

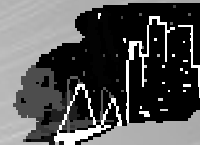


North Central Florida's  
Amateur Astronomy Club  
29°39' North, 82°21' West

May / June 2008  
Issue 69.1/70.1



Member  
Astronomical  
League



Member  
International  
Dark-Sky Association

# FirstLight

Newsletter of the Alachua Astronomy Club

## **AAC Lunar Observing Group**

By Bob O'Connell

Ten members of the Alachua Astronomy Club, Inc. participated in the second Lunar Observing Group (LOG) held March 18<sup>th</sup> at Chuck Broward's house. Five members gave

lunar-feature PowerPoint presentations on a large screen as members followed along through telescopes pointed at the features being described. The sky was clear for the two-hour observing session focusing on the Aristarchus Plateau, and the craters Kepler, Gassendi, Schiller and Clavius – all well placed for observing near the lunar terminator.



AAC Lunar Observing Group participants (L to R) Don Loftus, Fred Heinrich, Thomas Olmsted, Sandon Flowers, Chuck Broward, Scott McCartney, Dr. Howard Cohen, David Liles, Tandy Carter.

The highlight of the night was an extensive PowerPoint presentation by Dr. Howard Cohen on the complex geology of the floor-fractured crater Gassendi. Members were able to directly observe through telescopes a number of Gassendi features covered in the presentation. Chuck Broward's interesting presentation on the elongated crater Schiller was followed by lively discussion and speculation about how this crater may have formed. A video feed of the Moon to a 14" TV monitor was also used to support the visual observing.

Participants left the event with a greater appreciation for the complex geologic history of the Moon and for what can be seen on our nearest celestial neighbor through modest amateur telescopes. Future LOG observing sessions will be scheduled and announced at general monthly meetings and on the AAC website. All members and guests are encouraged to attend and participate in future LOG sessions.



This question arose one night when I was observing the Andromeda Galaxy with my 12.5 inch Dobsonian. I began to reflect (pun intended) on the miracle that the light I was seeing had been traveling at 186,000 miles per second for over 2 million years, a distance of some 12,000,000,000,000,000 miles. It entered my telescope and traversed the tube length in about 5 billionths of a second, or 5 nanoseconds. That's about the time your computer needs to complete 5 instruction cycles. After traveling this tremendous distance, at this tremendous speed, it suddenly reverses direction, travels back up the telescope tube, hits my diagonal mirror, and bends through my eyepiece to form an image inside my eye. Talk about a hundred million miracles! I began to wonder what it was that caused the light to turn around at the mirror's surface, and

go back the other way. I took down a couple of college physics textbooks on optics and electromagnetic waves. Not much help there! I tried some more recent books, some of which try to explain things at a conceptual, rather than mathematical, level. They all just accept that it happens, and explain the geometry, but none even gave a clue to why this miracle happens. Like an unsolved mystery from The Puzzler on Click and Clack's "Car Talk," once this entered my mind, I couldn't let it go. I decided to go back and review what I did know, and see if I could shed some light (Ouch!) on the matter. I pulled together clues from a number of sources, and I think I have an answer that makes sense. I present it as a provisional explanation, with no actual proof, or authoritative sources. If you know of a better explanation, or someone who does, please share it with me.

Physics books tell us that what we call light is an electromagnetic wave, which travels at 186,000 miles per second, or 300 million meters per second, in a vacuum. It travels slower in air, slower yet in water and glass, and about half that speed in a diamond. It is no different from radio waves, microwave or radar waves, infrared or ultraviolet radiation, X-rays and Gamma rays except for the wavelength and frequency. Wavelength and frequency are related by the equation Speed equals Wavelength times Frequency. I'll just stick to visible light waves for simplicity. Light is emitted and absorbed by atoms in discrete, indivisible little burps called photons. It turns out that light can be emitted in one burp, or two, or any multiple, but not half a burp, or one and a third, etc. When it is emitted or absorbed, it acts like a particle, and when it travels, more like a wave. Some people like to say it is both a wave and a particle, but I think that is a wrong conception. It is something that we have no familiarity with in everyday life, that has some characteristics of both our familiar waves and particles, and I like to think of it as a **wavicle**. Think of it as an infinitely small point in space, moving at 186,000 miles per second, and consisting of electric and magnetic fields centered on that point changing from positive to negative and back again about 500,000,000,000,000 (five hundred trillion) times per second. Imagine a visible light wavicle whose electric field changes from positive to negative and back again at five hundred trillion times per second. That makes it orange-yellow light with a wavelength of 600 nanometers (billionths of a meter). Red light changes a bit slower, blue light a bit faster.

Likewise, chemistry tells us that the unique physical properties of materials are determined by the kinds of atoms that make them up, the way those atoms are arranged in three dimensions, and the way they bond together. These properties include strength, hardness, stickiness, how they expand or contract when heated, whether they are magnetic, and how they conduct or resist the flow of electricity. We could reasonably guess that these physical properties might also include reflectivity. We know that metals, such as silver and aluminum, bond in such a way that they share "free" electrons, free to move easily. That is what makes them such good conductors of electricity, as opposed to rubber, plastic, etc. Might these free electrons play a role in reflectivity?

Reflectivity might be defined as the property of absorbing or transmitting very little of the incident light that falls on a surface, and reflecting all colors more or less equally. So, if you look directly at a string of multicolored holiday lights, and if you view them in a good mirror, they look much the same. But if you view their light bounced off of a green wall, a blue wall, or a red wall, some colors will be reflected well, and some will be muted.

Now, let's imagine that, long ago in a galaxy far, far away, like Andromeda, at a certain instant some atoms in the atmosphere of one of the stars emits a set of photons, and they begin traveling outward in an expanding bubble of light. Some two million years later, a small portion of that bubble, containing some of our photon of interest, intercepts the open tube of my Newtonian reflecting telescope, and begins its journey down the tube. Five nanoseconds later, it has reached the surface of my primary mirror, and begins to interact with that aluminum surface. The rapidly changing polarity of the electric field of each photon causes a free electron in its path to jiggle at exactly the same frequency as the incoming wave. James Clerk Maxwell and others learned that moving electric charges generate electromagnetic waves, so this jiggling electron takes the energy of the incoming wave, and sends out a wave of the same frequency. This is the phenomenon of reflection. Since the reacting electrons are free electrons, each one is able to respond to the any of the entire spectrum of incoming visible light frequencies. That is why metals are such good reflectors. White paper is also a good reflector, but not as smooth, so it reflects in all directions. It also doesn't have free electrons, so it does not reflect as well as a mirror.

