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

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Member
Astronomical
League

Member
International
Dark-Sky Association

FirstLight

Newsletter of the Alachua Astronomy Club

It's Going to Be Out of This World!

Don't miss Starry Night at the Florida Museum of Natural History on September 25th, 5:00pm to 10:00pm. Free for All Ages.

There will be lots of indoor/outdoor presentations and activities, including door prizes and giveaways. Meet Astronaut Captain Winston Scott, build a Telescope or just view the skies through one of the AAC scopes that will be set up from late afternoon (Sun viewing) to late evening (Moon, Jupiter and more). The event will feature Space aged arts and crafts, a Portable Planetarium, and 3-D Astro Wall. Come and picnic under the stars and enjoy an art exhibit by astronomical-artist, Tim Malles.

Go online to download a poster and for more details: www.floridastars.org/IYA2009.html The event is listed near the bottom of the page with links to other informative sites.

Starry Night is the AAC's International Year of Astronomy 2009 event and part of a global effort to help the citizens of the world rediscover their place in the Universe through the day and night-time sky, and thereby engage a personal sense of wonder and discovery.

Remember to thank our generous sponsors for making this event possible:
University of Florida, Florida Museum of Natural History, UF Department of Astronomy, Florida Space Grant Consortium, Alachua Astronomy Club, GE Foundation, Santa Fe College, SwampSat and Gainesville Chamber Orchestra.

Just One Thing

By: Bill Helms

The President's Corner

What is the one thing astronomy is about? If you had to describe astronomy with one sentence, what would it be? I would challenge you to attempt to do this before reading on. My sentence is shown below.

"Astronomy is the science of collecting, analyzing, and interpreting photons, their wavelength, intensity, and direction of travel, and how those three characteristics change with time, to yield an understanding of the world beyond Earth." That's it! That's all there is. Photons are all that astronomers have to work with. Astronomy is an observational science. We are not able to run laboratory experiments with interstellar dust, planetary atmospheres, or the hearts of stars. (We do have meteorites, Moon rocks, and the comet grains and solar wind particles returned by the Stardust and Genesis missions.) We must depend on the information carried to us by photons, little wavicles of electromagnetic energy. They are emitted and absorbed in discrete amounts, like particles, yet they travel through space like a wave. That's why I like to call them wavicles. Photons are NOT both particles and waves, as some like to say. They are unique, unlike anything we experience in our everyday lives. They have both particle and wave characteristics. Photons are wavicles.

Think of them as infinitely small points of energy, traveling in straight lines through a vacuum at 186,000 miles (or about a billion feet) per second. We often see them represented as a wavy line, an "S" shaped curve lying on its side, traveling through space. Photons do not travel in wavy lines. They travel in straight lines (unless they encounter matter of changing density, and then the straight line bends toward the denser medium). The wavy line is an attempt to depict the changing electric field of a moving photon. It turns out that changing electric fields induce magnetic fields, and changing magnetic fields induce electric fields. So we can think of the photon as traveling through space with the changing electric field constantly regenerating the magnetic field, and the changing magnetic field doing the same for the electric field.

What can astronomers learn from photons? To begin with, imagine a member of our Lunar Observing Group out under the sky, studying the Moon. The direction of the photons' arrival tells us where the Moon is located in the sky (actually where it was 1.3 seconds ago). The direction of the photons and their variation in intensity (number arriving per amount of time) allow us to discern the various features on the face of the Moon. The bright highlands reflect more of the Sun's incident light to us (more photons per second), and the dark mare reflect less, revealing the familiar pattern of the "man in the Moon," craters, mountains, rills, etc. The direction of the photons' arrival shows us Mare Crisium on the Moon's northeast quadrant, and Mare Humorum on the southwest quadrant.

As the Earth rotates around the Sun in its yearly path, some stars appear to move against the distant starry background. Knowing the Earth's distance from the Sun (93 million miles), and doing a little trigonometry tells us that a star that appears to shift its position by one arcsecond (1/3600 of a degree) is at a distance of about 19 trillion miles, or 3.26 light years. Astronomers have given this distance a name, the parsec (parallax of 1 arcsecond), and it is the preferred distance measurement for astrophysicists. So, the angle from which the photons of nearby stars arrive can tell us something of their distance. The Hipparcos satellite has measured the parallax for thousands of stars using this method.

