

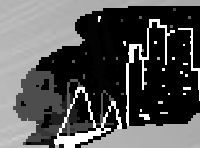


North Central Florida's
Amateur Astronomy Club
29°39' North, 82°21' West

July / August 2008
Issue 70.1/72.1



Member
Astronomical
League



Member
International
Dark-Sky Association

FirstLight

Newsletter of the Alachua Astronomy Club

June ATM Meeting Puts to Rest Mirror Concerns

Chuck Broward

The club's ATM group gathered at Chuck and Judy's house to learn how to use a Foucault tester and a ronchi tester to gage the quality of telescope mirrors.

Howard Cohen, Sandon Flowers, and Chuck all provided mirrors to analyze. Don Loftus provided the Foucault tester and the knowledge to use it, and David Liles provided a Ronchi Tester for the group to learn to use. Bob O'Connell and Fred Heinrich also took part in the evening's activities.

Fred's wife Lucille provided some great cupcakes.

Between munchies and comments we actually managed to look at several mirrors and determined that they were all pretty decent. Some had slight turned edges, others were not quite as corrected as we would hope, but we learned a lot.

July's meeting will feature a PowerPoint presentation by Howard Cohen taking a look at earlier days of ATM and professional astronomy too. Meeting location will be announced by list and on the web.

Clear Sky!

C.S. Broward
GhastlySky Observatory
Gainesville, Florida

Chuck Broward is the ATM Coordinator and AICor. He has messed with telescopes for way to many years. He owns a C-8, a 10 inch dob, a 102 refractor, and has a closet full of other scopes in various states of repair.





It was a dark and stormy night. As dark as a deserted stretch of U. S. Highway 90 coming east out of Quincy, Florida could possibly be in the mid-1960's. A cold front had moved through, and the rain had stopped, but there was a low hanging cloud layer still in the dark night sky. I was on my way back to college at Florida State, about a year away from my physics degree. I had something mindless on the radio, looking forward to getting to back Tallahassee, and getting some sack time before classes resumed. Suddenly, my attention snapped to a luminous glow in the sky. It was fairly bright, as large as the full moon, and moving rapidly from north to south. As it passed high and in front of me, it turned hard left and sped toward Tallahassee. The first thought that flashed through my mind was "That was weird. I have absolutely no explanation for

what I just saw." Intrigued, I kept driving, running the sight over and over in my mind. Then, again, out of the north, a soft-edged, but fairly bright, light, moving maybe an index-to-little finger distance in a second. That seemed pretty fast for something that had to be underneath the cloud layer. I guessed its size as maybe as big as my fingernail held at arm's length. Again, it executed a hard left turn and sped east. This was no airplane I had ever seen! I grew up around Eglin AFB and the Pensacola Naval Air training complex. I knew my airplanes. I knew a bit of astronomy, and I was studying physics, but I knew this was something beyond my experience. I'd seen my first "UFO." I wondered about it all the way into Tallahassee

UFO reports have been sporadic phenomena throughout the United States and the world since 1947, when private pilot Kenneth Arnold, flying near the Cascade Mountains in Washington State, reported "a chain of nine peculiar looking aircraft flying from north to south at approximately 9,500 foot elevation." He made what seems to me to be a careful and sober statement to the FBI when requested. Reports continued for the next several decades, most not nearly so well documented and reported as Mr. Arnold's. One of the more recent outbreaks was reported near Stephenville, Texas, in January 2008. USA Today quoted pilot Steve Allen: "The ship wasn't really visible and was totally silent, but the lights spanned about a mile long and a half mile wide. The lights went from corner to corner. It was directly above Highway 67 traveling towards Stephenville at a high rate of speed - about 3,000 mph is what I would estimate". *One obviously has to take such a report with the proverbial grain of salt. Our eyes are incapable of discerning depth beyond several hundred feet. And if you don't know the distance, you can't accurately know size or speed. It could be something close, slow, and small, or something larger, faster, and more distant.*

So, what's the right way to report an unexplained sky phenomenon? You can use the old news reporter's guide of what, where, when, plus a little trigonometry, to make an accurate and credible report. You can estimate the object's angular size, height, and speed using the fingers of your outstretched hand. Average size adults have an eye to hand distance of about 20 +/- 2 inches, and a pinkie to index finger spread of about 4 inches. Trigonometry tells us that the tangent of an angle in a right triangle is equal to the length of the opposite side divided by the length of the adjacent side. Using your handy scientific calculator tells us that your outstretched fingers subtend an angle of about a ten degrees.

First question: What? Is it a glow in the sky, a light, several lights in a pattern? If so, how many? How bright is it? Compare it to your recollection of the brightness of the full moon, first quarter moon, Venus at brightest, Jupiter, a first magnitude star like Vega. How large? Compare the object(s) to the size of the fingernails on your outstretched hand.

Second question: Where? Note, and mark if possible, your own location. Then note where the object is located, relative to a recognizable point (tallest tree, church steeple, house or barn, etc.) on the horizon. If possible, place some recognizable object in the direction you first spotted the object. Note whether it is moving, and in what direction. You can estimate its angular speed by holding out your hand with your fingers spread, and counting "a thousand one, a thousand two, etc.

Next question: When? Note the time on your watch when you first spot the object.

Note the time again when it disappears. As soon as possible, check your watch against a known accurate time signal, to correct your times. You should write down as much information as you can, including drawings of any relevant details.

Now, do I really expect you to need this information? Probably not. I really wrote it to give you a benchmark against which to evaluate reports you find in the news. You will have some criteria against which to judge reports of "a thousand feet long, moving 3000 miles per hour.

Oh, yes. My own experience that night near Quincy. As I drove into Tallahassee, I noticed that someone had opened a new movie theater on West Tennessee Street. They were advertising it with searchlights that played against the bottoms of the low-hanging clouds. Mystery solved!

So, do I believe in UFO's? I do believe people observe objects they can't identify, that appear to be flying, and to be objects. But flying saucers? No! There is a saying in scientific circles that extraordinary claims require extraordinary evidence. I have yet to see any even ordinary evidence. And the second reason I am skeptical is you and I. The amateur astronomy community. We spend more time observing the skies than any other group of people. We know and recognize Venus and Jupiter, meteors, Iridium flashes and other satellites and we certainly know what airplane lights look like. We usually have binoculars handy to check out any unusual sights. So, sights that might baffle others, even experienced pilots, do not confuse us. And, guess what? We don't see a sky populated with strange, unexplained phenomena. If we did, it would be all over Sky and Telescope and Astronomy Magazine.

Next month, my subject will be "What Really Happened at Roswell, NM." There really were "flying disks" found, and there was a government cover-up. But it's probably not what you think!

Here is an excellent website with even more great suggestions:
www.gi.alaska.edu/ScienceForum/ASF2/222.html

Till then, Clear Skies!

Bill Helms
Alachua Astronomy Club, President@FloridaStars.org



Comet Between Fireworks and Lightning

Photo by: Antti Kempainen

Sometimes the sky itself is the best show in town. Last January, people from Perth, Australia gathered on a local beach to watch a sky light up with delights near and far. Nearby, fireworks exploded as part of Australia Day celebrations. On the far right, lightning from a thunderstorm flashed in the distance. Near the image center, though, seen through clouds, was the most unusual sight of all: Comet McNaught. The photogenic comet was so bright that it even remained visible through the din of Earthly flashes. Comet McNaught has now returned to the outer Solar System and is now only visible with a large telescope. The above image is actually a three photograph panorama digitally processed to reduce red reflections from the exploding firework.

July Club Meeting

Tuesday, July 8 2008, 7:00 p.m. EDT

Speakers: Dr. J. William Doyle, M.D. , Ph.D.