This solves the riddle of why reflection takes place. But why does the light reflect from the surface at an angle, toward our diagonal mirror, instead to just going back up the tube? Remember that our telescope has a curved, concave mirror. That means the outside edges are closer to the front of the tube than the middle of the mirror. By the time our expanding light bubble has reached Earth, after traveling so far, the wave front traveling down the tube is very, very close to a flat plane. This flat wave front reaches the higher outside part of the mirror first, and reflects off that part before reflecting off the lower, inner parts. Christian Huygens proposed in 1678 that each point of a wave front acts like a source for a small, secondary spherical wavelet. This lets us predict a wave's future position from its present shape and location. The result of this is that the reflected wave front is bent in toward the center of the tube, so as to intercept the diagonal mirror. The diagonal mirror bends the light again, this time through a right angle, sending this ever-decreasing circle of light through the eyepiece, through the pupil, and onto the receptors on the retina of our eye, where they are turned into electrical signals our brain can process and understand. A 12.5-inch mirror collects over 2000 times as much light energy per unit time as does a human eye, which only opens perhaps one quarter of an inch. If we magnify it (spread it out) 100times, we still end up with 200 times the light energy per amount of area.

Our telescopes are remarkable instruments, collecting far more light than an unaided human eye can ever see, and allowing us to magnify tiny objects to see details never before imagined. They have made amazing contributions to our understanding of the world we live in, and bring pleasure and deep satisfaction to those of us who are privileged to use them.

Till next time,

Bill Helms  
Alachua Astronomy Club,  
President@FloridaStars.org

## **Subscribe to the AAC Email Service**

The Alachua Astronomy Club, Inc. has two electronic mailing lists:

1. **AAC-L** is a public, moderated list. Anyone may subscribe but all messages are filtered by a list moderator. Primarily for announcements. Not a discussion list.
2. **ATM-Observers-L** is a public, unmoderated announcement and discussion list. Anyone may subscribe. All messages posted are posted immediately once the sender approves their message. This list is specifically for those interested in amateur telescope making (ATM) or observing.

See our website for additional information on how to sign up at [floridastars.org](http://floridastars.org)

## May Club Meeting

Tuesday, May 13 2008, 7:00 p.m. EST

**Speakers:** Chuck Broward, Joe Haldeman, Fred Heinrich & Tim Malles

**Title:** *Review of the 2008 Winter Star Party*

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



**Preview:** Next year the Winter Star Party will celebrate its 25th anniversary (February 21–28) with a special eight day event at West Summerland Key, Florida. This year this grand celebration of the heaven, hosted annually by the Southern Cross Society, brought out hundreds of amateur astronomers from around the world. Dark skies and a chance to view southern celestial objects not visible from most other places in the continental USA makes this one of the most popular and largest gatherings of amateurs (warm winter weather is also an attraction!). Hear AAC members who attended the 2008 Winter Star Party explain why this star party is a must for anyone interested in gazing at the stars.

**About the Speakers:** Chuck Broward, Joe Haldeman, Fred Heinrich & Tim Malles are all active members of the AAC. Chuck is one of the AAC's earliest members, is AAC's Astronomical League Correspondent (ALCOR), and heads the AAC Amateur Telescope-Making (ATM) group. He spoke to the AAC this past January. Joe is an award winning writer of science fiction. He has won every major award for his science fiction, including many Hugos and Nebula awards. Fred with his wife, Lucille, are registrars for the annual Winter Florida Keys Star Party hosted by the Southern Cross Astronomical Society. Tim has been an active AAC member since 2001 and is a professional artist. He was also our last month's speaker.

## 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](http://floridastars.org)). There will be no monthly meeting in December.



It is mid-April, 2008 and we have had several interesting and vibrant ATM meetings. They have ranged from hands-on activities to in-the-driveway directed observing sessions. In May we will be building portable observing chairs. If you are interested in doing this please contact me at [broward32666@yahoo.com](mailto:broward32666@yahoo.com). We will attempt to have the material purchased and cut so that the meeting time will be spent building a project that you can take home that night (the 3<sup>rd</sup> Tuesday of May).

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During the rest of this year we will look at mirror testing, astro-photography, a look back to earlier days (a presentation by Howard Cohen), and hopefully more evenings of observing. I am almost finished with a equatorial table that can be made by anyone with rudimentary wood-working skills (only one cut requires any precision at all, and it isn't much!). This platform holds my ten inch dob securely, and will track for an hour at a time. This will be a project for later this year.

Come to the ATM meetings! You will learn something about this diverse hobby of ours. As the club's Astronomical League contact, or AlCor, I feel I need to remind you to take a look at what the League has to offer. There are many observing awards if you are so inclined. Several of our club members already have earned Messier Certificates, and Lunar awards. You can also attend

### ALCONEXPO 2008: JULY 18-19, 2008

"It's only three months until ALConExpo 2008 convenes in Des Moines, Iowa. To register online or to print out your registration form for mailing, please go to:

[http://www.alconexpo.com/4\\_registrationpage.html](http://www.alconexpo.com/4_registrationpage.html)

Visit the Astronomical League's website at [www.astroleague.org](http://www.astroleague.org). Browse through the site and find out what you have been missing.

Do you have something special to share with other club members? You might want to get involved in the ATM group.

Clear Sky!  
Chuck

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**Chuck Broward** is a long term AAC member, and a avid builder of astro-gizmos, and some nice telescopes and accessories. Reach him at [broward32666@yahoo.com](mailto:broward32666@yahoo.com)

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**Note:** In the last issue of *FirstLight*, longtime AAC member Howard Cohen wrote an article, “Why See a Total Eclipse of the Sun.” Here Prof. Cohen introduces us to the “Great Solar Eclipse of 2009,” the longest total duration solar eclipse of the 21st Century.

