, was a little easier to detect and see than NGC 7223. It has a nucleus that can almost be seen with direct vision. The halo, however, can only be seen with averted vision. There are 2 not-so-dim stars involved in the southern part of the halo.

8" SCT at 145X; AJ Crayon: round, very faint and pretty small; but only after a minute of averted vision and good seeing.

11" SCT at 127X; Dick Harshaw: Very faint oval with a rapid brightening to the center, with a large core but no distinct nucleus. Very small and faint halo.

16" f4.5 Dobsonian at 261X; Dave Hofland: ~2 deg SE of 4.2 mag 1 Lac, ~ 2'W of a 10th mag star; ~2' diam round diffuse difficult spot of hazy light, gradually moderately brighter middle. NGC7264 a ~1.5' long NE-SW aligned sliver of light with AV ~10' N, just S of and parallel with a pair of dim stars, with AV the galaxy is > twice as long as the sep of those stars

NGC7296 is on the *Herschel 400* list, is small and has 20 stars, so it may not be that easy to find.

8" SCT at 83X; Dick Harshaw: Triangular, and easy with averted vision. Note the 9th mag star at the N end. This cluster is 100 million years old. The center star is GSC 3619-0835. The red star on the W side is BD+51 3383 (9.70m).

8" f6 Newtonian at 80X; Rick Tejera: Small compact

cluster well detached from the Milky Way. About 5 stars resolved over a mottled haze. A chain of 5 stars pointing at it from the north. There is an arc of 10 stars to the east at the edge of the field.

8" f6, Newtonian at 115X; AJ Crayon: 7 stars in a "V" shape to an eastern position with a 10th mag star at the apex.

14.5" f5.2, Dobsonian, 220X; AJ Crayon: One bright star is about 8th mag just to east of center and about 40 others from 10th to 14th mag. There are three stellar chains radiating from about the bright star in a westerly direction. Another chain of stars trails to the south.

16" f4.4 Newtonian, 100x; Rick Rotramel: OC - pS, fB, odd shaped, ~20 stars.

16" f4.5 Dobsonian at 261X; Dave Hofland: ~35' E of Beta Lac; ~15' SSW of a little 3-4-5 triangle asterism of a couple 8th mag and a 6th mag (the 6th mag is a 6.5/11.5 double), ~5' diam loose concentration of about 20 stars, the brightest is a 10th mag that sits on the W edge.

The last selection is the elliptical galaxy **NGC7426** and is just to the east of SAO72851, a double star, whose primary is mag 5.7. Note that SAO72851 is the same as HD 216831.

8" SCT at 206X; Dick Harshaw: A stellar nucleus; you must get HD 216831 out of the field with high power. From the Washington Double Star Catalog this double star (HD 216831) is HJ 975, a 5.73 and 9.02 mag pair 53.8" in PA 245 (1994). The white/red pair is probably optical since the two stars have different proper motions.

8" f6 Newtonian at 80X; Rick Tejera: Seen as small and bright. Round and slightly brighter to the center. Noticed bright double star close to it. This is HJ 975 as indicated by SkyMap

8" f6 Newtonian at 150X; Charlie Whiting: I can at least say that I detected this galaxy. The 5.7 mag star to its west is pretty glaring. But I did see an extended object. I probably saw only the brightest part of its center. I tried moving the star out of the eyepiece field of view, but it did not improve the view.

16" f4.5 Dobsonian at 261X; Dave Hofland: ~4 deg SE of 4.9 mag 10 Lac, ~4' E of mag 5.7/9.5 double HJ 975, fuzzy glow directly, with averted vision ~1' diam smooth symmetrical round glow gradually a good bit brighter in the center.

Call for Observations

Our constellation, for December, is Piscis Austrinus meaning *Southern Fish*. There are numerous galaxies in this constellation that should be within reach of 8"

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President's Corner

By Steve Dodder



It's been quite a ride. This year as your President, I somehow managed to increase SAC's presence in the outreach community with appointments of Rick Tejera and Chris Hanrahan to Public Outreach and Schools Coordinators, respectively. Both are moving forward in these areas, along with Jack Jones and myself with the Novice Group. I believe we can make important contributions to the community with continued efforts along these lines, and that we've already had an impact.

I'd like to thank Jennifer Polakis for her service as Vice President and for the great speakers she cajoled for us. Great job!

Charlie is doing a fine job keeping an eye on SAC's finances, and I urge the incoming board to heed his advice.

AJ, as always, is terrific as Secretary, and I look forward to his reports each month. Keep up the good work!

For the incoming members, Dick Harshaw as your President and Chris Hanrahan as your Veep, best of luck! I know you two will continue the outreach direction I began. Dick, speak slowly. ;-) Chris, just be as persuasive as I know you can be, and you'll be fine.