Title: *How the Eye Works to Let You See the Stars*

Location: Powell Hall, Florida
Museum of Natural History,
Lucille T. Maloney Classroom,
UF Campus, Gainesville, Florida



Dr. J. William Doyle,
M.D., Ph.D.

Preview: Dr. Doyle will cover the working of the eye, as well as complications such as Dry Eye, Presbyopia, Cataracts, and LASIX.

About the Speaker: Dr. Doyle is an associate professor in the Department of Ophthalmology at the University of Florida's College of Medicine. Dr. Doyle obtained his medical degree and doctorate in pharmacology from the University of Florida. After graduation, he pursued an ophthalmology residency and glaucoma fellowship at the University of Florida. He joined the UF faculty in 1992 and has received the prestigious Honor Award from the American Academy of Ophthalmology's. Dr. Doyle is director of clinical research for UF's Department of Ophthalmology. His interests include all glaucoma and cataract surgeries.

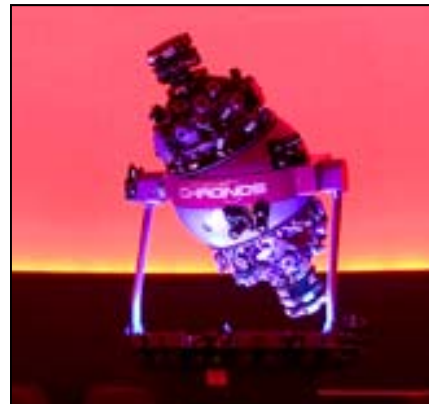


Located on the Northwest Campus of Santa Fe College, the **Kika Silva Pla Planetarium** seats 64 guests beneath a 34 ft Spitz dome, and is equipped with not one, but two - state of the art planetarium projectors!

The first is a computer-controlled Goto Chronos mechanical-optical projector (shown below), which provides the most realistic night sky available. Unlike traditional mechanical-optical projectors elsewhere, the Chronos is capable of transporting you to any place on Earth, or in time +/- 10,000 years, within seconds. The Kika Silva Pla Planetarium Chronos is the first of only two of its kind in Florida, and only the 10th one installed in the world!

The second star projector is a Spitz SciDome Digital Projection system. The SciDome turns the 34 ft dome into one giant, immersive computer screen that totally surrounds you with images, animations, and video for an experience you will never forget. With the SciDome, you can be transported to the surfaces of other planets, out into the Galaxy, and to the ends of the Universe. Or, it can just as easily take you to the depths of Earth's oceans and even within the human body!

See the Santa Fe College website for more information and schedules of upcoming shows and events:
www.sfcc.edu/planetarium



AAC Meeting Location

AAC regular meetings are held on the second Tuesday of each month at 7:00 p.m. at the Florida Museum of Natural History, **Powell Hall**, in the Lucille T. Maloney Classroom, on UF campus, unless otherwise announced. All meetings are free and open to the public. Join us for some great discussions and stargazing afterwards. Please visit our website for more information (floridastars.org). There will be no monthly meeting in December.

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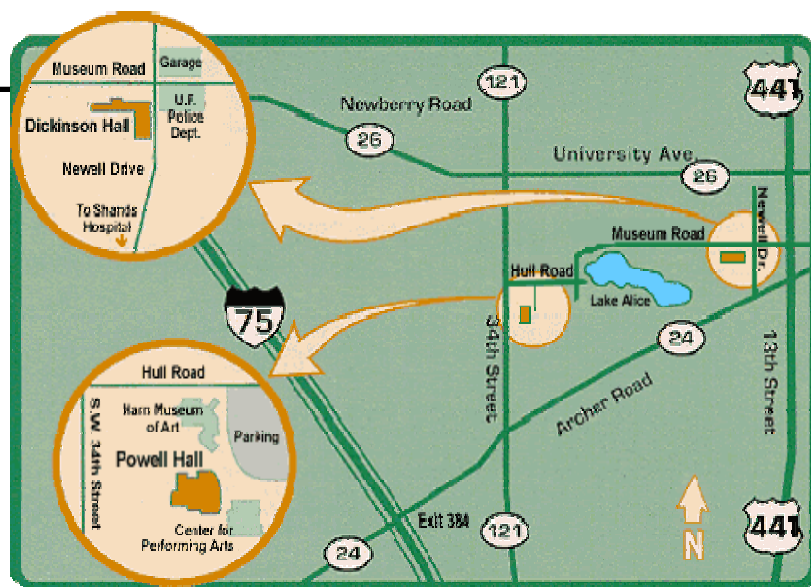
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Submitting Articles to FirstLight

The AAC encourages readers to submit articles and letters for inclusion in *FirstLight*. The AAC reserves the right review and edit all articles and letters before publication. Send all materials directly to the *FirstLight* Editor.

Materials must reach the *FirstLight* Editor at least 30 days prior to the publication date.

Submission of articles are accepted **by e-mail or on a CD**. Submit as either a plain text or Microsoft Word file. (In addition, you can also send a copy as a pdf file but you also need to send your text or Word file too.) Send pictures, figures or diagrams as separate gif or jpg file.

Mailing Address for Hard Copies or CDs

Note: Since our mailbox is *not* checked daily, mail materials well before the deadline date. (Hence, submission by e-mail is much preferred!)

c/o FirstLight Editor
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By E-Mail; Send e-mail with your attached files to
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Since new moon is coupled with the long Independence Day weekend, combined with the traditionally poor weather this time of year, we will not be having a star party in July. We do plan on meeting again at Hurricane Harbor (Bob Jacobs' residence) on August 2. Jupiter's opposition is just a few weeks prior so the gas giant will be a highlight for that evening. Scanning the Summer Milky Way is always a pleasure while meteor season gets underway.

Presently, we have not scheduled a star party for Labor Day weekend either but we may pull something together at the last minute if the weather looks promising. Beyond that, we reconvene at Stargate Observatory in September.

It's not too early to reserve your site for Gold Head in October. In fact, if you are considering renting a cabin for the weekend, you should do so now. I've made a number of changes to this year's event. First of all, the star party will be two nights. Our observing location for the second evening (Saturday) will be on a much larger grass field near the picnic area. Our picnic will be potluck, and registration will not be required. The rest of the details will be in the next *FirstLight*, or you can visit the web site.

We've seen several new faces at star parties recently, beginners and veterans alike. We met Tom Hettinger, an astronomy student at UF, as well as Matt Cooper, another undergraduate who recently took an introduction to astronomy. Sandon Flowers, a recent transplant to Gainesville, has ingeniously rebuilt a Chinese reflector. A fellow named Evo was looking for ideas in reconstructing an old reflector as well. Fred and Susan Palgon are friends and neighbors of the Friedbergs.

Back In Time, perhaps the only star party location to have become *darker* in recent years, was attended by 17 members and guests. Saturn was amazing through hazy but otherwise steady skies. We gave the McCartney family a warm farewell; Scott has a new job in New Hampshire.

Our first star party attempt at the Loftus Family Farm was rained out. Despite mostly clear skies all day, sea breezes collided just before sundown, dumping an inch of rain on the 20-some of us. The following Saturday, however, provided excellent viewing and nearly as many observers. Several sky watchers added to their Messier list, including entries in the Virgo Galaxy Cluster. Chuck Broward has just 20 more targets to go!

I was reintroduced to NGC 4565 (the Needle Galaxy), one of the finer galaxies Messier's list omits. We enjoyed several superb double stars, including Alpha Herculis, Xi Bootes and Epsilon Bootes (Izar), a tricky but otherwise beautiful binary system. Late in the evening, we resolved Antares' close, lime-colored companion. Antares B was discovered during a lunar occultation in 1819. Antares is one of only four 1st magnitude stars that can be occulted by the Moon (Regulus, Spica and Aldebaran are the others).