## A Long Eclipse in an Exotic Land

*The Year 2009 brings the longest duration total solar eclipse in your lifetime.  
This eclipse also provides an excuse to visit ancient and exotic China  
during the International Year of Astronomy*

by Howard L. Cohen  
2008 February

### INTRODUCTION

**O**n 2009 July 22 a most wonderful and singular event will occur for those willing to undertake a journey to distant lands once considered by Europeans as the mysterious east — the longest duration total solar eclipse that anyone now alive can witness (6m39s in the Pacific Ocean). This is the longest in nearly twenty years and not to be exceeded until 2132.

This eclipse also comes during an auspicious time for astronomy — *The International Year of Astronomy 2009 (IYA2009)* as declared by the International Astronomical Union (IAU), endorsed by the United Nations Educational, Scientific and Cultural Organization (UNESCO), and affirmed by a United Nations General Assembly proclamation (2007 December).

**Note:** Learn more about the IYA2009 at <http://www.astronomy2009.org>.

Two other upcoming solar eclipses precede this eclipse during 2008 and 2009 but none of these have the accessibility, drama and potential to allow journeys to exotic lands as does the “Great Solar Eclipse of 2009.” These other solar eclipses include the total eclipse of 2008 August 1 with a maximum duration less than 2½ minutes and a path mostly through inhospitable arctic and Siberia regions that trails out over Mongolia and China. The next is an annular eclipse (2009 January 26) that crosses broad ocean waters of the south Indian Ocean.

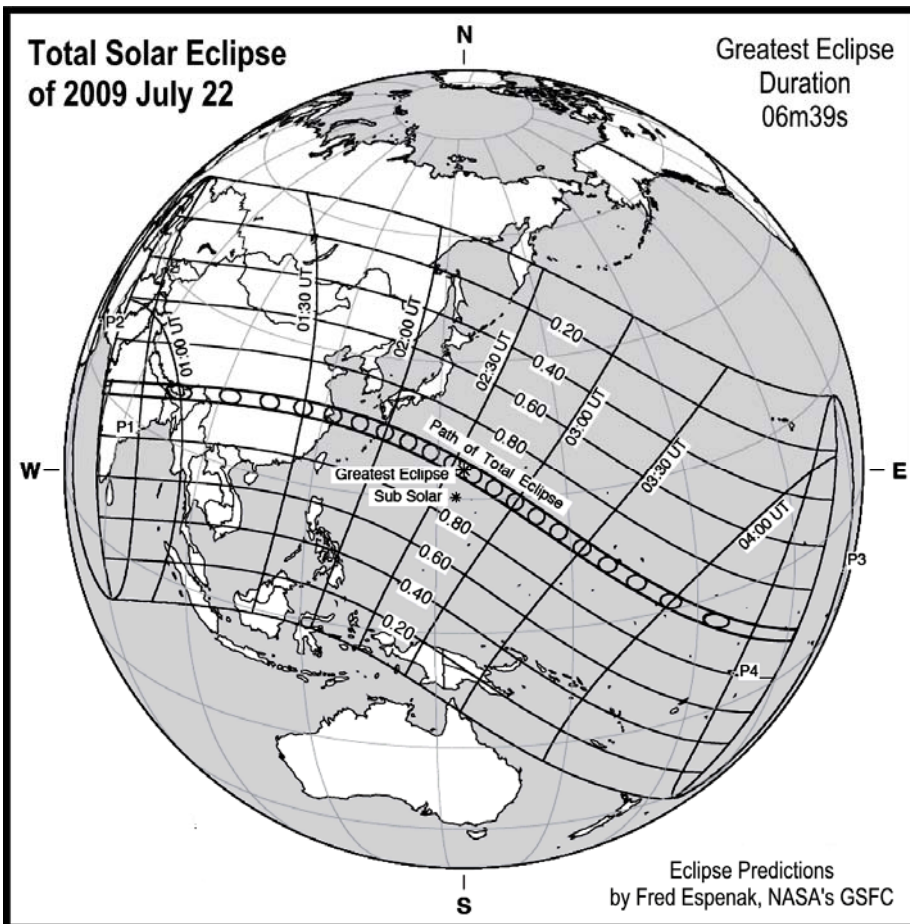
### PATH OF TOTALITY

Although no part of the great 2009 eclipse will be visible from the continental United States, its eclipse path is easily accessible and provides exceptional opportunities to visit and discover the hidden secrets of the People's Republic of China.

To observe the 2009 event as a total eclipse, one must locate within a long total eclipse corridor that traverses nearly half the Earth's surface (more than 9,000 miles) but is never more than about 160 miles wide (Fig. 1). Even then, one must be near the central path line (“curve of central eclipse”) at the point of maximum duration — situated out in the wide Pacific Ocean — to achieve fullest duration. Nevertheless, one can still achieve a maximum duration of nearly six minutes in accessible regions of eastern Asia near or on the east China coast (Espenak 2008).

In addition, a partial eclipse will also be seen over a much larger area extending north to the polar regions of Asia and south into the East Indies. None of the eclipse is visible from the United States except as a slight partial eclipse during late afternoon in the Hawaiian Islands where the Moon will obscure about 12% of the solar diameter (called the *eclipse magnitude* — the fraction of the Sun's diameter covered by the Moon at moment of greatest eclipse). Also see Fig. 1 for regions of partial eclipse.

The 2009 July total eclipse path first begins early morning on the west coast of the Indian subcontinent north of Bombay before crossing India's midsection. Unfortunately here, monsoon rains will likely dampen views of this extraordinary event. After moving eastward through northern Bangladesh, the path crosses the vast southeastern regions of the People's Republic of China where dramatic mountains often alternate with broad, lush green valleys. Monsoons too, oscillating frontal bands and potential smog may reduce chances of observing this eclipse. However, China still offers promising prospects of seeing this long eclipse and the opportunity to plan a trip to see the mystery of China.



**Fig. 1. Total Eclipse of 2009 July 22.** The path of totality begins in eastern Indian and ends over 2,000 mi south of Hawaii where a slight partial eclipse occurs. Greatest eclipse is 6m39s, longest of the 20th Century. However, eclipse duration is still nearly 6 min near the central line in eastern China. Curved lines adjacent to the path of total eclipse show regions of decreasing partial eclipse with eclipse magnitudes from 80% to 0%. (Cred. Fred Espenak, NASA's GSFC.)

during the midst of typhoon season, China probably offers some of the best prospects for a successful eclipse trip while still having a long total eclipse duration.