Once we have measured the distance to certain nearby stars, we can correct their apparent (to us) brightness to their intrinsic or actual brightness by correcting for distance. We know that, if a star is twice as far away, it will appear one fourth as bright. Knowing this, we can measure the distance to more distant stars, stars that are too far away to use parallax, by comparing their brightness to stars that are somehow similar. Henrietta Levitt discovered that there was a direct relationship between the intrinsic

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Alachua Astronomy Club, Inc.
2009 Officers

President: Bill Helms
Phone: 352-542-8227
Email: president@floridastars.org

Acting Vice-President: Rich Russin
Phone: 352-333-3012
Email: vicepresident@floridastars.org

Treasurer: Larry Friedberg
Phone: 954-290-6872
Email: treasurer@floridastars.org

Secretary: Tandy Carter
Phone: 386-719-9706
Email: sec@floridastars.org

Board of Directors
Howard Cohen
Pamela Mydock
Fred Palgon

Chairs and Committees:
Star Parties: Marianne Gamble
Phone: 352-379-0653
Thomas Hettinger - Assist. Coordinator
Phone: 407-252-0567
Sandon Flowers - Assist. Coordinator
Email: starparty@floridastars.org

Programs/Promotions: Tim Malles
Phone: 352-371-7192
Rich Russin - Assistant Chair
Email: programs@floridastars.org

School Liaison & Outreach:
Tandy Carter
Email: outreach@floridastars.org

ATM SIG: Chuck Broward
Phone: 352-373-7527
Email: ATM@floridastars.org

Astronomical League Correspondent:
Charles S. Broward
Phone: 352-373-7527

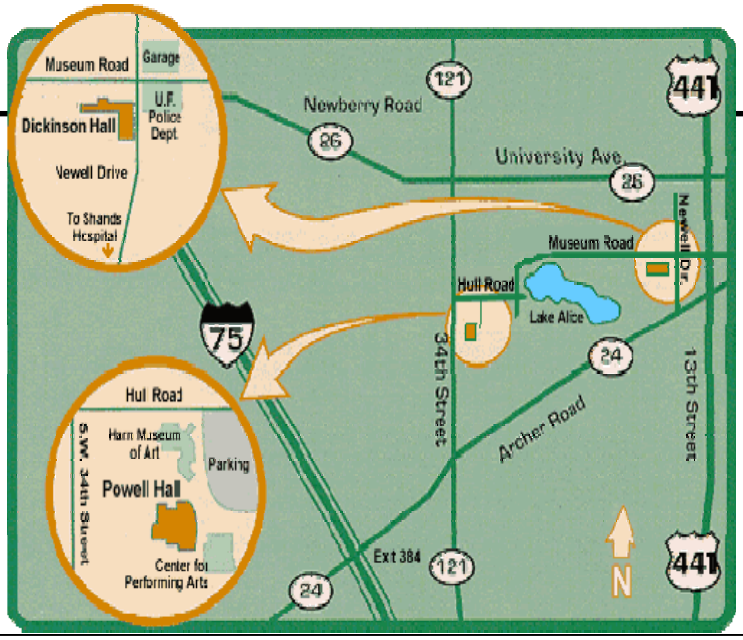
Telescope Custodian: Tandy Carter
Email: telescopes@floridastars.org

Lunar Observing/SIG: Bob O'Connell
Phone: 352-475-1586
Email: lunar@floridastars.org

Webmasters: Howard L. Cohen
Sandon Flowers, Assistant Webmaster
Email: webmaster@floridastars.org

FirstLight Editor: Jackie Owens
Phone: 386-462-7366
Email: firstlight@floridastars.org

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 is no monthly meeting in December.



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
The Alachua Astronomy Club, Inc.
P.O. Box 141591
Gainesville, FL 32614-1591 USA

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

FirstLight is the bi-monthly publication of the Alachua Astronomy Club, Inc., Gainesville, Florida.

Special Thanks For Successful Lunar Festival

Hi everyone!