To all of SAC, I thank you for your patience and support over what proved a difficult time for me personally, and I look forward to serving you again.

See you at the meetings next year! Renew early and often! ☺

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telescopes. So, let us hope the weather favors us for this unexpected trip below the celestial equator. Starting from the western end is the asterism titled **Air Balloon** and found at R.A. 21h 30.0m Dec $-25^{\circ} 30'$. It is about 45' in diameter, contains a nice collection of 7th and 8th mag stars and is described as a closed loop of stars. What does it look like to you? Now on to the galaxies and we start with **NGC7135** that is mag 11.7, less than 3' and just southeast of 3 stars with mag 9.5, 10.3 and 11 that form a nice right triangle. Now we move on to a galaxy group containing 4 or 5 galaxies. The first is the spiral **NGC7172**, almost 12th mag, elongated and sporting an equatorial dust band. Can you spot it? The other galaxies are located just 7' due south and consist of NGC7173/74/76. They are located between 2 stars of 9th and 10th mag in a north of northeast position. **NGC7173** is the northern most, is 12th mag and somewhat elongated in a southeast position. **NGC7174** is a little larger, somewhat elongated in an easterly position and at mag 13.3 is the faintest of the group. The last is **NGC7176** only very

slightly elongated with an uncertain position angle. Also involved in this triple grouping is the mag 11.9 galaxy **LEDA198475** located between NGC7173 and NGC7174. This grouping of galaxies is also known as Hickson 90. Moving on to the others, we continue with 11th mag **NGC7314**. This galaxy is quite elongated, not doubt because we are seeing the bar of this barred galaxy. Now mosey on to the spindle shaped **IC5269**, a rather small, elongated galaxy of mag 12.2. Next is the nearly edge-on **NGC7361** at mag 12.3. Can you detect a little brighter middle? Last we have the very elongated **IC5271** at mag 11.6. What do you see in the middle?

For January we will do something a little different, like do a study of Trumpler classification for open clusters. Briefly there are 3 codes used to describe a cluster. They are concentration, magnitude range and richness. The first, concentration, indicates how the cluster stands out from the Milky Way background and used 4 Roman Numerals. Their descriptions are

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December 2008

<i>SUN</i>	<i>MON</i>	<i>TUE</i>	<i>WED</i>	<i>THU</i>	<i>FRI</i>	<i>SAT</i>
	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i> ☽	<i>6</i> SAC Holiday Party, at Susan Trask's House
<i>7</i>	<i>8</i>	<i>9</i> ATM Meeting 1930, Paul Lind's House	<i>10</i>	<i>11</i>	<i>12</i> ○	<i>13</i>
<i>14</i>	<i>15</i>	<i>16</i>	<i>17</i>	<i>18</i>	<i>19</i> ☾	<i>20</i> SAC Star Party, Site TBD
<i>21</i>	<i>22</i>	<i>23</i>	<i>24</i>	<i>25</i>	<i>26</i>	<i>27</i> ● DOTM Star Party at Antennas
<i>28</i>	<i>29</i>	<i>30</i>	<i>31</i>			

Schedule of Events for December 2008

Dec. 5th	Moon at first quarter at 1425mst.
Dec 6th	SAC Holiday Party at Susan Trask's House, See page 14 for Directions
Dec. 9th	ATM Sub group meeting at Paul Lind's house
Dec. 12th	Moon is full at 0937mst.
Nov. 19th	Moon at Last Quarter at 0329mst.
Dec 20th	SAC Star Party, Site TBA, Sunset 1747, Ast. Twilight 1910, Moonrise 0432
Dec. 27th	Moon is new at 0522mst.
Dec 27th	DOTM Star Party at the Antennas, Sunset: 1734, Moonset 1748, Ast. Twilight ends 1903, Ast. Twilight begins 0609

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PanStarrs Sounds like a Howard Hughes space enterprise, doesn't it? This project needs an acronym, because it has way too long a name- *Panoramic Survey Telescope & Rapid Response System*.

The immediate science goal of Pan-STARRS is to discover and characterize Earth-approaching objects, both asteroids and comets, that might pose a danger to our planet. Sound familiar? Must'a been a

whole pot of money available for these type surveys once they became politically correct. "Hey, I see an asteroid. Send me money!"

The huge volume of images produced by this system will also provide valuable data for many other kinds of scientific programs. I hear it referenced in regards to all the transient and variable star data it will produce on a regular basis. The challenge for variable star researchers will be to scan through all the data and find those few interesting objects worthy of follow up observation programs. This scope and LSST are supposed to provide nightly alerts of transient phenomena, as well as terabytes of data. We need to get more AAVSO observers ready, and we need them now!