Unfortunately, this longest eclipse of the 21st Century does come during summer weather that often brings cloudy skies and extreme heat and humidity. (See "The Weather" below.) Still, for veteran eclipse chasers, the prospect of standing in the Moon's shadow for more than five minutes far outweighs less than optimal weather conditions. With a careful choice of an observing location, one can still have a moderately good chance of experiencing the chilling and awesome phenomenon of totality.

## MAXIMUM DURATION

The maximum duration of totality for a solar eclipse is about 7-1/2 minutes (nowadays 7m32s according to Belgian astronomer Jean Meeus, 2002) and this is almost never achieved — usually totality lasts only a few minutes. Almost half are approximately three minutes or less. The longest duration of the 20th Century occurred over a half century ago, 1955 June 20 (7m08s). A seven minute duration will not happen until 2150 June (7m14s) while a total eclipse with a duration near maximum is nearly two centuries in the future.

After exiting the China mainland through populous Shanghai, the total eclipse path enters the Pacific Ocean south of Japan. Here the Moon's shadow moves quickly through enchanting and sometimes battle scarred tropical islands including sacred Iwo Jima more than 700 miles south of Tokyo. In waters about 200 miles farther to the southeast, totality reaches maximum duration of not quite seven minutes. The Moon's shadow then heads into the huge expanse of the remote South Pacific Ocean where totality ends late in the day more than 2,000 miles south of the Hawaiian Islands.

With restricted access to many Pacific islands, as hallowed Iwo Jima, and the prospects of severe storms

## A Long Eclipse in an Exotic Land - continued

According to calculations by NASA astronomer Fred Espenak (2007a), this will not happen until the remarkable 2186 July total eclipse (7m29s), the longest duration of totality in a ten millennium period from -3999 to +6000 (4000 BCE to 5999 CE)! Unfortunately, no one now alive will likely see this unbelievable eclipse. Disappointingly too, this uncommonly long duration will take place about 400 miles east of South America in the Atlantic Ocean, 500 miles north of the equator.

Currently maximum total eclipse durations are declining with the 2009 July eclipse longest of the 21st Century. Not until 2078 will total eclipse durations begin to increase when *Saros cycle 139* begins to bring eclipses of longer and longer durations. (See "The Saros" in next section.)

Thus, the total solar eclipse of 2009 gives us the longest duration of totality of the 21st century (6m39s). Since the duration varies along the path of totality, maximum duration will happen only for those near the central line at the point of greatest eclipse out in the Pacific Ocean. Nevertheless, even areas near the east China coast will still see total eclipse durations of nearly six minutes.

### THE SAROS

The 2009 July eclipse belongs to a series of now long eclipses that are members of an eclipse cycle called Saros 136 (Espenak 2007b). Eclipses occur in families. The Saros cycle is a period of about 6,585.3 days (18 years 11 days 8 hours). Two eclipses separated by one Saros cycle have similar geometry (similar duration, same time of year, etc.) although separated in longitude about one-third of Earth's rotation since the Saros cycle ends in approximately one-third of a day. The periodicity and recurrence of solar eclipses as governed by the Saros are useful for organizing eclipses into families. A typical Saros series lasts about 12 to 13 centuries and contains 70 or more eclipses. Eclipses in a given cycle typically start as partials and later become central with increasing and then decreasing durations, the longest durations occurring halfway through the period. Finally the cycle ends with partial solar eclipses more than one thousand years after the cycle first began.

Saros 136 brought us most of the long eclipses of the 20th century and will do so until late in the 21st century. Then eclipses of another cycle (Saros 139) will begin producing longer durations of totality. (The incredible 2186 eclipse of 7m29s duration belongs to this Saros.) The last long eclipse that brought more than six minutes of totality occurred 1991 June 11, the last occurring eclipse in Saros 136, and, in fact, the middle eclipse of Saros 136. Readers who witnessed totality from regions near Baja California Sur remember this spectacular event and have been patiently waiting eighteen years for the next eclipse in Saros 136!

After the 2009 July 22 eclipse, total eclipse maximum durations for Saros 136 will continue to decrease as the cycle progresses. The next eclipse in this series, for instance, occurs another eighteen years later (2027 August 2) with a maximum duration 16 seconds less than in 2009. Finally, the last total eclipse of this cycle (2496 May 13) will have a duration of 1m02s when it occurs on May 13, 2496. Saros 136 will then end with seven partial eclipses, the last in the year 2622, having produced 71 eclipses over a period of 1262.11 years since 1360.

### THE WEATHER

Unlike the "Great 1991 Baja California Sur Eclipse" that came with the promise of good weather, finding viewing locations with high probabilities of success is much more daunting for the long 2009 eclipse than most others in recent memory (Anderson 2007). Much of this total eclipse path occurs during midsummer in northern latitudes in regions of subtropical climate. Like Florida, weather in China during this time can be very uncertain. Here, average cloud cover usually varies between about 50-60% over most of the total eclipse path including the Pacific Ocean. (In India conditions are much worse with average cloud cover about 65-85%.) Nevertheless, some places have reasonable weather prospects, especially on or near the Shanghai coast.