I absolutely had to thank each and every one of you again for the wonderful job you did to help make this year's first (hopefully annual) Lunar Festival one of the most successful events the Kika Silva Pla Planetarium has had to date!!! We estimated a crowd of 600+ and that was even with the afternoon and evening rain storms! That was the only thing we couldn't control which was very unfortunate because the AAC and Dr. Sally Hoffman were ready to go with the telescopes that would have provided our guests with an opportunity to view the moon up close and learn some Lunar Geography and the location of Apollo landing sites. Aside from that though, everything was great and we received such amazing publicity both before and after the event!

Crowd exiting the planetarium after Bob O'Connell's lecture. Photo Credit: Howard Eskildsen

Thank you, thank you, thank you to Marilyn Tubb and the Department of Natural Sciences for sponsoring this wonderful event!!! Our guests had such a wonderful time and greatly appreciated all of the goodies you helped to provide to them including the Moon Bounce, Moon Pies, Bomb Pops, Crater Station, Space Arts n' Crafts. A huge thanks goes out to Sture Edvardsson for running EVERYTHING that took place inside of the planetarium! Also, a special thanks to Bob Lightner for helping to set-up, and for bringing his model rocket display, and for donating 100 NASA patches to hand out to the kids, and for recruiting Dr. Jay Garlitz and his HAM radio team members to set-up a table!!! Wow! That was a first and I know our guests were very interested in that! Big thank you to Dr. Jay Garlitz from and his friends for coming out!

And a Thank You to the Alachua Astronomy Club for everything as well!! What a wonderful organization! I heard nothing but great comments about everything to the talks given by Bob O'Connell, Howard Eskildsen and Bill Helms, to the solar telescope viewings, to the arts 'n crafts (which could not have been a success without JoAnn Stevener!) to the Space Art provided by Tim! (by the way, Tim, the finished artwork from your "live" painting was beautiful!) Thank you so to Larry Friedberg and Tandy Carter for all of your hard work! What a wonderful addition to have AstroHawk (Bob Duvall) there with their Lunar Software too!

Thanks to all of the volunteers from SFC and UF including Evan Tilton, Stefan O'Dougherty, Chris Armada, Jeramiah Hocutt, Will Silver, Karen Pecoraro, Richard Ruth!!! Without you guys, I don't know what we would have done!

And last but certainly far from least, Thank You to Julie Garrett, Delia Carr, Cheryl Farrell, Steve Yongue, Daniel Barker, Donna Sparks, Peter Anschultz, David Diefendorf, and John Coleman for helping me with all of the details! I
am so proud and honored to be a part of Santa Fe College which has such a wonderful and helpful staff and I could not have done it without them! Seriously, thank you all for you help with everything!

Ha ha, I feel like I just won an Emmy and I'm giving my acceptance speech with all these 'thank you's'... I hope I
didn't forget anyone! But this really was a very special event for me for several reasons and I can't thank you enough
for all of your help and support with everything! I am so grateful to you all and happy with how everything turned out! I hope to work with you all again in the future some time!

Kristin Fiaccato
Planetarium Specialist, Kika Silva Pla Planetarium
Santa Fe College www.sfcollege.edu/planetarium

Bob Duvall's Display at the Lunar Festival.
Photo Credit: Howard Eskildsen

Bill Helms and Solar Observers

Kika Silva Pla Planetarium Lunar Fest A Resounding Success

On August 2, 2009, members of the Alachua Astronomy Club helped make the Lunar Fest at the Kika Silva Pla Planetarium a resounding success. Kristin Fiaccato, Planetarium Specialist, estimated that over 600 people attended the event, which was inspired by the 40th anniversary of the first Apollo landing.

Larry Friedberg and Tandy Carter manned the AAC table and helped with set up as did several other club members. Bob Lightner brought a model rocket display and donated 100 NASA patches for distribution. Tim Malles produced a "live" painting and completed a lovely work of space art during the course of the day.

A PST was provided for solar viewing for as long as the clouds permitted, and JoAnn Stevener led Arts N' Crafts. Bob O'Connell, Howard Eskildsen, and Bill Helms gave presentations about the Apollo program and future lunar exploration. Bob Duvall had a display featuring his lunar computer programs. I believe other members were present as well, but I did not catch all the names. Rain dampened the evening and prevented direct lunar observing, but failed to dampen the spirits of those in attendance.