PQ -Palomar Quest Now

here is an ongoing survey that I confess I hadn't heard about until my boss mentioned it in passing. This survey uses the 48" Samuel Oschin telescope at Mt. Palomar to study Quasi-Stellar Objects (QSO), supernovae, variable stars, galactic structure and stellar astrophysics. Significantly, this is the first major digital sky survey designed and implemented in the Virtual Observatory environment. Now there's an interesting topic loaded with acronyms (NVO). Perhaps installment number two in this

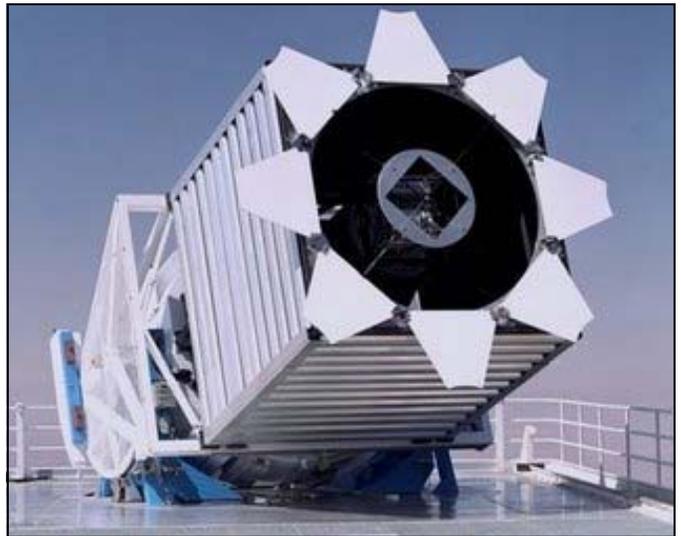


series.

I just love this picture of Hubble at the finder scope of the 48", conveniently pointed for him to pose at the eyepiece as if he actually guided long exposures with a pipe in his mouth.

SDSS The *Sloan Digital Sky Survey* is the "most ambitious astronomical survey ever undertaken. When completed, it will provide detailed optical images covering more than a quarter of the sky, and a 3-dimensional map of about a million galaxies and quasars. As the survey progresses, the data are released to the scientific community and the general public in annual increments."

This 2.5 meter telescope system is straight out of science fiction. The dual spectrographs are fed by fiber optic cables inserted through pre-drilled precision plates in order to measure up to 600 galaxies or stars per exposure. The list of discoveries and science accomplished thus far with SDSS is impressive.



And last but not least...UCAC Two acronyms embedded in an acronym! *USNO CCD Astrogaph Catalog*. USNO is the US Naval Observatory and CCD is Charged Coupled Device. Egads, layers upon layers of acronyms within acronyms. This is an all sky astrometric (positional) survey measuring the position and proper motion of stars to a very high degree of accuracy. The final catalog should be released in 2008.

If you haven't had enough yet, here is a link to a more extensive, although not necessarily current, listing of astronomical surveys, most with acronyms for names.

There now, don't you feel smart? The next time someone mentions one of these surveys you'll know what they are talking about. Then you can look around to see who is nodding their head knowingly with that blank expression on their face, and have pity. ("This content distributed by the [AAVSO Writer's Bureau](#)")

[Writer's Bureau](#)

Bits and Pisces, Minutes of the October General Meeting

By A.J. Crayon



After calling the meeting to order out esteemed President Steve Dodder requested visitors to introduce themselves. To this end 6 did so and were amongst the 39 others in attendance. Steve also announced his availability as the new Novice Group Chair to help anyone with astronomy questions, be they casually interested, new or experienced folks.

The treasurer's report indicated we have \$3547 in checking and \$121 cash-on-hand. He also reminded us it is time to **RENEW OUR MEMBERSHIPS**. So, please for next month fill out the form at the end of the newsletter and turn it in with a check for the appropriate amount. Please include your e-mail address and phone number.

We also need a venue for the Holiday Party, scheduled for December 6th. Later Susan Trask volunteered her abode for this annual get together. Stay tuned for more details.

Upcoming events: November 11 – ATM at Paul Lind's house; November 14 – SAC Meeting; November 22 – Star Party at Antenna's site; and November 29 – Star Party at Antenna's site, be careful this is Thanksgiving weekend

This is time for year for our annual elections. To our surprise Steve Dodder, president and Jennifer Polakis, vice president, both announced they would not run for re-

election. All others indicated they would stay for another year. So here is the, current, slate of candidates, including offices available for you to fill. President – open; Vice President – open; Treasurer – Charlie Whiting; Secretary – AJ Crayon and Properties – Jack Jones.