The few of us that stayed up late were rewarded with rock solid views of Jupiter. I had one of those rare and fortunate circumstances in which seeing was perfect for a few fractions of a second, long enough to embed a Hubble-like image in my conscience. While Callisto slowly emerged from behind the disk of the giant, the Great Red Spot was flowing in the other direction.

A faint glimpse of the Crescent Nebula put a cap on the night. The O-III filter demonstrated its function once again. A special thanks to Don for putting up with us two weekends in a row.

Mike Toomey has served the AAC in many capacities since 1998, including President, Secretary, FirstLight editor and Star Party Coordinator. He won the AAC's Service Award in 2000. Mike resides in Gainesville with his wife Heidi.

Alachua Astronomy Club, Inc. Star Party Etiquette

It's summer in Gainesville. Between daylight savings time and all the evening rain showers, star gazing opportunities come few and far between. So this would be a good time to brush up on your Star Party Etiquette. The following article is taken from the AAC website on the Star Parties page. Look it up at floridastars.org for additional useful info on how to fit in at any star party.

Most AAC star parties are informal. Rule infractions are met with warnings, typically moans and scowls. However, as representatives of the AAC, please apply these rules more strictly when attending star parties hosted by other organizations (such as Chiefland or the Winter Star Party in the Florida Keys).

Arriving and Departing

Arrive Before Dark: Most astronomers prefer to arrive well before dark to set-up their equipment. This is particularly true when visiting a star party site for the first time. Even if you are not bringing a telescope, arriving before dark will permit time to familiarize yourself with the equipment and other astronomers. If you plan on departing early, *now* is the time to plan your departure.

Arrive After Dark, If You Must: If you must arrive after nightfall, know what to expect. Will there be warning signs prohibiting headlights? Will you run over someone/something if you cannot see? It may be necessary to stop your vehicle before reaching the observing field, then walk in and examine the situation.

Leaving Early: Sooner or later, someone will have to leave unless there is a lock-in (no AAC star parties have lock-ins). If you are leaving before midnight (or before dawn at overnight star parties), you should assume that others will still be observing. Therefore, plan ahead. Situate your equipment and vehicle in such a manner as to permit a safe exit without the use of headlights, or headlights directed well away from the telescope area. Do not park in a manner that will require you to back up (it's dangerous on the observing field, and white backing lights are bright!).

Pack Your Trash: Most star party hosts will not protest picking up an odd or end after a star party. Please, however, take a moment to pick up any litter you notice before leaving.

Leave Together: If you are among the last to depart, please check with others that their vehicles will start reliably, and that they haven't any "issues" to contend with before leaving. Note: at private residences, such as Jacob's, Back-In-Time, et al, this is generally not a concern.

Lighting

Use of Personal Lighting, Part I: Lighting for the use of star charts and the like is a personal choice. While red lights are vogue, other colors will not harm night vision if used in very low wattage. Even red LED lights can spoil night vision if turned all the way up! *Keep your lights directed down, on low power, and well shielded.* You can be assured that Mag lights and Coleman lanterns do not fit this description.

Use of Personal Lighting, Part II: It is prudent to pack a full spectrum white flashlight to any outdoor activity. For star parties, these may be useful to find the restroom or pick up garbage before departing. However, just because you're done stargazing doesn't mean everyone else is! If you must use a white light, call out, "Bright light in 5 seconds!" This will give everyone a moment to avert their eyes and preserve their night vision. This also applies to opening a car door or tailgate that will activate an interior dome or courtesy light.

Astrophotography: Many AAC members enjoy astrophotography, and all those attending star parties should be sensitive to that fact. A poorly aimed flashlight, even at lowest power, can ruin an exposure. Furthermore, tampering with a telescope, even by walking too near, can cause vibrations and ruin an exposure. Be aware of your surroundings, and what others are doing. (Generally, AAC star parties do not emphasize astrophotography unless announced.)

Green Lasers: Green laser pointers are permitted at most AAC star parties. **Keep them aimed up!!!** A laser in the eye can be painful and outright dangerous if shown through telescope optics! Many star parties have banned green lasers altogether. Please use your green laser with caution and best intentions, or we'll need to ban them as well. (Unless otherwise stated, do not use green lasers at Chiefland and WSP.)

Laptop Screens: Be certain that your laptop screen is not lighting up the observing field. Most are too bright even with the brightness set down. Add a thick layer of cellophane or other light reduction material, and isolate the direction in which it shines.

Star Party Etiquette - continued

Telescopes

Sharing: It is a certainty that most telescope owners at AAC star parties will want to share their telescopes with others. However, please keep these points in mind. Some operators may be running through a program or checklist; let them be, or do not disturb them for long. The same applies to astrophotographers. Also, it's fine to come to AAC star parties without a telescope, but if you do own one, it's always a good idea to bring it no matter what it is. Others will recognize your effort and be more willing to share so long as you are not the "aperture leech" at every star party.

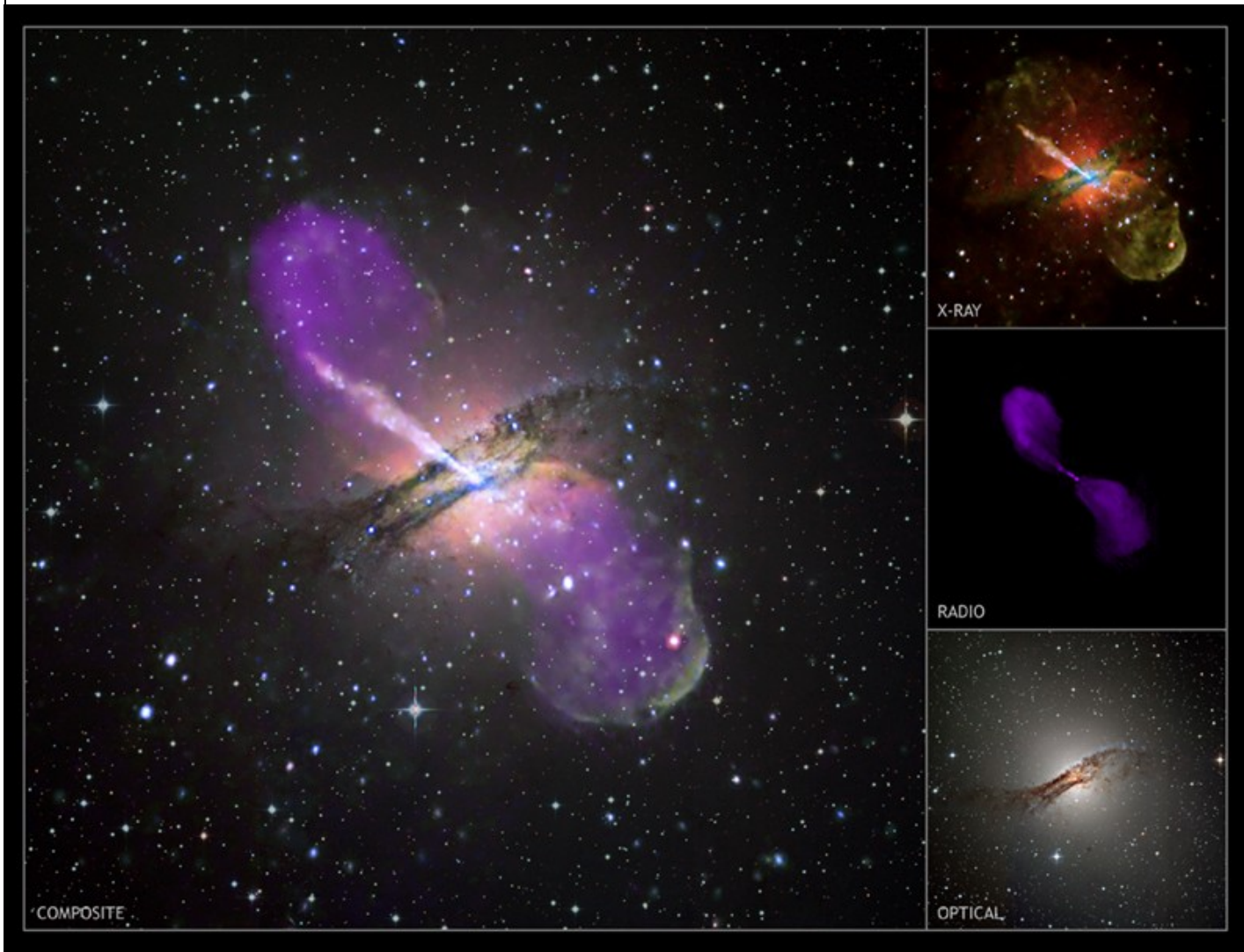
Chutes & Ladders: It is generally not appropriate to pick children up by the collar to look through a telescope. At star parties in which children may be present, a sturdy step stool or ladder should be standard equipment for many telescopes, including equatorial mounts and most Dobsonians.