Although cloudy summer weather and smog in eastern Asia can interfere with viewing this eclipse, China offers promising locations and the opportunity to visit this still mysterious land. Still, everyone should know that this eclipse comes during the height of summer when temperatures and humidity may be overbearing and op-

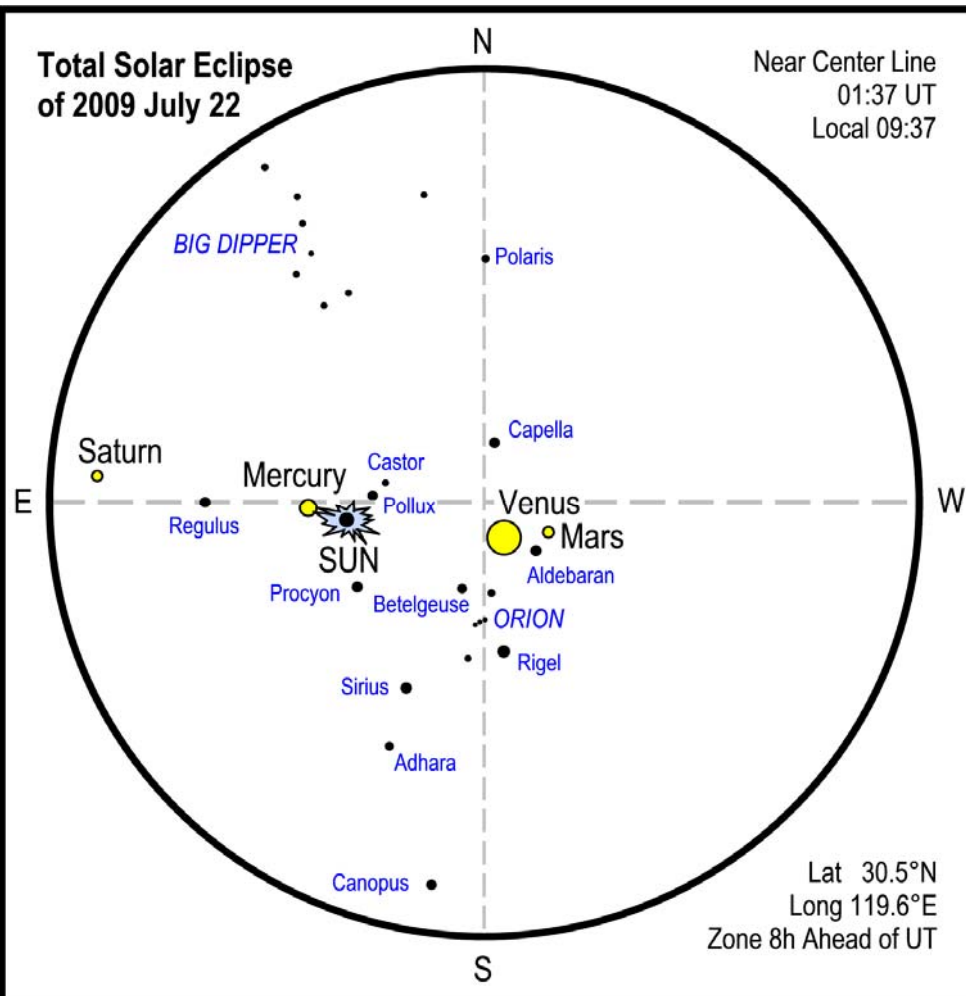


pressive. (Floridians, however, should know how to deal with this!) Visitors will need to take proper precautions to ward off energy-sapping heat and wet air.

My wife Marian and I hope to observe this long eclipse from eastern Asia. To increase the probability of observing the eclipse, we plan to view from near the east China coast about 125 miles (200 km) southwest of Shanghai in the Zhejiang Province where weather prospects are among the best possible along the total eclipse path. Here also the duration of totality still has an impressive length of nearly six minutes. Furthermore, the total eclipse occurs during midmorning before the day's heat builds and before summer storm clouds often form.

## THE ECLIPSE AND ECLIPSE SKY

In eastern China the eclipse duration remains impressively long, 5m36s at our intended observing location 20 miles (32 km) south of the center line.



**Fig. 2. Eclipse sky during totality for the 2009 July 22 eclipse.** View is from southwest of Shanghai in eastern China at about 9:37 a.m. local time. The Sun will be in the star studded winter sky near the western edge of Cancer. Venus, Mercury and Sirius should be easily visible since all will have negative stellar magnitudes. (Drawing by author).

Near Center Line  
01:37 UT  
Local 09:37

Partial phases of the eclipse will begin at approximately 8:21 a.m. local time. Totality will follow about 72 minutes later with mid-eclipse about 9:36 a.m. and the Sun a comfortable 54 degrees above the eastern horizon (Fig. 2). After totality, the partial phases will run their course and end before lunch about 10:58 in late morning. A morning eclipse is fortunate too since convective clouds often build later in the day.

The eclipse backdrop will be the bright northern winter sky, usually hidden from view by the Sun's glare during northern latitude summer months. Depending on sky brightness during totality, at least some bright winter stars should become visible along with a few bright planets. Brilliant *Venus* will shine nearly overhead (mag. -3.9) along with the brightest nighttime star, *Sirius*, in the south southeast (mag. -1.4). An extra eclipse treat will be *Mercury*, since this bright planet is rarely seen due to its proximity to the Sun. In fact, Mercury will be near greatest brilliancy (mag. -1.9) and just 9

degrees below (east) of the Sun during totality.

**Note:** The use of the word *magnitude* (abbrev. *mag.*) here refers to the *stellar magnitude scale*, an astronomical scale of brightness where algebraically decreasing numbers indicate brighter objects. (When applied to solar eclipses, "magnitude" refers to the fraction of the Sun's diameter obscured — the *eclipse magnitude*.)

## A Long Eclipse in an Exotic Land -conclusion

### THE WAIT IS NEARLY OVER


The wait for another long eclipse is now nearly over and 2009 eclipse tours are rapidly filling. Many eclipse enthusiasts and “virgin eclipse chasers,” anxious to experience the impressive memory of a total eclipse of the Sun, will journey to China, one of the world's most fascinating and breathtaking lands.

*“No more accessible and exciting eclipse journey will happen for many years together with the longest duration total eclipse of the century!”*

China is working hard to improve air quality and improve its infrastructure including roads and accommodations for the 2008 Olympics, an advantage for anyone touring China in 2009. A tour to China in 2009 for the “great eclipse” will not only help celebrate the *International Year of Astronomy 2009* but will also let you explore ancient and modern exotic China regardless of the eclipse. As I previously wrote (Cohen 2008), when planning your next perfect travel experience, use an eclipse as a focus for a trip that will become unforgettable and extraordinary for its own sake.

*“To witness a total eclipse of the Sun is a privilege that comes to but few people. Once seen, however, it is a phenomenon never to be forgotten.”*

– Isabel M. Lewis (1924)

If you would like to learn either more about this eclipse or more about our own exclusive tour to China for the 2009 eclipse, see <http://www.flycapers.com>. 