AJ Crayon presented the 110 Best NGC award to Bob Christ. He and others are busy on the Herschel 400. Keep it up guys. Steve Coe announced a garage sale at his house to relieve himself of many goodies, both astronomy and not.

Dick Harshaw thanked those who showed up to do a star party for his neighborhood. There were 8 folks with scopes and about 100 folks. I hear the pizza was as delicious as the crowd. Finally, Chris Hanrahan requested help with a star party on this past October 21st to be held at Central Ave and Maryland. There were about 10 scopes and 70 folks. Thanks to all that helped make these events a success.

For Show-n-Tell Gene Lucas gave a thorough presentation on occultation's with the model being 9 Metis that included how to use video.

After the break Jennifer Polakis introduced our main speaker for the evening. He was Steven Aggas with the topic *Basic Telescope Construction*. He discussed making his own 20" and 36" telescopes with emphasis on the 36-incher. He introduced many interesting, if not novel, ideas for such a behemoth. (If this is basic I wonder what is advanced? ajc)

(Continued from page 6)

- I Detached, strong concentration towards the center,
- II Detached, weak concentration towards the center,
- III Detached, no concentration towards the center,
- IV Not well detached from surrounding star field.

There are 3 number for magnitude range; 1 for small or ± 2 magnitudes, to 3 for wide range. One of 3 letters are used for richness they are p for poor, under 50 stars; m for medium with 50 to 100 stars and r for rich, over 100 stars. For this session we will have all concentration classes as they seem to be the description causing the most difficulty. To this end we will not stay in one

constellation as in the past, but will meander around fall constellations. If you are interested in learning more about this classification methodology see *Touring the Trumpler Classes* by Richard Harshaw, which can be found on the SAC web site. To get a better feel for the classification, pan around the cluster to see how the detached description relates to each. While at it note the magnitude range and count, or estimate, the number of stars. Now on to the clusters, in descending concentration order. **M 37** in Auriga is I 2r. **IC 361** in Camelopardalis is II 1 r. **NGC1512** in Perseus is II 1 m. **NGC7789** in Cassiopeia is II 2 r. Back into Perseus for III 1 r is **NGC1245**. Finally, again in Cassiopeia is **NGC 225** an III 1 p cluster. Now, having done this study, perhaps we should consider doing during the summer. Let me know your thoughts and preferences.

SAC 2009 Schedules of Events

SAC General Meetings

January 9th, 2009
 February 6th, 2009
 March, 6th, 2009
 April 10th, 2009
 May 8th, 2009
 June 5th, 2009

July 10th, 2009
 August 7th, 2009
 September 4th, 2009
 October 2nd, 2009
 October 30th, 2009*
 Holiday Party – TBA

* Blue moon meeting will cover the month of November

ATM Meetings

January 6th, 2009
 February 3rd, 2009
 March, 3rd, 2009
 April 7th, 2009
 May 8th, 2009
 June 2nd, 2009

July 7th, 2009
 August 4th, 2009
 September 1st, 2009
 September 29th, 2009
 October 27th, 2009
 December 1st, 2009

SAC Star Parties

1/17/2009	Low Desert	Sunset 1748, Astronomical twilight ends 1915, Moonrise 0114. 5:59 Hours Dark Time
2/14/2008	Low Desert	Sunset 1815, Astronomical Twilight ends 1939, Moonrise 0002. 4:23 Hours Dark Time
3/21/2009	Low Desert	Sunset 18:44, Astronomical Twilight 20:07, Moonrise 04:17. 8:10 Hours Dark Time
4/18/2009	Low Desert	Sunset 1905, Astronomical Twilight ends 2033, Moonrise 0246. 6:13 hours Dark Time
5/16/2009	Cherry II	Sunset 1925, Astronomical Twilight ends 2104, Moonrise 0111. 4:07 hours Dark Time
6/13/2009	Cherry II	Sunset 1942, Astronomical Twilight Ends 2128, Moonrise 2339. 2:11 Hours Dark Time
7/18/2009	Cherry II	Sunset 1940, Astronomical Twililght ends 2121, mMoonrise 0229. 5:0 Hours Dark Time
8/15/2009	Cherry II	Sunset 1916, Astronomical twilight Ends 2047, Moonrise 0117. 4:30 Hours of dark time
9/12/2009	Cherry II	Sunset 1839, Astronomical Twilight Ends 2004, Moonrise 0012. 4:08 hours Dark Time
10/10/2009	Low Desert	Sunset 1800, Astronomical Twilight Ends 1923, Moonrise 2313. 3:50 Hours of Dark Time
11/7/2009	Low Desert	Sunset 1729, Astronomical Twilight ends 1855, Moonrise 2216. 3:21 Hours of Dark Time
12/12/2009	Low Desert	Sunset 1719, Asronomical Twilight 1849, Moonrise 0455. 10:06 Hours darkk Time