Howard Eskildsen

Tim Malles at the easel

Photos by Howard Eskildsen

Kristin Fiaccato, Planetarium Specialist, at the registration

Hideaway: Sunset at the North Pole — Howard L. Cohen

A picture "too beautiful not to share," supposedly taken at the North Pole, shows a large crescent moon hovering above a much smaller Sun. This breathtaking image is circulating the Internet. Is it real many ask, or an outstanding fake?

Urban legends never die or so it would seem. A remarkably beautiful and amazing picture has been circulating on the Internet for several years usually via e-mails and postings on web sites (Figure 1)

Figure 1. "Hideaway." A stunning picture purportedly taken of sunset at the North Pole with the crescent moon and setting Sun. This image has circulated on the Internet since at least 2006. See text for source.

This striking image often carries a caption containing words like:

> "A scene you will probably never get to see in person. This is the sunset at the North Pole with the moon at its closest point, so take a moment and enjoy God at work at the North Pole. An amazing photo and not one easily duplicated."

Sometimes additional words in the caption contain a request like this:

> "You may want to pass it on to others so they can enjoy it. The Chinese have a saying 'When someone shares with you something of value, you have an obligation to share it with others!' "

Many people do share this image and the chain goes on and on. I recently received several e-mails with this picture and so this article results.

Most who see this picture probably accept this beautiful image as an amazing photograph. Some won-

der whether real or a fake but few bother to critically assess this image. Thus, they just pass it on, presumably as a real, extraordinary photograph.

Although this image is certainly a picture "too beautiful not to share," this surreal sight definitely shows a scene not duplicated in nature.

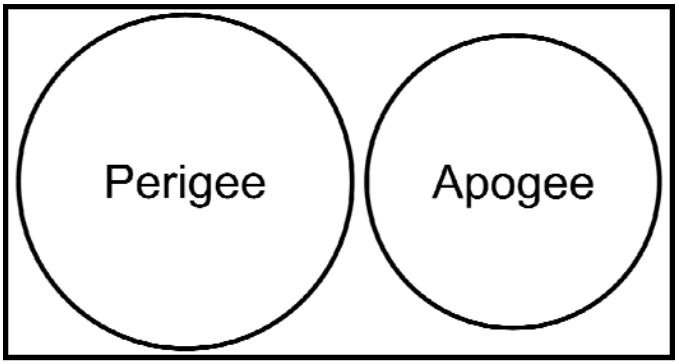


Figure 2. The perigee moon compared with the apogee moon. The variation in the apparent size of the Moon when closest and farthest from Earth is only about seven percent. The Sun's variation is but three percent.

First, the Sun and Moon always appear nearly the same size in our sky whatever your location on Earth even when the Moon is closest to our planet. The Moon increases in apparent size only about 1.14 times between nearest and farthest distances from Earth; the Sun's variation is even smaller, only 1.03 times. See Figure 2. Actually, the near equality of the Sun and Moon's apparent sizes makes possible the grand phenomenon of a total eclipse of the Sun!

Yes, the Sun and Moon often appear larger than "normal" when seen near the horizon. This is a phenomenon called the "moon illusion" and is an optical illusion of the mind. Is the Moon's enlargement in this image a consequence of this illusion? Not so for two reasons. First, the Sun should appear even larger than the Moon due to this illusion since the Sun's image is closer to the horizon than the Moon. Yet, in this image, the Sun appears much smaller than the Moon. Second, photographs of the Moon or Sun, when either high or low, should show no appreciable change in apparent size despite their elevation above the horizon. Why? Because this is an illusion of the mind and not photography.

Also, sunset does not happen at the poles as it does elsewhere on Earth. Sunset would take many days as the Sun circles the horizon gradually getting lower as the fall equinox date approaches. Here the Sun is still substantially above the Arctic horizon with sunset many days away. In addition, a crescent moon would not appear above the Sun's position at the poles; the crescent moon would be off to the side of the Sun due to the angles the paths of the Sun (*ecliptic*) and Moon on the sky make with each other.