Miscellaneous

Alcohol: Rules for the consumption of alcohol on star party premises will vary, but assume that those on public grounds (such as state parks and the like) will prohibit alcohol. Alcohol impairs vision and is therefore discouraged at most star parties. (*Caffeine does, too! Drink water!*)

Smokers: Step away. While you may be outdoors, and the smoke is probably not going to bother many, or the optics of a telescope, stay away from telescopes nonetheless. Light shrouds on Dobsonians will surely get a few holes in them with smokers at the eyepiece. Be extra careful to shield your lighters/matches when lighting up - blind yourself, not everyone else. Don't discard your butts on the ground. (*Submitted by a smoker, so no protests!*) Note: The Kitty Hawke star party requires smokers to use the "porch." Aviation fuel is somewhat volatile.

Music: Music at AAC star parties is generally permitted at low volumes. Playing your own instrument is always encouraged! More Information: For more star party etiquette suggestions, please visit our the AAC website at floridastars.org.



August Club Meeting

Tuesday, August 12 2008, 7:00 p.m. EDT

Speaker: Dr. Fred Hamann, Professor of Astronomy,
Department of Astronomy, University of Florida

Title: *Which Came First, the Chicken and/or the Egg?*
--- *Super-massive Black Holes and the Birth of Galaxies*

Location: Powell Hall, Florida Museum of Natural History
Lucille T. Maloney Classroom,
UF Campus, Gainesville, Florida

Preview: One major milestone in astronomical research was the recent discovery that super-massive black holes reside in the centers of galaxies, including our own Milky Way. These holes in the cosmic space-time devour any matter that haplessly ventures too close. They can accumulate masses equal to a billion Suns, but they are still tiny compared to the sizes and masses of the galaxies themselves. One might expect the black holes to have almost no effect on their galaxy-scale surroundings, but the reality is probably just the opposite. These little pinholes in space-time might actually regulate galaxy formation at critical evolutionary stages billions of years ago. I will provide an overview of this fascinating research field, including some recent results from my own group here at the University of Florida.

About the Speaker: Dr. Hamann received his Ph.D. at the State University of New York at Stony Brook (SUNY) in 1987, and subsequently worked as a research fellow at the Carnegie Observatories, the Ohio State University, and the University of California at San Diego, before joining the faculty at UF in 1999. Main interests are studies of quasars, active galaxies, galaxy evolution, early-epoch star formation, elemental abundance evolution, circumstellar environments of pre- and post-main sequence stars, nebular astrophysics.

Professor Hamann is becoming a tradition at AAC meetings. He has unselfishly spoken to the AAC numerous times in past years including May 2004 (*Twinkle, Twinkle, Huge Explosion: The Story of Gamma-Ray Bursts*), February 2005 (*From Darkness Into Light: The End of the Dark Ages*), and July 2006 (*Life on the Edge: The Story of Eta Carinae*). His wonderful talks are always interesting, informative and enthusiastically received. And they are easily understandable by even novice star gazers.



Dr. Fred Hamann,
Professor of Astronomy,
University of Florida

Active Galaxy Centaurus A (shown left)

Credit: X-ray - NASA, CXC, R.Kraft (CfA), et al.;

Radio - NSF, VLA, M.Hardcastle (U Hertfordshire) et al.; Optical - ESO, M.Rejkuba (ESO-Garching) et al.

Explanation: A mere 11 million light-years away, Centaurus A is a giant elliptical galaxy - the closest active galaxy to Earth. This remarkable composite view of the galaxy combines image data from the x-ray (Chandra), optical(ESO), and radio(VLA) regimes. Centaurus A's central region is a jumble of gas, dust, and stars in optical light, but both radio and x-ray telescopes trace a remarkable jet of high-energy particles streaming from the galaxy's core. The cosmic particle accelerator's power source is a black hole with about 10 million times the mass of the Sun coincident with the x-ray bright spot at the galaxy's center. Blasting out from the active galactic nucleus toward the upper left, the energetic jet extends about 13,000 light-years. A shorter jet extends from the nucleus in the opposite direction. Other x-ray bright spots in the field are binary star systems with neutron stars or stellar mass black holes. Active galaxy Centaurus A is likely the result of a merger with a spiral galaxy some 100 million years ago.

Not Just Once in a Lifetime

— Howard L. Cohen

Jupiter comes to opposition in 2008 on July 9 and is closest to Earth the next day. However, the low maximum altitude of Jupiter for Northern observers makes this opposition less favorable than most other close approaches. However, much better oppositions for the USA are forthcoming over the next several years

Approximately every thirteen-months the planet Earth overtakes Jupiter as they race around the Sun in their nearly circular orbits. At this time Jupiter is closest to our planet causing its disk to appear largest when view telescopically from Earth. Since Jupiter's orbit is larger than Earth's (such orbits are called *superior*), Jupiter also appears opposite the Sun's position on the sky when nearest Earth (see Fig. 1), a configuration (or *aspect*) called *opposition*. (Closest approach and opposition do not occur exactly at the same moment since planets do not orbit in the same plane.)

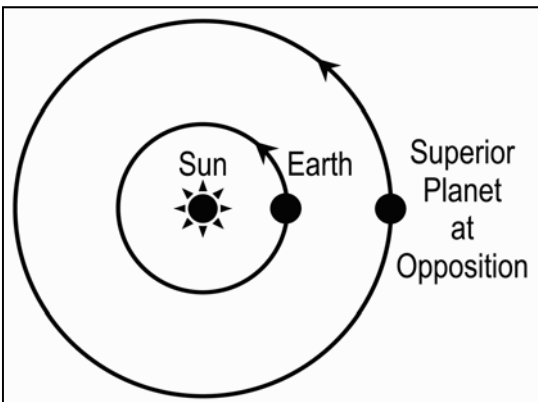


Fig. 1. Planets with orbits larger than Earth are closest when on the opposite side of the Earth from the Sun.

Sky watchers know that Mars also performs a similar dance with Earth and anxiously await oppositions of Mars for best viewing. These close approaches of Mars help enlarge the otherwise very small apparent disk of the red planet. Observers of Mars also know that some oppositions of Mars are much more “favorable” than others. This occurs because the eccentric Martian orbit puts Mars twice as far from Earth at an unfavorable opposition when compared with a favorable opposition.

five times larger than Earth's orbit while the Martian orbit is only one and one-half times larger. Therefore, the Jupiter-Earth distance at unfavorable oppositions compared with more favorable oppositions changes by only 10 percent rather than by a factor of two as for Mars. (See Fig. 2.)