SAC 2009 Schedules of Events

SAC DOTM Star Parties

<i>1/24/2009</i>	<i>Antennas</i>	<i>Sunset 1758, Astronomical Twilight 1925, Astronomical Twilight Begins 0609</i>
<i>2/21/2009</i>	<i>Antennas</i>	<i>Sunset 1825, Astronomical Twilight 1948, Astronomical Twilight Begins 0548. 10:00 hours Dark Time</i>
<i>4/25/2009</i>	<i>Antennas</i>	<i>Sunset 1913, Moonset 2022, Astronomical Twilight 2043, Astronomical Twilight 0421. 7:38 Hours Dark Time</i>
<i>5/23/2009</i>	<i>Cherry II</i>	<i>Sunset 1930, Astronomical Twilight Ends 2111, Astronomical Twilight Begins 0339. 6:36 Hours of dark Time</i>
<i>7/25/2009</i>	<i>Cherry II</i>	<i>Sunset 1935, Astronomical Twilight ends 2114, Moonset 2152, Astronomical Twilight Begins 0356. 6:04 Hours of Dark Time</i>
<i>8/22/2009</i>	<i>Cherry II</i>	<i>Sunset 1907, Moonset 202, Astronomical twilight ends 2037, Astronomical twilight begins 0426. 7:49 Hours of dark time</i>
<i>9/19/2009</i>	<i>Cherry II</i>	<i>Sunset 1829, Astronomical twilight ends 1953, Astronomical twilight begins 0451. 8:58 Hours dark time</i>
<i>10/17/2009</i>	<i>Antennas</i>	<i>Sunset 1758, Astronomical Twilight 1921, Astronomical Twilight Begins 0519. 9:55 Hours Dark time</i>
<i>11/14/2009</i>	<i>Antennas</i>	<i>Sunset 1758, Astronomical Twilight Ends 1858, Astronomical twilight begins 0540. 10:45 hours Dark Time</i>
<i>12/19/2008</i>	<i>Antennas</i>	<i>Sunset 1730, Astronomical Twilight ends, 1859, Moonset 2034, Astronomical twilight begins 0605</i>

SAC Special Events

<i>2009 All Arizona Messier Marathon</i>	<i>3/28/2009</i>	<i>Arizona City</i>	<i>Sunset 1849, Astronomical Twilight Ends 2013, Moonset 2125, Astronomical twilight begins 0458, Sunrise 0622</i>
<i>5 Mile Meadow</i>	<i>6/19/2009- 6/20/2009</i>	<i>5 Mile Meadow</i>	<i>Friday: Sunset 1942, Astronomical Twilight ends 2128, Mon Rise 0249, 5Hr 51 min Dark time. Saturday: Sunset 1942, Astronomical twilight Ends 2128, Astronomical Twilight Begins 0327. 5:59 Hours Dark Time</i>

Monthly Trivia Question

This month the questions is: What procedure used to get help navigate to the moon is use by amateur Astronomers today?

Last month's Answer: rely. OK, we've covered two of the four "Trench" controllers. This month: GUIDO, What did he do?

GUIDO, Short for Guidance officer, monitored onboard Navigational Systems and onboard guidance computer software. Responsible for determining the position of the spacecraft in space. One well-known Guidance officer was Steve Bales, who gave the "go" call when the

Apollo 11 Guidance Computer came close to overloading during the first lunar descent.

Bales was chosen by his peers to accept the Presidential freedom Medal awarded to the mission control team for their role in the successful completion of Apollo 11.



Steve Bales

SUCH A DEAL

FOR SALE: 3.5 Questar and accessories

 Purchased new, 1992 directly from Questar Corp.
 All items in perfect Mint condition.
 All original correspondence and documents.

- Standard 3.5 Questar, Zerodur Mirror, Broadband, Low Reflection Coatings, complete with Deluxe case and all the standard accessories (2 Brandon eyepieces 16mm; 24mm; legs, dew cap map, built in Barlow, etc.)
- set of extra Brandon eyepieces, 8mm; 12mm; 32mm with case
- Full Aperture solar filter, with external baffle attachment
- Full set of Wratten Series Filters with case
- Custom Astro Tri-Stand portable pier with levelers (very formidable, machined aluminum, tilt head, rotation and elevation adjustments)
- Accessory case
- Powerguide
- Original shipping Drum with engineered packing.