Furthermore, if the crescent Moon was this close to the Sun in the sky, the Moon would be very difficult, probably impossible to see due to glare from the Sun and the brightness of the still day sky. And why is the reflection of the Sun on the water brighter than the Sun on the sky? (Notice the Moon's reflection is dimmer than the Moon in the sky.)

Close inspection of the image also shows several faint stars. This is not likely with the still bright sky background.

Figure 3. NOAA web cam view of the North Pole. Photo taken 2009 April 29, an unusually clear day. Note the absence of high ice ridges and the overexposed image of the Sun. See www.arctic.noaa.gov.

This picture shows a large expanse of liquid water at the North Pole. This might be possible after summer (and global warming?) but the ice ridges seem too high for the North Pole. Also the image looks too slick or crisp and possibly lacks real sunset hues and brightness. In fact, unlike the image of the Moon, Sun or landscape, a magnified image shows no pixilation of the background. Exceptionally clear skies at the pole as this picture depicts would be uncommon, especially occurring when the Sun and Moon are in this "unusual" configuration. Figure 3 shows an NOAA web cam image of the North Pole take 2009 April 29 on an exceptionally clear day. Notice the overexposed image of the Sun compared with the properly exposed foreground.

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So, the caption stating, "A scene you will probably never get to see" is essentially correct as you will never see this at the North Pole or elsewhere from Earth (at least not from our Earth)!

And the statement, "An amazing photo and not one easily duplicated" is wrong. One can easily duplicate this image using computer software if you have the talent for it!

In fact, this image (titled "Hideaway") was created by a young, twenty-six year old art student in Hamburg, Germany, Inga Nielson (Fig. 4), who is also studying astro and geophysics. Nielson uses a software program, *Terragan* (www.planetside.co.uk), a landscape or scenery generator for Windows and the Mac. An additional hobby is also creative writing and she composes poems, short stories, novels and songs. For example, see a small selection of her science fiction, mystery, horror and fantasy short stories, including a few poems at www.gatetonowhere.de/index.php?link=stories (only available in German).

Figure 4. Inga Nielson. German artist and student who created the fantasy view, "Hideaway," using specialized landscape software. (Photo from artist's web site.)

Nielsen has a home page, "Gate To Nowhere" at www.gatetonowhere.de where you can see this image (www.gatetonowhere.de/gallery/details.php?image_id=63) and many other outstandingly beautiful and stunning, fanciful creations produced with *Terragan*, some also postworked with *Photoshop*. For example, Figure 5 shows her dazzling creation, "Eclipse." A link to Nielsen's home page is on the AAC's "Space Art" page at www.floridastars.org/spaceart.html. However, note that her web site is in German. (Click on the UK icon to bring up an English version of some pages.)

Nielsen states she paints landscapes for portions of the scene or for the entire landscapes with a graphics tablet while some are painted entirely. Additionally, Nielsen writes that she uses matte painting to create scenes that come to her mind. Images on her web pages are available only for private, non-commercial purposes free of charge.

Figure 5. Eclipse. Another imaginative and beautiful fantasy scene by artist Inga Nielsen. Her website contains dozens of such surrealistic, stunning creations.

And, are you sure you have never seen her creation, "Hideaway," before? In fact, "The Astronomy Picture of the Day" web site (APOD) featured this image 2006 June 2 (antwrp.gsfc.nasa.gov/apod/ap060620.html)!

So, this "photo" circulating on the Internet is a "hoax" in the sense that it shows a scene that cannot exist anywhere on Earth and misleads the viewer to think this is a real scene of the sky. Apparently someone deleted the artist's name, titled the picture "Sunset at the North Pole" and circulated the image as a real photo. Nielson, herself, wonders how "anyone can think that this is a photo of a place that is earthly!"