Except Venus, whose disk exhibits phases but little else in most Earthbound telescopes, Jupiter telescopically exhibits an apparent size larger than any other planet. Numerous colored cloud belts, spots, and four bright satellites often seen passing behind or in front of this giant planet, make Jupiter the most revealing solar system planet in small telescopes. (Yes, Saturn has rings but its disk is bland in comparison and appears only half as large.)

Since Jupiter's disk does not substantially change apparent size from opposition to opposition—the range is about 44 arc seconds* to 50 arc seconds—all oppositions of Jupiter can potentially reveal the beauty and detail of its

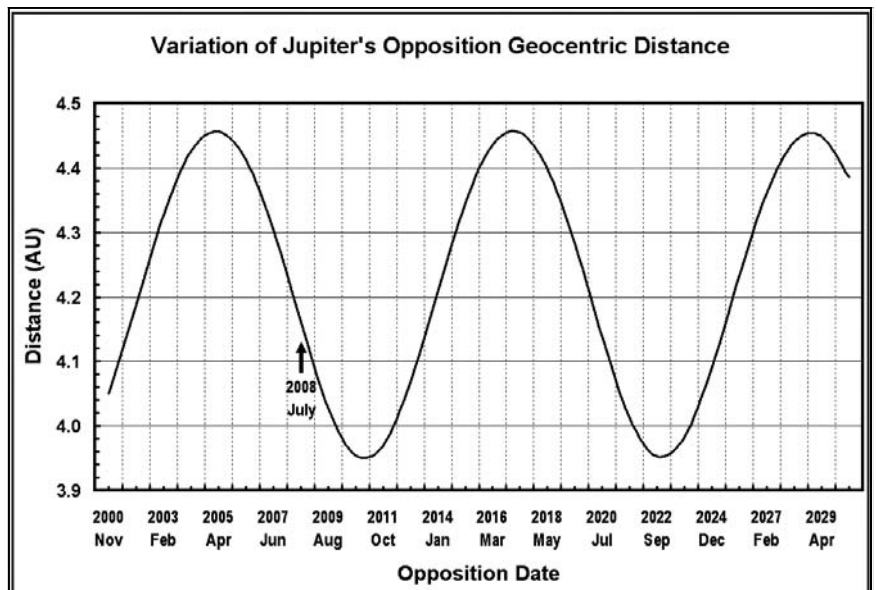


Fig. 2. Jupiter's distance from Earth varies from about 3.95 AU to 4.46 AU during 2000 to 2030. An AU, or *astronomical unit*, is the Earth's mean distance from the Sun, about 93 million miles.

belt-covered disk. (See Fig. 3.) In addition, because of Jupiter's large orbit, Jupiter does not rapidly change apparent size when viewed a few months before or after opposition. So, viewing Jupiter within a few weeks of opposition will not show dramatic changes in apparent diameter. For example, this year Jupiter's disk will remain 43 to 46 arc seconds from mid-May to the beginning of September. (See Fig. 4.)

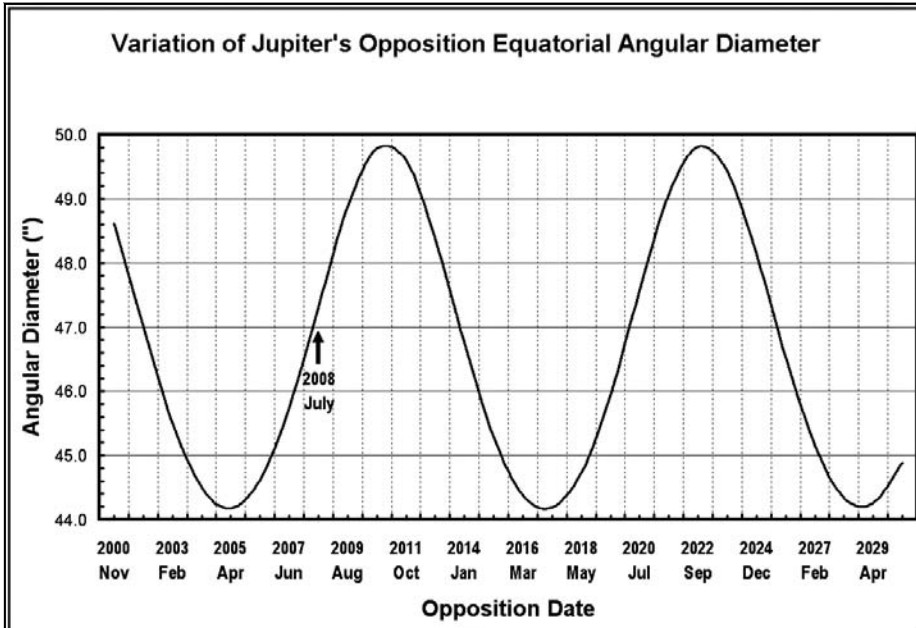


Fig. 3. Jupiter's equatorial angular diameter varies from about 44.2 arc sec to 49.8 arc sec during 2000 to 2030.

*Note: An arc second (arc sec, also abbreviated ") is 1/3600 of a degree. In addition, diameters listed are *equatorial diameters* since the disk of Jupiter is very *oblate* (flattened)—its polar diameter is about 94% of its equatorial diameter.

However, Jovian oppositions contain a hidden caveat. Over a period of about twelve years, Jupiter's position on our sky ranges from about 24 degrees above to about 24 degrees below the *celestial equator*. (See Fig. 5.) This variation in the celestial coordinate called *declination*, causes Jupiter's maximum *altitude* or elevation above the observer's horizon to vary about 48 degrees over the continental USA.

For example, in north Florida (latitude about 30°N), Jupiter can rise as high as 84 degrees above the southern horizon, or almost overhead near some oppositions. At other oppositions, Jupiter may barely clear treetops during the night because it does not rise more than 36 degrees above the south horizon. (See Fig. 6.)

Viewing celestial objects at low altitudes not only makes them appear dimmer but also fuzzy from air turbulence. Thus, some oppositions of Jupiter become "unfavorable" not because of disk size but because the planet does not rise to high altitudes during the night.

This is true for the 2008 opposition of Jupiter when viewed from northern latitudes. The declination of Jupiter this year is near its minimum value, a value that favors southern hemisphere observers. Although Jupiter's disk enlarges to more than 47 arc seconds, larger than in recent years, the 2008 opposition of Jupiter is very unfavorable from the point of view of USA observers. (See Fig. 6.)

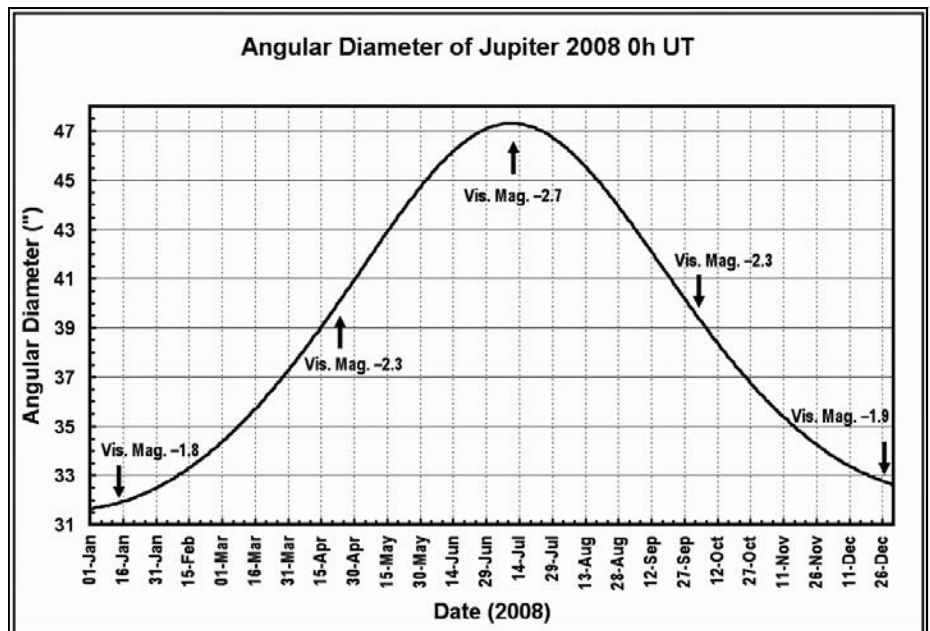


Fig. 3. Jupiter's equatorial angular diameter varies from about 44.2 arc sec to 49.8 arc sec during 2000 to 2030.