 Replacement value today: \$8,125.00
 Invoiced purchase price in 1992: \$6,700.00
 Asking: 4,500.00

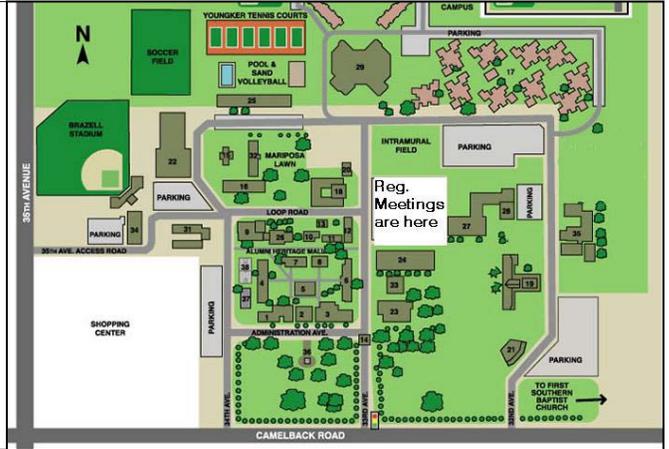
Lou Bruno
 1409 Luisa St., Ste. E
 Santa Fe, NM 87505
 505.982.5544



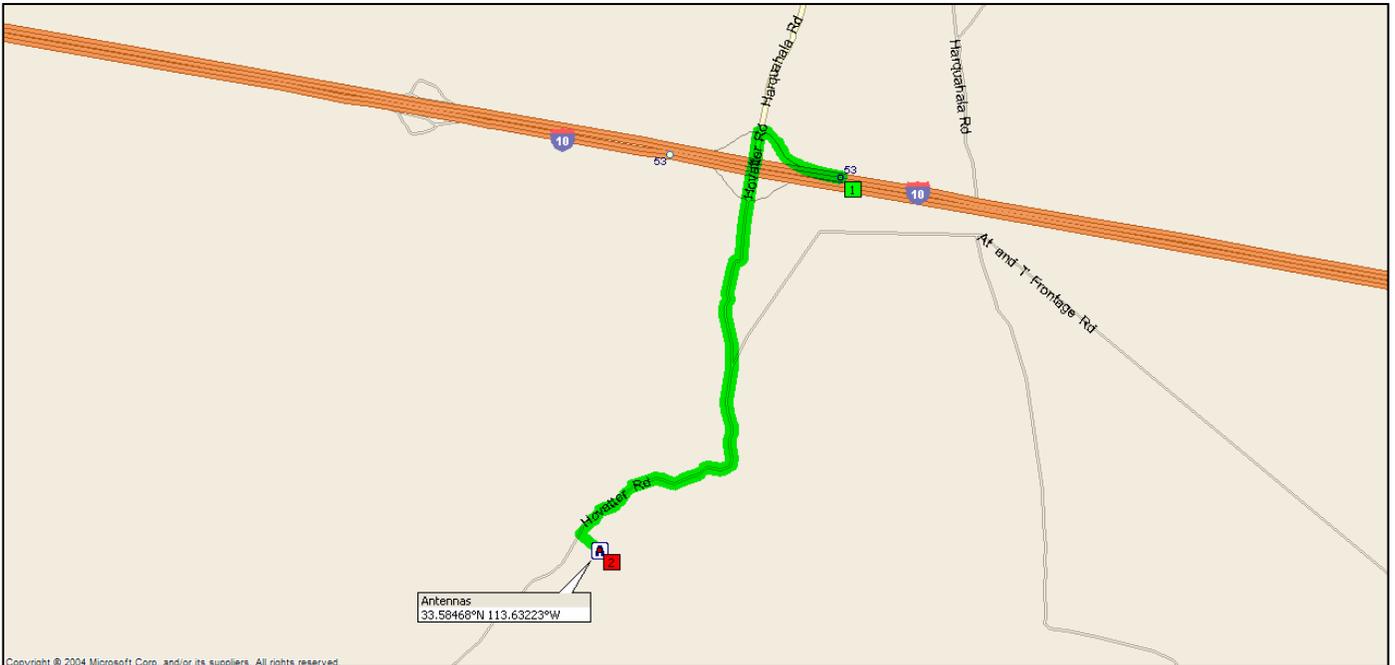
SAC Membership Services

General Meetings

7:30 p.m. at Grand Canyon University, Fleming Building, Room 105: 1 mile west of I-17 on Camelback Rd., North on 33rd Ave., Second building on the right.