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**Dr. Howard L. Cohen** is an emeritus professor in the University of Florida’s Department of Astronomy and a founding member of the Alachua Astronomy Club, Inc.

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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 to 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. Please identify credit for photos and people in them. Mail submissions to:

c/o FirstLight Editor  
The Alachua Astronomy Club, Inc.  
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Gainesville, FL 32604-1744 USA

**By E-Mail;** Send e-mail with your attached files to: **FirstLight@floridastars.org**

## June Club Meeting

Tuesday, June 10 2008, 7:00 p.m. EST

**Speaker:** Dr. Eric Ford, Assistant Professor of Astronomy,  
University of Florida  
**Title:** *Searching for Extrasolar Planets: Care to Join the Hunt?*  
**Location:** Powell Hall, Florida Museum of Natural History  
Lucille T. Maloney Classroom,  
UF Campus, Gainesville, Florida



Dr. Eric Ford, Assistant Professor of Astronomy, University of Florida

**Preview:** During the past 15 years, astronomers have discovered over 200 planets orbiting stars other than the Sun. These discoveries have unveiled an unexpected diversity of planetary systems. While many professional astronomers are working hard to detect planets more similar to Earth, the detection of Jupiter-sized planets is within the grasp of amateur astronomers. Dr. Ford will provide an overview of what we've learned about extrasolar planets and describe how amateur astronomers are contributing to the field.

**About the Speaker:** Dr. Eric Ford is an assistant professor of Astronomy at the University of Florida. His research focuses on studying extrasolar planets and improving our understanding of planet formation. Dr. Ford received bachelor's degrees in Physics and Mathematics from the Massachusetts Institute of Technology in 1999 and his Ph.D. in Astrophysical Sciences from Princeton University in 2003. He continued his research on extrasolar planets as a Miller Fellow at the University of California Berkeley and as a Hubble Fellow at the Harvard-Smithsonian Center for Astrophysics before joining the faculty of the UF Astronomy department in Gainesville. You may read more at Dr. Ford's website.

**Note:** Dr. Ford is the key note speaker for the 2008 Starry Night Program at the Florida Museum of Natural History (Apr. 17), a yearly event sponsored by the University of Florida Student Government in collaboration with the Department of Astronomy and the Alachua Astronomy Club, Inc.

### Starry Night at the Florida Museum of Natural History a Success

I would like to thank and congratulate all the AAC members who brought and/or operated telescopes, answered questions, planned and coordinated activities, or helped in any other way for making Starry Night a resounding success. The UF Astronomy Department folks were well pleased, and the FLMNH folks were ecstatic. They reported an attendance of 551. I agree that things went extremely well.

We will be having a "Lessons Learned" debrief within the next couple of weeks that I will attend for AAC.. While your memories are still fresh from last night, please email me promptly with any suggestions for positive changes we can make. We want to make Starry Night 2009 an even bigger success.

Thanks again, and it is a privilege to serve you.

Bill Helms  
Alachua Astronomy Club  
President@FloridaStars.org



## Star Parties

Back In Time Ranch will be the location for the May 3 star party. Come out and enjoy superb skies less than an hour's drive from Gainesville. We encourage everyone to bring a potluck dish. This will be Scott McCartney's last star party with us so this will be a Rain or Shine event. Arrive as early as 5pm for set up. Dinner starts at 6:30pm.

Our "June" star party begins on Saturday, May 31 at the Loftus Family Ranch just north of Gainesville. We have also elected to have a rain-date for this session on June 7. As always, announcements concerning the forecast are sent out on the AAC-L listserv by 3pm on the day of each star party.

New moon in July falls on Independence Day weekend so we'll take the month off, then reconvene at Bob Jacob's on August 2.

## Western Australia

Heidi and I had a fantastic time visiting Western Australia. We were only able to explore a small fraction of the southwest, including the cities of Perth, Dunsborough, Margaret River, Albany and Kalgoorlie, among others. We spent considerably more time in the many fine parks, my favorite of which was Stirling Range. Heidi's favorite experience was traversing 170km of the Holland Track, off-road, of course.

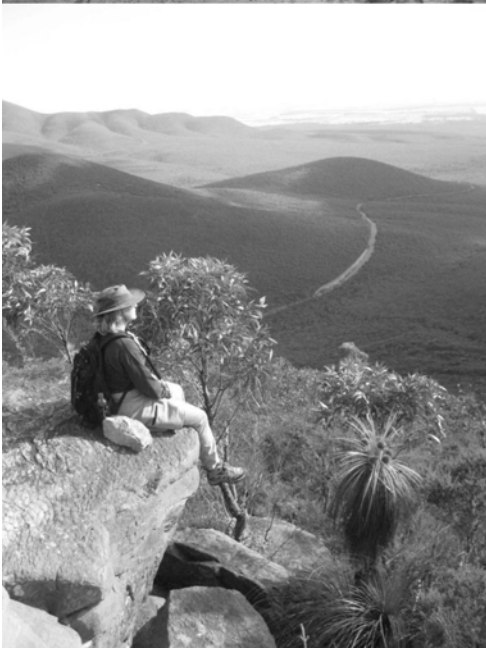
We spent several nights camped beneath pristine skies. We brought along an Orion StarBlast (pictured left on "tripod") but I think the Canon stabilizing binoculars performed just as well. The Large and Small Magellanic Clouds were available early each evening but I spent most of my observing time mesmerized by the dark nebulae of the Milky Way, particularly the Coalsack. I was nearly as impressed with the absence of airplanes.

We left a lot to explore, on the ground and in the sky, so we're already planning our next visit -- perhaps a drive from Perth to Broome and beyond.