Fortunately, this situation improves over coming years as both the disk size and maximum altitude at oppositions improve. (See Figures 3 and 6.) For example, the 2011 October opposition will produce an apparent disk of nearly 50 arc seconds and a maximum altitude of more than 70 degrees!

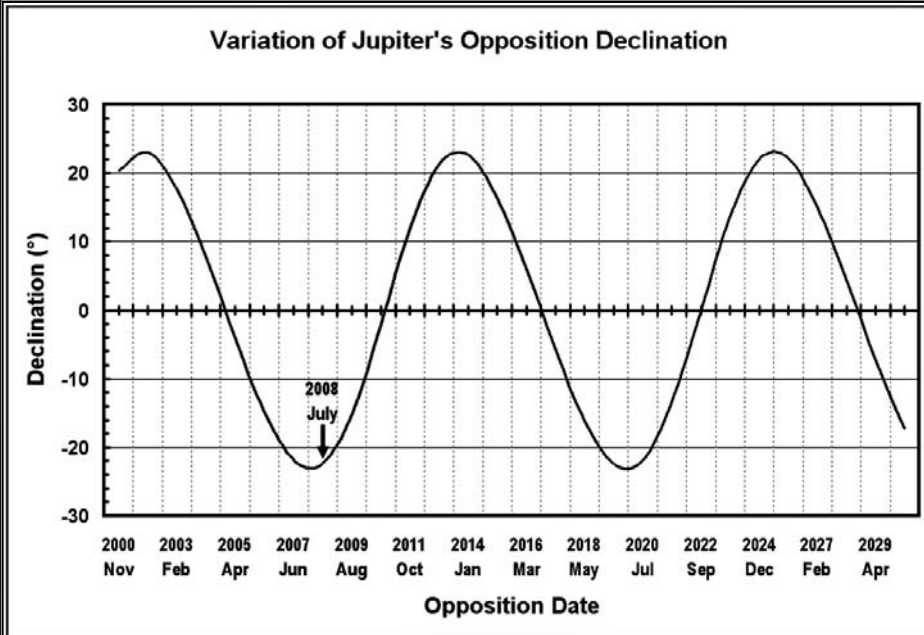


Fig. 5. Jupiter's declination (angular distance above or below the celestial equator) cycles through the range from about 24 degrees N to 24 degrees S during 2000 to 2030. The effect on altitude is shown in the next figure.

Still, Jupiter's large disk always impresses. This year Jupiter reaches opposition on the morning of Wednesday, July 9, near 3:00 a.m. EDT. Jupiter is then closest to Earth about twenty-eight hours later, shortly after sunrise on the morning of July 10, near 7:00 a.m. EDT. Maximum altitude (about 38°) during the night occurs at approximately 1:30 in the morning.

Since Jupiter will not rise high during this opposition, plan to observe Jupiter near the middle of the night for best viewing. And, don't worry if clouds and air turbulence spoil your attempts on these nights. Jupiter will remain large and bright, dominating our skies throughout summer months.

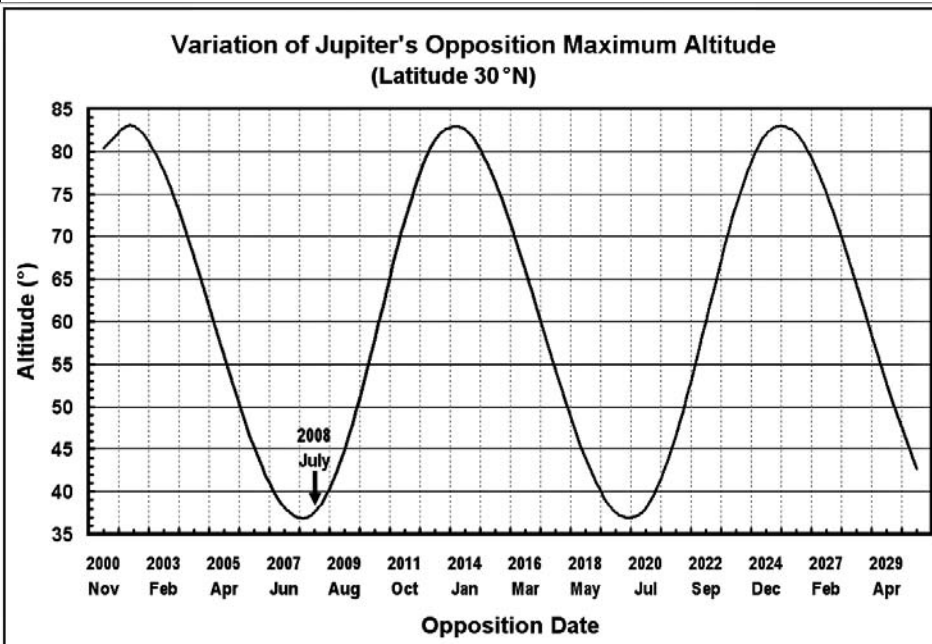


Fig. 6. Variation in Jupiter's declination causes its maximum altitude to vary widely at oppositions for the continental USA. This figure shows the effect on altitude for locations like north Florida (latitude 30 degrees N).

Besides, Jupiter will be back next year better than ever. ☀

September Club Meeting

Tuesday, September 9 2008, 7:00 p.m. EDT

Speaker: Dr. Ata Sarajedini, Associate Professor of Astronomy,
Department of Astronomy, University of Florida

Title: TBA

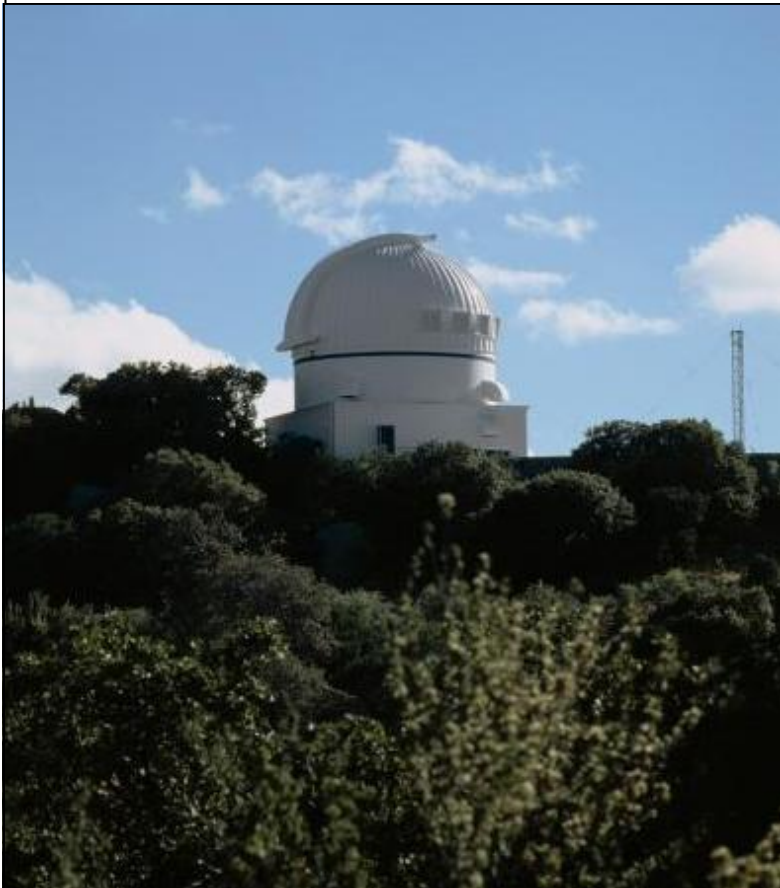
Location: Powell Hall, Florida Museum of Natural History
Lucille T. Maloney Classroom,
UF Campus, Gainesville, Florida