Antennas Star Parties

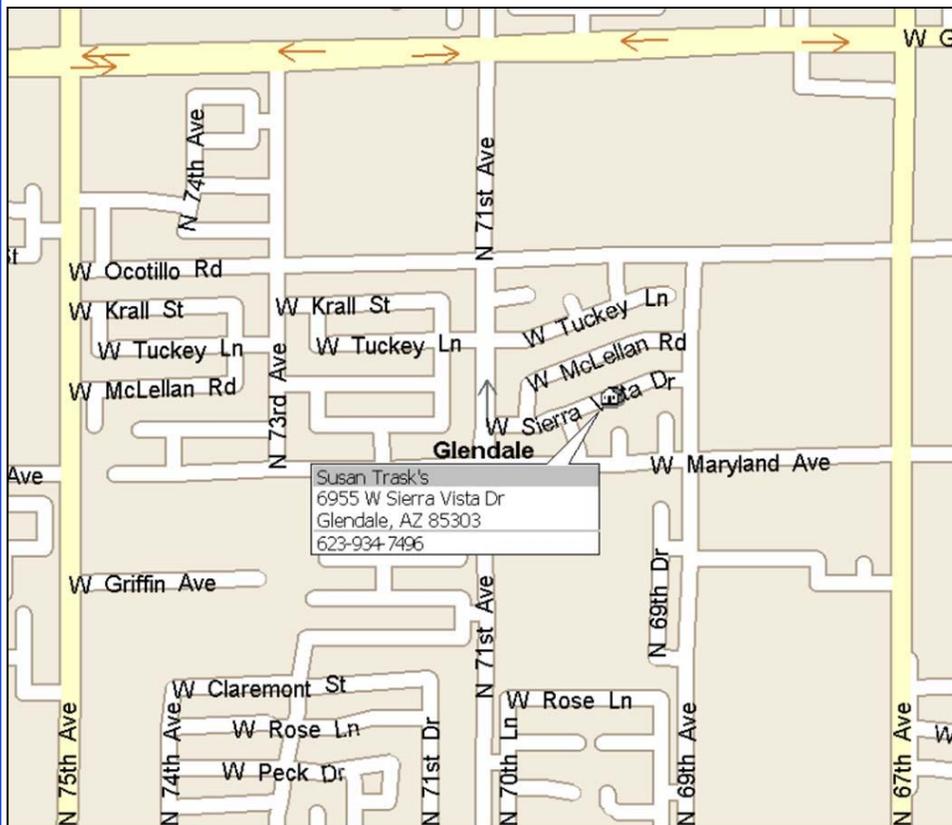


Take I- 10 Westbound to the Hovatter Rd exit (exit 53). Turn South (left and go over the over pass, Cross over the Canal and take a sharp right just past the canal at a large guard rail. Travel parallel to the canal for about 0.1 mile and turn left onto a dirt road that goes past the Communication antennas (Yes, that how the site got it's name). Do not go down the road marked "Dead End". Follow this road for about 2 miles. The entrance to the site is on the left and marked with White painted stones. It is a large flat area of desert pavement.

GPS Data

N 33 35.081, W 113 37.934 Elev: 1332'

SAC Membership Services



DATE
 Dec. 6th, 2008
TIME
 1800 (6:00p.m.)
 until Susan kicks us
 out.

WHERE:
 Susan Trask's House
 6755 W Sierra Vista Dr.
 Glendale, AZ 85303

**Pot Luck, Please
 bring something for
 all to share.**

Directions

From the North East:

Get to 67th Ave & Glendale Ave

Mile	Instruction	For
0.0	Head South on N 67th Ave (South)	0.3 mi
0.3	Turn RIGHT (West) onto W Ocotillo Rd	0.2 mi
0.5	Turn LEFT (South) onto N 69th Ave	0.1 mi
0.7	Turn RIGHT (West) onto W Sierra Vista Dr	174 yds
0.8	Arrive Susan Trask's	

From the North West:

Get to 67th Ave & Glendale Ave.

Mile	Instruction	For	Toward
0.0	Continue West on W Glendale Ave (East)	0.5 mi	
0.5	Turn RIGHT (South) onto N 71st Ave	0.5 mi	
1.0	Turn LEFT to stay on N 71st Ave	87 yds	
1.0	Turn RIGHT (East) onto W Sierra Vista Dr	0.1 mi	
1.2	Arrive Susan Trask's		

From the South East:

Get to 67th Ave & Bethany Home Rd

Mile	Instruction	For
0.0	Continue West on W Bethany Home Rd	0.3 mi
0.3	Turn RIGHT (North) onto N 69th Ave	0.6 mi
0.9	Turn LEFT (West) onto W Sierra Vista Dr	174 yds
1.0	Arrive Susan Trask's	

From the South West:

Get to 75th Ave & Bethany Home Rd

Mile	Instruction	For
0.0	Continue east on W Bethany Home Rd	0.5 mi
0.5	Turn LEFT (North) onto N 71st Ave	0.6 mi
1.1	Turn RIGHT (East) onto W Sierra Vista Dr	0.1 mi
1.2	Arrive Susan Trask's	

Membership Reminder

Just a reminder that memberships expire at the end of December. There is a three month grace period for delivery of SACnews, so use the form on the following page and renew now to avoid any missed issues.