**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.

*Picture collage - opposite page, left to right, top to bottom:*

Karri tree with Moon, Margaret River  
StarBlast on "bush pod", Contos camp  
Hiking Mt. Franklin, Mt. Franklin N.P.  
Biking on Rottnest Island  
Somewhere along the Holland Track  
Ferry on the Swan River; Perth Skyline  
View from Mt. Hassel, Stirling Range N.P.  
Karri forest, Leeuwin-Naturaliste N.P.  
Leeuwin Lighthouse, Cape Leeuwin



1. (TC) Presence of a Quorum: a. 6 Members present
2. (BH) Call to order: a. The meeting was called to order at 6:48 PM
3. Roll Call: a. TC Board members present: Bill Helms (BH), David Liles (DL), Howard Cohen (HC), Larry Friedberg (LF), Tandy Carter (TC), Bob O'Connell (BO'C); b. TC Chair persons present; i. None  
c. TC Club members attending: Marian Cohen (MC), Thomas Olmsted (TO)
4. Reading and approval of the minutes of last meeting: a. Corrections; TO pointed out some misspellings  
b. Acceptance; i. DL moved and LF seconded to accept the minutes as corrected; ii. The motion passed on a voice vote; iii. The minutes were accepted
5. Officer, board and standing committee reports: a. LF distributed the Treasurer's report ;  
i. Checking: Previous Balance \$1,182.24; Total inflows \$338.00; Total outflows -\$514.22;  
Closing Balance \$1,006.02
6. ii. Savings: Previous Balance \$5,075.78; Total inflows \$4.31; Total outflows \$0.00;  
Closing Balance \$5,080.09  
iii. Members: 1. 35
- b. TC reported on the status of club Telescopes: i. PST – Scott McCartney ; ii. Collimating Tools – Michael Toomey; iii. Banner – Tandy Carter (C)
- c. BH in lieu of MT reported on Star Parties : i. Star parties are as listed; ii. TC in lieu of MT reported on the preparations for the Oak Hall Elementary School outreach program.
- d. BH in lieu of SM reported on the speaker schedule; i. March April and May confirmed
- e. BO'C reported on LOG activities; i. BO'C announced that the LOG would not be measuring the height of lunar mountains; ii. BO'C reported on the lunar eclipse program at Santa Fe Community College
6. Special committee reports; a. PM Report on plaque and murals at Royal Park Stadium 16 Theater; i. None  
b. LF reported on the dues structure for 2009; i. LF passed out a report showing where the Alachua Astronomy Club's dues stood in relation to other Florida astronomy clubs
7. Special orders; a. None
8. Old Business; a. BH reported on posting club policies to the club website; i. Policies through 2001 have been posted; ii. OPEN; b. LF reported on the club tax exempt status; i. There has been no change; ii. OPEN  
c. BO'C reported on the disposition of the NEFAS telescopes; i. The final telescopes had been delivered to Duval Elementary School; ii. CLOSED  
d. BO'C reported on the outreach program at the Duval Elementary School; i. BO'C reported that the outreach program went well; ii. CLOSED  
e. HC reported on the AAC's role in the 2009 IYA; i. BH reported on his meeting with the Florida Museum of Natural History; ii. HC volunteered to be the liaison between the AAC and the UFAD; iii. OPEN  
f. BO'C reported on distributing copies of FirstLight at the AAC meetings; i. BO'C reported that it would be financially prohibitive to pass out the entire issue to prospective members; ii. BO'C mentioned that passing out the front page and a club brochure would be possible; iii. OPEN
9. General orders; a. None
10. New Business: a. BO'C reported on the UFAD donation to the AAC of old issues of the Journal of the Association of Lunar and Planetary Observers; i. BO'C reported that the issues were in hand; ii. BO'C transferred the issues to the club librarian; iii. CLOSED  
b. HC requested a discussion of advertising club meetings; i. BH suggested that the program chair should be in charge of club publicity; ii. OPEN  
c. BH requested a discussion of Starry Night; i. BH reported on a meeting he attended with the FLMNH and UFAD  
ii. There was a general discussion of signage for the club telescopes; iii. BH reported that the museum would provide telescope security so club members could attend the lecture; iv. OPEN  
d. TC requested a discussion of e-mail addresses on the club website; i. TC requested that he be assigned telescopes and outreach with CB; ii. CLOSED
11. Good of the Order: a. BH questioned the amount of SPAM other club officers were receiving; i. There was a discussion about the methods taken to prevent harvesters from finding e-mail addresses; ii. CLOSED
12. Announcements: a. HC announced that the club e-mail listserv AAC-L was down significantly in membership  
b. HC announced that there would be an Art in Public Places Trust meeting to discuss the solar walk; i. BH as signed HC to be the ambassador to the APPT for the solar walk
13. BH Time and location of next meeting: a. The next meeting will be at 6:30 PM on March 4, 2008 at Grill Masters
14. BH Adjournment: a. TC moved and BO'C seconded to adjourn the meeting  
b. The motion passed on a voice vote; c. The meeting was adjourned at 8:54 PM