Still, her picture is breathtaking. Rather, than critically judging this picture, we should perhaps continue to share it with others. Still, let people know it is a fictional, artistic creation by a young, talented and imaginative young women and not a real photograph. ¤

Howard L. Cohen *is an emeritus professor in the University of Florida's Department of Astronomy, a founding member of the Alachua Astronomy Club, Inc., and a current member the club's executive board.*

September Club Meeting

Bill Helms, President AAC

Tuesday, September 8, 2009, 7:00 p.m. ET

Speakers: **Bill Helms, President, Alachua Astronomy Club**

Title: *How You Can Know, Absolutely and Positively, Whether We Landed On The Moon, No Matter What NASA Says*

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

Preview: The speaker will present evidence regarding the Apollo missions from sources other than NASA that will allow the audience to come to their own conclusions regarding the truth or falsity of NASA's claim to have landed twelve men on the Moon in 1969–1972. The program will end with a scientific hypothesis which each audience member can test for themselves.

About the Speaker: Bill Helms is the current President of the Alachua Astronomy Club, Inc., and has served the AAC, in outstanding capacity, during his previous three years holding the office.

Bill is also past Programs Coordinator of the AAC. He has a Bachelor's degree in Physics and a Master's degree in Management from Florida State University. Bill retired to the dark skies of North Florida after a 35-year career with NASA at the Kennedy Space Center (KSC), where he was a Firing Room launch console operator for both the Apollo lunar landing missions and the early Space Shuttle missions. While at NASA, Bill designed launch complex instrumentation for the Space Shuttle, and designed the Hazardous Gas Detection System used at the launch complex for over 20 years. The instrumentation he designed was credited with saving five shuttle missions from launch with potentially catastrophic hydrogen leakage. Bill established and managed KSC Instrumentation Development Labs for 20 years. He has been awarded two NASA Exceptional Service Medals.

Bill has been an amateur astronomer for 36 years. In that time, he has earned several Astronomical League Observing Club Awards: ***Messier*** - observed the complete Messier Catalog of objects; ***Binocular Messier*** - observed 50, or more, Messier Catalog objects using binoculars; and ***Lunar*** - observed 100 features of the moon by eye, binocular and telescope. Multifaceted and multitalented, Bill is also a percussionist in the Gainesville Community Band.

This is Bill's fourth presentation to the Alachua Astronomy Club; he has previously given talks on purchasing a telescope in November 2005, reviewed lunar atlases, books, and maps in February 2006, and building his Suwannee Skies Observatory September 2007.

International Year of Astronomy September Lecture

5:00pm, Friday, September 25, 2009 at the Florida Museum of Natural History (Starry Night)

The UF Department of Astronomy invites the University of Florida and the Gainesville communities to celebrate the International Year of Astronomy. September's lecture series features Astronaut Captain Winston Scott with an inside look at what it takes to visit space (shown in inset photo).

Check the website www.astro.ufl.edu/IYA/lectures.html for more details.

The Galileoscope: The Good, the Bad and the Ugly

Howard L. Cohen

The Galileoscope is purportedly a high-quality, low-cost refracting telescope kit developed for the International Year of Astronomy 2009. Many will be given away to children and adults to learn how telescopes work and operate, and to repeat some of the celestial observations that Galileo made 400 years ago. How well does the Galileoscope work is the subject of a more detailed, on-line review

The Galileoscope™ is advertised as a high-quality, low-cost refracting telescope kit developed for the International Year of Astronomy 2009. Merrit Models and a group of astronomers, optical engineers and science educators developed this kit (www.galileoscope.org) in conjunction with the International Year of Astronomy 2009. The "Galileoscope" is also a Cornerstone Project of the International Astronomical Union (IAU), the worldwide coordinator of the IYA2009 celebration (www.astronomy2009.org).

Figure. 1. The Galileoscope. This low-cost kit enables the user to build a 50-mm refractor telescope. The length of the optical tube including dew cap is about 22 inches.

This kit allows one to assemble a 50-mm (2-inch) diameter, 25- to 50-power achromatic refractor (Figure 1). Since the IYA2009 marks the 400th anniversary of the first use of an astronomical telescope by Galileo, the manufacturer claims "You can see the celestial wonders that Galileo Galilei first glimpsed 400 years ago that still delight stargazers today."

Promotions state, "The Galileoscope is more than a telescope—it's a strategic initiative to improve math, science and technology literacy worldwide."