Dr. Ata Sarajedini,
Assoc. Professor of Astronomy,
University of Florida

About the Speaker: Dr. Sarajedini received his Ph.D. in Astronomy from Yale in 1992, and did postdoctoral research at the National Optical Astronomy Observatory as well as at the University of California in Santa Cruz. He was on the faculty of Wesleyan University until joining the astronomy faculty at the University of Florida in 2001 along with his wife, Dr. Vicki L. Sarajedini, who is also an Assistant Professor in the Department of Astronomy. Dr. Sarajedini research interests include stellar populations, galactic structure, distance scales, precision photometry, WIYN Open Cluster Study, and HST Globular Cluster Treasury.

Professor Sarajedini captivated his audience in March 2004 with his stunning talk on the (*The Eating Habits of the Milky Way and Andromeda Galaxies*). Like Dr. Hamman, who will speak next month, his presentation should again thrill the audience with his current presentation



The Kitt Peak National Observatory

(KPNO), part of the National Optical Astronomy Observatory (NOAO), supports the most diverse collection of astronomical observatories on Earth for nighttime optical and infrared astronomy and daytime study of the Sun.

KPNO operates three major nighttime telescopes, shares site responsibilities with the National Solar Observatory and hosts the facilities of consortia which operate 19 optical telescopes and two radio telescopes. Kitt Peak is located 56 miles southwest of Tucson, Arizona.

Dr. Sarajedini is a guaranteed time observer on the WIYN 0.9m telescope located on Kitt Peak.

The telescope is equipped with the NOAO MOSAIC wide-field imager which yields a 59 x 59 arcmin field and 0.4"/pixel. The S2KB CCD, which has a FOV of 20 arcmin on a side and 0.6"/pixel, is also available.

The Meeting was called to order at 6:59 PM

Board members present: Bill Helms (BH), David Liles (DL), Larry Friedberg (LF), Tandy Carter (TC), Howard Cohen (HC), Pamela Mydock (PM), Bob O'Connell (BO'C); Chair persons present: Charles Broward (CB); c. TC Club members attending: i. Marian Cohen (MC); Board members and Chair persons departing early: LF, CB, PM. Reading and approval of the minutes of last meeting; BH reported that the president can't make policy; BO'C moved and PM seconded to accept the minutes as corrected; The motion passed on a voice vote; The minutes were accepted as corrected.

Officer, Board and Standing Committee Reports: Treasurer's report: Checking ACCT BALANCE 3/31/2008 = \$1,258.67; Savings ACCT: BALANCE 3/31/2008 = \$5,084.27;

Status of Club Equipment: SkyQuest XT-8 – Larry Friedberg (C) with Kami Monticello PST – Scott McCartney with Rich Russin; Collimating Tools – Michael Toomey (C) with Tandy Carter HC in lieu of MT reported on Star Parties; TC reported on the status of the star party at Hickory Ranch The AAC May star party will be May 3, 2008 at Randy Palmer's Moondance Hill as listed on the AAC star party web page; SM reported on the speaker schedule: BH reported that he approached TM to help SM with the speaker schedule; BO'C reported on LOG activities: BO'C reported that the LOG meeting for April was well attended TC reported on Outreach activities: TC reported on the outreach event at Oak Hall Elementary School TC reported that there will be an Astronomical Event Debrief form for subsequent Astronomical Events.

Special committee reports: a. PM reported that there was nothing new to report on the status of the plaque and murals at the Royal Park Stadium 16 Theater; b. LF reported that there was nothing new to report on AAC dues structure until the May board meeting.

Old Business: 3H reported that there had been no progress in posting club policies to the club website; OPEN; LF reported on the club's tax exempt status; LF reported that the IRS had accepted the club's 501.c.3 registration and the accepted registration had been forwarded to the state of Florida as proof of tax exempt status; OPEN HC reported on the role of the AAC in the 2009 IYA: HC reported that there had been no progress; OPEN HC reported on the Gainesville Solar Walk: HC passed out artist conceptual drawings of the Comet Halley perihelion and aphelion markers; HC reported that the budget for the Comet Halley markers was approximately \$10,000.00 HC reported on the asteroid belt marker; iv. HC reported that there had not been a budget allocated for the asteroid marker; OPEN; BO'C reported on distributing copies of FirstLight at AAC general meetings; BO'C reported that he had the pages on hand and would pass them out at the upcoming meetings as required; OPEN BH reported on advertising club meetings; BH reported that he would talk to SM and TM to ensure that appropriate announcements were forwarded to the appropriate entities in a timely manner; OPEN BH reported on Starry Night: BH reported that preparations were on pace; BH reported that the date for Starry Night is April 17, 2008; BH reported that the LOG was in charge of providing telescopes for the AAC participation There was a general discussion of signage for Starry Night and possibly subsequent events; There was a general discussion of targets for Starry Night; OPEN TC reported on changes to the structure of the minutes: TC reported that he sent out a copy of the minutes shell to the members of the board and Chair persons; He reported that there was no response and therefore the board and chairs were satisfied with the current minutes; TC reported that there was a suggestion that a condensed version of the minutes be published in the FirstLight because the complete minutes were published on the website. TC pointed out that the minutes were only published on the password protected portion of the board page and would have to be moved before a limited version of the minutes could be published in the FirstLight; TC inquired about backups to the minutes; HC reported that he has backup copies of all minutes in one form or another; CLOSED HC reported on preparing a program on the AAC participation in the science of the occultation of Iota Cancri by 711 Xanthe; HC reported no progress; Deferred; OPEN.

New Business: BO'C requested a discussion on starting a Solar Observers Group (SOG); BO'C received permission to solicit a head for the SOG at the next general membership meeting; OPEN. BO'C requested a discussion of Membership cultivation; BO'C reported that there were members that were interested in web casting the general meeting; BO'C reported that there was a member that was interested in developing a glossary of lunar terminology with pronunciations; There was a general discussion of the club purchasing an FM microphone system; OPEN. HC requested a discussion of production and purchase of posters and related items for future star parties; There was a general discussion of items needed and the cost of different items; There was a general discussion of how to post the posters; PM suggested using posts in buckets of concrete; TC pointed out that solution would be much too heavy; OPEN. TC requested a discussion on modifications to the club's outreach webpage; TC passed out requested changes to the club's outreach webpage; BH asked about payment for outreach activities; TC informed the board that since the AAC is a nonprofit organization, the only payment that could be requested is travel expenses. TC informed the board that the AAC can only request a donation, but could not set an amount; There was a general discussion about what expenses could be deducted; CLOSED. HC requested a discussion on using bylines in the FirstLight

Good of the Order: HC requested that the AAC thank the LOG for the excellent program it provided at the last ATM meeting; **Adjournment:** TC moved and HC seconded to adjourn. The meeting was adjourned at 9:15 P M

Respectfully submitted, Tandy W Carter Jr., AAC Secretary

The meeting was called to order at 6:34 PM; Board members present: Bill Helms (BH), David Liles (DL), Larry Friedberg (LF), Tandy Carter (TC), Pamela Mydock (PM), Bob O'Connell (BO'C), Howard Cohen (HC)

Chair persons present: Michael Toomey (MT), Chuck Broward (CB). Club members attending: Marian Cohen (MC)

Reading and approval of the minutes of last meeting: DL moved and BO'C seconded to accept the minutes.