Respectfully submitted,  
Tandy W Carter Jr.,  
AAC Secretary

## Executive Council Meeting Minutes

March 4, 2008, Grill Masters Restaurant

1. (TC) Presence of a Quorum: a. 6 Members present; b. Quorum is present
2. (BH) Call to order: a. The meeting was called to order at 6:50 PM
3. Roll Call: a. TC Board members present: i. Bill Helms (BH), David Liles (DL), Howard Cohen (HC), Tandy Carter (TC), Pamela Mydock (PM), Bob O'Connell (BO'C); b. TC Chair persons present: i. Charles Broward (CB), Michael Toomey (MT)  
c. TC Club members attending: i. Thomas Olmsted (TO), Marian Cohen (MC)
4. Reading and approval of the minutes of last meeting: a. Corrections: i. None; b. Acceptance: i. BO'C moved and DL seconded to accept the minutes as reported; ii. The motion passed on a voice vote; iii. The minutes were accepted  
c. BH expects that all corrections to the minutes to the secretary within seven (7) days of receipt of the draft minutes from the secretary
5. Officer, board and standing committee reports: a. BH in lieu of LF distributed the Treasurer's report ;  
Checking ACCT -- Feb 2008 ; BALANCE 1/31/2008; \$1,006.02; TOTAL INFLOWS: \$251.00;  
TOTAL OUTFLOWS: -\$406.35; NET TOTAL: -\$155.35; BALANCE 2/29/2008: \$850.67  
Savings ACCT -- Feb 2008: BALANCE 1/31/2008: \$5,080.09; TOTAL INFLOWS: \$2.02  
TOTAL OUTFLOWS: \$0.00; NET TOTAL: \$2.02; BALANCE 2/29/2008: \$5,082.11  
b. TC reported on the status of club Equipment: i. SkyQuest XT-8 – Larry Friedberg (C)  
1. with Kami Monticello; ii. PST – Scott McCartney; 1. with Tim Malles; iii. Glatter Laser Collimating Tools – Michael Toomey (C); 1. with Tim Malles; iv. Banner – Tandy Carter (C); 1. with Tim Malles  
c. MT reported on Star Parties: i. TC will be the event coordinator of the April club star party at Hickory Ranch  
ii. All other star parties are as posted on the AAC website  
d. SM reported on the speaker schedule: i. There was no report on the speaker schedule; ii. HC reported that the speaker schedule page was not being updated regularly; iii. BH will take an action to correct the problem  
e. BO'C reported on LOG activities: i. The LOG will meet this month at Rich Russin's house to study different Lunar features;  
ii. Update on AAC joining Santa Fe Community College (SFCC) for the February 20th Lunar Eclipse Outreach;  
1. BO'C reported that there were a few problems at the event but the public was unaware of them  
2. there were 10 telescopes supplied by the AAC; 3. There were 250 – 500 people that stopped and looked through the AAC telescopes  
f. TC reported on outreach activities: i. TC reported on the Oak Hall Elementary School outreach function  
1. there will be approximately 100 3rd and 4th graders; 2. It will be March 13, 2008 at 6:30 P.M.
6. Special committee reports: a. PM reported that there was nothing new with the plaque and murals at the Royal Park Stadium 16 Theater; i. OPEN; b. LF there was no report on dues structures; i. OPEN
7. Special orders: a. None
8. Old Business: a. BH reported that there had been no progress in posting club policies to the club website; i. OPEN  
b. LF There was no report on the club's tax exempt status; i. OPEN; c. HC reported that the role of the AAC in the 2009 IYA was in work; i. BO'C will investigate possible lunar-related ideas for the 2009 IYA and report back to the board with suggestions; ii. BH suggested IYA be tied in with Starry Night 2009; iii. OPEN  
d. BO'C reported on distributing copies of FirstLight at AAC meetings; i. BO'C, prior to the general meetings as appropriate, talk with new visitors and new members and hand out a copy of the first page of the current FirstLight with address; . OPEN;  
e. HC reported on advertising club meetings; i. BH to talk to SM; ii. OPEN  
f. BH reported on Starry Night: i. The last meeting was February 21, 2008; ii. The speaker will be Dr Brownlee  
1. a researcher with the comet dust return mission; iii. Starry Night will be April 17, 2008; iv. OPEN
9. General orders: a. None
10. New Business: a. TC reported on outreach; i. There are sufficient number of people to try to reinvigorate both the school liaison and outreach programs; ii. HC reported that all links to the outreach page have been reconnected; iii. TC reported that there were some changes to club policy that are needed; iv. CB reported that a club member requested an outreach program for a commercial organization; 1. it was decided to turn down the request until it was properly requested; v. CLOSED; b. TC requested a discussion of the structure of the minutes; i. TC reported that he had received suggestions that had been implemented; ii. TC reported that he had received contradictory suggestions iii. TC reported that the minutes in the FirstLight were difficult to read; iv. TC requested any changes to the minutes; 1. minor changes would be accepted immediately; 2. major changes would be accepted through email; v. BH suggested that only policy changes be reported in the FirstLight with the URL to the entire minutes; vi. OPEN; c. TC requested a discussion of selling astronomy related bandanas; i. MC reported that it was not the policy of the club just to sell items simply for fund raising purposes; ii. CLOSED  
d. BH reported that SFCC has requested an AAC member to be a member of the planetarium steering committee  
i. BH volunteered to be the AAC representative; ii. CLOSED; e. TO questioned when there would be a report on the occultation of iota Cnc by 711 Xanthe; i. HC noted that there had been several articles about the occultation in the FirstLight; ii. OPEN
11. Good of the Order: a. HC demonstrated the posters he uses at star parties for to show people what to expect through the eye-piece and to convey information about the object to be viewed ; i. CLOSED
12. Announcements: a. None
13. BH Time and location of next meeting: a. BH gave the list of requirements for a different restaurant; i. The requirements are an adequate size and space, privacy, acceptable menu and price, and willing to honor reservations for the monthly meeting  
b. Grill Masters; i. 6:30 P.M.; ii. Tuesday April 1, 2008
14. BH Adjournment: a. TC moved and BO'C seconded to adjourn the meeting; b. The motion passed on a voice vote  
c. The meeting was adjourned at 8:51 P. M.

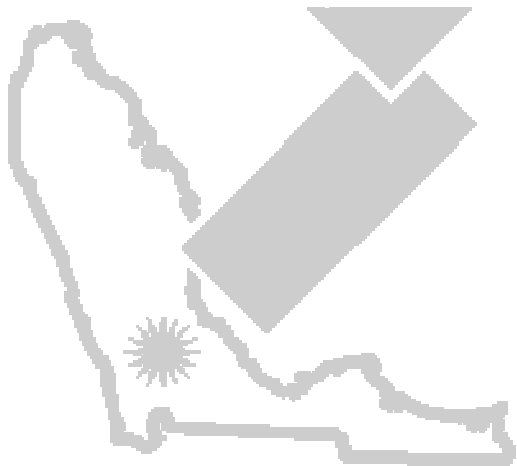
Respectfully submitted  
Tandy W Carter Jr.  
AAC Secretary

# FirstLight

May / June 2008

Photo Credit: NASA, ESA,  
Hubble Heritage;

Linking spiral arms, two large colliding galaxies are featured in this Hubble Space Telescope view, part of a series of cosmic snapshots released to celebrate the Hubble's 18th anniversary. Recorded in astronomer Halton Arp's Atlas of Peculiar Galaxies as Arp 272, the pair is otherwise known as NGC 6050 and IC 1179. They lie some 450 million light-years away in the Hercules Galaxy Cluster. At that estimated distance, the picture spans over 150 thousand light-years. Although this scenario does look peculiar, galaxy collisions and their eventual mergers are now understood to be common, with Arp 272 representing a stage in this inevitable process. In fact, the nearby large spiral Andromeda Galaxy is known to be approaching our own galaxy and Arp 272 may offer a glimpse of the far future collision between Andromeda and the Milky Way.



**FirstLight**  
Newsletter of the Alachua Astronomy Club, Inc.  
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