The Galileoscope web site also states that not everyone has a telescope, especially in less developed parts of the world. Therefore, to enable more people in more places to personally experience the wonders of the universe, they claim to have developed a remarkably inexpensive, very-high-quality, easy-to-use refractor. With this new instrument, called the Galileoscope, the developers of this telescope say children and adults are supposed to learn how telescopes work and repeat for themselves the spectacular observations made by Galileo beginning in 1609.

COST

As of August 10, 2009, the kit was priced at U.S. $20 each plus shipping for 1 to 99 units, or U.S. $15 each plus shipping for 100 units or more. This price is obviously much less than most other commercially available telescopes. Is it worth the price? Is this telescope an easy-to-use refractor? I ordered four of these telescopes in March 2009 for evaluation. (The original price was only $15 each plus about $5 for shipping.)

REVIEW

The Florida Museum of Natural History in Gainesville will hold a major "Starry Night" event Friday evening, September 25 in celebration of the International Year of Astronomy 2009. Included will be talks by an astronaut, astronomy exhibits, activities and outdoor observing. (See the AAC web site for more details.) Up to one hundred Galileoscopes will be given away during this event at telescope workshops that will allow children

aged ten or over to build this simple telescope.

The Galileoscope kits finally arrived in August 2009 leaving little time for review before the “Starry Night” event. However, even preliminary inspection of these kits reveals both the good and bad about these low-cost instruments. Potential users of these telescopes should be aware of the attributes of these kits and telescopes before either buying, assembling or supervising others in their construction or operation.

While the Galileoscope can give good images of many celestial objects, mechanical constraints limit its usefulness. Like many low-cost telescopes, operating the telescope can be frustrating, especially for beginners. Furthermore extremely poor instructions included with the kit can make proper assembly difficult and baffling although most parts fit together nicely. Fortunately, better on-line instructions are available as a pdf file from the Galileoscope web site (www.galileoscope.org).

The Galileoscope comes as a kit with simple instructions for no-tools assembly, which is claimed to be five minutes or less. Its achromatic optics includes a 50-mm-diameter glued doublet objective lens of focal length 500 mm (giving it an f/10 focal ratio). Also included are six small lenses to make an eyepiece of focal length 20 mm (magnification 25x) and a 2x Barlow lens (yielding 50x). This Barlow lens can also be used as an optional “Galilean eyepiece” giving about 18x although the field of view is extremely small, a normal characteristic for this type of eyepiece. The Galileoscope has a standard 1.25-inch eyepiece barrel so other eyepieces can be used. The telescope also attaches to nearly all standard photographic tripods, another useful feature.

However, a tripod is not included with the kit; you need to supply your own.

Some may try to handhold the telescope but this is ill-advised. Most people have trouble viewing objects with handheld instruments even at 10x let alone 20x or more. However, you can probably glimpse views of daytime scenes with the 25x eyepiece if you have steady hands.

A full evaluation of the Galileoscope is available on-line as a pdf document. Due to the length of the full review, including the full review of the Galileoscope in this printed copy of *FirstLight was not possible.* Readers interested in learning more about this novel instrument should read this detailed review on the AAC web site (floridastars.org/Galileoscope.html).

The good news is the telescope can produce acceptable images for both daytime and night viewing, especially for beginners. The bad news is the instructions included with the kit may make it difficult to assemble properly or use the Galileoscope. Furthermore, mechanical constraints may make this instrument frustrating to operate and less useful than intended, especially for beginners. These problems include tube vibration, difficulty focusing, and locating or viewing objects. These are common problems with many inexpensive telescopes.

Although the Galileoscope delivers much more, at least optically, than most telescopes costing five to ten times more, its mechanical construction is only fair. Therefore, some may question that the Galileoscope is really an easy-to-use refractor. Readers intending to purchase, give away or instruct others in its use, should read the full, on-line review (floridastars.org/Galileoscope.html).

The best thing about the Galileoscope may be the 50-mm glass achromatic, doublet objective, which is probably worth more than the cost of the scope. Some may even find it useful to place this lens in their own mounting cell, optical tube assembly, focuser and star diagonal to make a new and better working small telescope! ¤

Howard L. Cohen *is an emeritus professor in the University of Florida's Department of Astronomy, a founding member of the Alachua Astronomy Club, Inc., and a current member the club's executive board.*

Dudley Farm Star Party in October

The Dudley Farm Historic Park Star Party, tentative Date, Sat., Oct. 24, 2009, is a public star party sponsored by the AAC and Dudley Farm State Park (more info to follow on the AAC web site and by e-mail). The Dudley Farm star party is also a celebration of the International Year of Astronomy's newest Cornerstone Project: Galilean Nights.