Officer, Board and Standing Committee Reports: Treasurer's report: CHECKING ACCT BALANCE 4/30/2008 = \$1,380.67; SAVINGS ACCT BALANCE 4/30/2008 = \$5,086.36.

LF queried how to handle new members with the departure of SM; HC to email SM for instructions on updating the club roster; LF passed a copy of the declaration page from the AAC insurance policy to BH for safe keeping. LF reported that he received the AAC's registration from the state of Florida. LF read the statement to be placed numerous places as required by state law. TC questioned the existence of the original articles of incorporation.

Status of Club Equipment: SkyQuest XT-8 – Larry Friedberg (C) with Fred Palgon; PST – Michael Toomey (C) with Bill Helms; Collimating Tools – Michael Toomey (C) with Tandy Carter.

Star Parties: MT reported that the original host for the May star party was unable to host the star party and it was moved to MT's ranch. All other star parties are as posted on the club web page. The Villages wants their star party to be either November 1, 2008 or February 28, 2009; TC requested to be in the loop for the Villages star party and all other outreach star parties; HC questioned the receipt of an honorarium from the Villages

Speaker Schedule: BH reported he has asked TM to take over as the Speaker chair person; BH reported that RR has shown interest in being the Speaker chair person; BH will speak to RR about being the assistant; HC reported that the speakers schedule is set for the rest of the year. MT reported that the FLMNH has requested that the AAC have more out of town speakers. BH reminded everyone that out of town speakers will have to be paid for their efforts. BO'C suggested that the AAC work with the FLMNH for the LRO lunar impactor next year. BO'C requested to be relieved of all responsibilities for the IYA

Outreach activities: TC reported that there were no official outreach functions for May. TC reported there were members that were going to SFCC for Astronomy Day Saturday May 10, 2008. TC reported that SFCC has requested an outreach function for Astronomy day 2009.

Special committee reports: LF reported on AAC dues structure. LF passed out a report showing the AAC annual expenditures and number of full dues paying members.

Old Business: HC reported that there had been no progress on the role of the AAC in the 2009 IYA. HC requested to be relieved of responsibility. BH reported that the AAC will be active in the IYA. BO'C requested time at the general meeting to discuss the IYA and the need for a coordinator. TC moved to close the item. The motion failed due to the lack of a second. OPEN. BO'C reported on distributing FirstLight at AAC general meetings. BO'C reported that he has AAC brochures and FirstLight issues to be distributed. CLOSED.

Gainesville Solar Walk: HC reported that he has been invited to be a member of the Art in Public Places Trust and declined. The comet markers will be voted on at the Gainesville City Council meeting May 12, 2008, and if all goes well, they could be installed as early as fall 2008. HC reported that the asteroid maker was problematic due to lack of funds. The City of Gainesville wants to erect a plaque at the Pluto marker. HC read the statement that is to be placed on the plaque. BH suggested that the AAC should stay out of the Pluto Controversy. HC reported that the GRU will be building a new facility and he suggested a large sundial as a piece of art at the main entrance. OPEN. **Advertising Club Meetings:** BH reported that TM did an adequate job of advertising the previous meeting and that he will ensure that TM will advertise the meetings as appropriate. BH suggested the advertising be monitored. OPEN. BH reported that there were 551 attendees at Starry Night at the FLMNH. BH received comments from many club members and that the recommendations meeting with the FLMNH has not yet occurred. BH reported that because of various rules at the FLMNH refreshments could not be served. BH reported that UF student government may not sponsor future Starry Night programs but that the FLMNH was interested in sponsoring future Starry Night programs. CLOSED.

Astronomy Day at SFCC Kika Silva Pla Planetarium: BH reported that the Kika Silva Pla Planetarium invited the AAC to bring two PSTs for Astronomy Day. Due to the shortness of the notice, the AAC declined the invitation officially. BH will support the request personally. BH reported that the policy of SFCC was that there could be no direct observation of the sun. The policy had been forwarded to SFCC risk management. BH reported that a member of the SFCC faculty felt blind sided because he did not support the ban (no pun intended). OPEN. HC requested to be relieved of the responsibility for reporting to the general membership on the AAC participation in the Iota Cancri occultation. CLOSED. BO'C reported on the SOG: BO'C requested to pass out an article he submitted to FirstLight on solar astronomy and to seek a person to head the SOG at the general membership meeting. OPEN. BO'C reported on membership cultivation. LF volunteered to print the article for BO'C. OPEN. BH reported that the FLMNH is willing to produce posters for the AAC for use in conjunction with Starry Night. DL moved to take advantage of having the FLMNH printing the posters and to come up with a way to display the posters later. PM seconded the motion. There was a general discussion of what was needed to display the posters. MC voiced concerns about displaying the posters properly. The motion passed on a voice vote of 6 – 0. OPEN.

New Business: TC reported on outreach. TC distributed the proposed AAC Astronomical Event Review Form. There ensued a general discussion on modifications to the form. CLOSED. TC reported on the NASA Night Skies Network. TC distributed the FAQ page and the Club application page. TC recommended the AAC join. BH requested TC to forward the URL to the board members and chair persons. BH requested TC, BO'C, MT, and CB to return with a firm recommendation for the next board meeting. HC pointed out there is a deadline for applications for this session. OPEN. c. HC reported that the AAC had not printed any brochures for 2008. BO'C suggested that the brochure be reworked to bring it up to date. BH requested HC to update the information on the brochure. BH requested LF to print 100 brochures. BH requested the board members to fold the brochures. BH requested BO'C to work with TM on updating the brochure. HC pointed out that room has to be made for the state required statement. OPEN. CB reported on the plaque for SM. CB reported that the plaque for SM would not be ready until May 8, 2008. OPEN.

Good of the Order: HC complained that the board email is getting excessive. CLOSED. BO'C reported that numerous astronomy related VHS video tapes have been offered to the AAC. BO'C will bring the tapes and allow the club members to choose which tapes they want. CLOSED. HC commented that because of the extensive turn over of officers there needed to be an Ad Hoc nominating committee named. BH reported that he will announce the members of the nominating committee. OPEN. The meeting was adjourned at 9:33 PM

Respectfully submitted, Tandy W Carter Jr., AAC Secretary

FirstLight

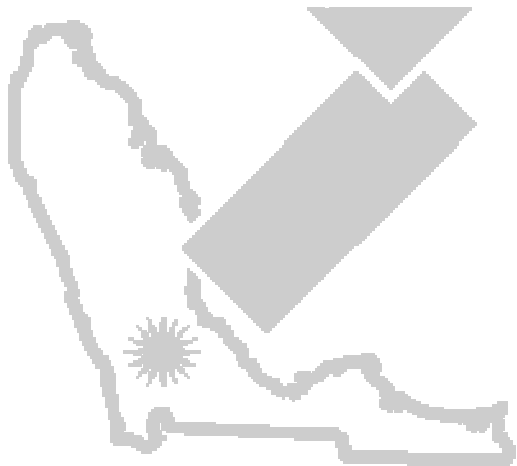
July / August
2008

Photo Credit: Mars
Exploration Rover Mis-
sion, JPL, NASA

Explanation:
Opportunity and sister
robot Spirit have been
probing the red planet
Mars since early 2004,
finding evidence of an-
cient water, and send-
ing breathtaking im-
ages across the inner
Solar System. Pictured
right, Opportunity looks
opposite the Sun into
Endurance Crater and
sees its own shadow.
Two wheels are visible
on the lower left and
right, while the floor
and walls of the un-
usual crater are visible



in the background. Opportunity and Spirit have now spent over four years exploring the red world, finding new clues into the wet ancient past of our Solar System's second most habitable planet.



FirstLight
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