Our esteemed treasurer also advises if you have any magazine subscriptions (S&T or Astronomy, through the club, and the expiration date is Jan 09 or sooner. Now is the time to renew them as the processing takes some

SAC Membership Services

Membership— Memberships are for the calendar year and are pro-rated for new members as follows: Jan– Mar: 100%; Apr– Jun: 75%; Jul–Sep: 50%; Oct–Dec; 25%.

- \$28.00 Individual Membership
- \$42.00 Family Membership
- \$14.00 Newsletter Only
- \$10.50 Nametag for members,
Pinned Clasp
- \$12.50 Nametag for members,
Magnetic Clasp
(will be mailed to address below)

Magazine Subscription Services

The following magazines are available at a discount to club members. Check the magazines you wish to subscribe to or renew, and pay the club treasurer. Please allow 3-4 months for the order to be processed.

- Sky & Telescope \$33.00/yr
- Astronomy \$34.00/yr
- Astronomy \$60.00 for 2 Years

Please Print

Make Check Payable to : SAC

Name: _____

Bring completed form to a meeting or
mail it with your remittance to:

Address: _____

SAC Treasurer
c/o Charlie Whiting
4526 W Purdue Ave
Glendale, AZ 85302

City: _____ **St:** _____ **Zip:** _____

Phone: _____

Check here if this is an update of information
already on file.

E-Mail: _____

SAC on the Internet

SAC has several E-mail mailing lists. To subscribe, send an email to the email address and put **Subscribe** in the subject box.

SAC-Announce@freelists.org: SAC-Announce is a mailing list for just club announcements, Typically 3-5 messages per month.

SAC-Forum@freelists.org: SAC-Forum is a general discussion mailing list. Topics should be related to Astronomy or SAC

SAC-Board@freelists.org: SAC-Board is a mailing list for discussions of club business. If you'd like to see how the club is run (or not run), or have a question about the club, this is the list to read. Typically month to month matters are discussed.

AZ-Observing@freelists.org: AZ-Observing while not a Sac list , is well attended by SAC members. This is the list to with observing places around Arizona. Find out where people are going and what they saw.

Printed Newsletter

SAC can save a lot of money if you download the PDF version of the newsletter. PDF files are readable by both PC's and Macs. When the newsletter is published, a message will be sent to the address indicated above with the URL of the newsletter. Check the box below if you don't have access to the internet or if your prefer a printed copy.

Please send me a hard Copy of the newsletter

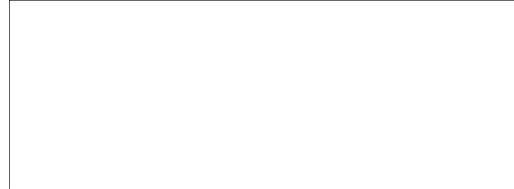
SAGUARO ASTRONOMY CLUB

November 2008

5643 W. Pontiac Dr
Glendale, AZ 85308-9117

Phone: 623-572-0713

Email: newsletter@saguaroastr.org



Videmus Stellae



SAC Schedule of Events 2008

SAC Meetings

January 18th, 2008	July 11th, 2008*
February 22nd, 2008	August 15th, 2008
March 21st, 2008	September 12th, 2008
April 11th, 2008*	October 10th, 2008*
May 16th, 2008*	November 14th, 2008
June 13th, 2008*	Dec 6th, Holiday Party

* Rescheduled Meeting Date

Future Planning

April 5th, 2008	All Arizona Messier Marathon
May 30th-June 1st, 2008	5 Mile Meadow Star Party
November 28th-30th, 2007	Autumn Stargaze

SAC Star Parties

Date	Sunset	Astronomical Twilight Ends	Moonrise	Site
Jan 5th, 2008	1737	1905	0608	A
Feb 2nd, 2008	1824	1929	0507	S
Mar 1st, 2008	1829	1952	0346	S
Apr 26th, 2008	1911	2042	0100	S
May 3rd, 2008	1915	2049	0401	C
Jun 28th, 2008	1945	2130	0142	C
Jul 26th, 2008	1935	2113	0021	C
Aug 23rd, 2008	1903	2033	2303	C
Sep 27th, 2008	1815	1938	0455	S
Oct 25th, 2008	1747	1910	0432	S
Nov 22nd, 2008	1726	1853	0331	S
Dec 20th, 2008	1730	1859	0128	S

S= Saddle Mountain; C= Cherry Road; A=Antennas