On 22-24 October 2009, the new IYA2009 Cornerstone Project, Galilean Nights, will see amateur and professional astronomers around the globe taking to the streets, pointing their telescopes to the wonders that Galileo observed 400 years ago.

The event will be spread over three nights during which amateur and professional astronomers will share their knowledge and enthusiasm for space by encouraging as many people as possible to look through a telescope at our planetary neighbors. The focus for Galilean Nights is the objects that Italian astronomer Galileo observed 400 years ago. These include Jupiter and the Moon, which will be well-positioned in the night sky for observing during the event.

For more information on Galilean Nights see: www.galileannights.org

STAR PARTY / OBSERVATION SCHEDULE: Upcoming Events - 2009

Star Party Event	**Date**	**Location** Check the website for directions	**Start/End Time**
AAC September Star Party	September 19th, Saturday	Stargate Observatory	Sunset approx. 7:25 pm EDT
Starry Night	September 25th, Friday	Florida Museum of Natural History	Starts at 5:00pm till 10:00 pm
AAC October Star Party	October 16th & 17th, Friday and Saturday	Gold Head Branch State Park—See website for campsite reservations	Sunset approx. 7:00 pm EDT
AAC Dudley Farm Star Party	October 24th, Saturday	Dudley Farm State Park	To Be Announced Check website for information

October Club Meeting

Mr. Russ Romanella, NASA

Tuesday, October 13, 2009, 7:00 p.m. ET

Speaker: **Russ Romanella (NASA)**
Title: *TBA*
Location: Powell Hall, Florida Museum of Natural History
Lucille T. Maloney Classroom,
UF Campus, Gainesville, Florida

Preview: TBA

About the Speaker: Russell Romanella is the Deputy Director for Program Management in the International Space Station (ISS) Payload Processing Directorate. He joined NASA in 1981 as a Co-Op student while attending Florida State University. After graduation, in 1984, he joined NASA as an Operations Engineer, automating Shuttle and Payload Processing schedules and assessments. Mr. Romanella became Project Manager for the Payload Data Management System (PDMS). In 1991 he became Chief of the Software Development section and later was selected as Chief of the Automation Systems Division. His division was also responsible for the Spacelab logistics phase-down activities, as well as the KSC World Wide Web development and deployment activities.

In 1996, Mr. Romanella moved to the Space Station Hardware Integration Office (SSHIO) as chief of the Integration Operations Office. In 1997, he became Element Manager for International Space Station missions, including those flying the Multi-Purpose Logistics Modules (MPLM) and the Canadian Robotic Arm.

In May of 2000, Mr. Romanella served as the Deputy Director of the Space Station Hardware Integration Office. In May of 2001, he became Deputy Director for Program Management in the ISS/Payload Processing Directorate. In this, his current position, Mr. Romanella is responsible for plans, processes, and operating philosophies of the ISS and Shuttle Payloads ground operations. He is responsible for long-range multi-year work plans of the subordinate divisions and offices and provides direction to the Payload Ground Operations Contractor. While in this position, critical elements of the ISS have been successfully assembled at KSC, tested, and launched to orbit. These critical space station elements including the US Laboratory, Robotic Arm, Airlock, and large solar arrays are now on orbit and supporting the permanent 3-person crew.

Mr. Romanella has received numerous group achievement and performance awards, including NASA's Exceptional Service Medal in 1996 for his outstanding management leadership in the development and operation of the Payload Data Management System.

Born in Miami Florida, he graduated in 1976 from Southwest Miami High School. He received a bachelor of science in Mathematics and Computer Science in 1984 from Florida State University in Tallahassee, Florida. Mr. Romanella is currently living in Cocoa Beach, Florida.

International Year of Astronomy October Lecture

7:20pm, Friday, October 23, 2009

The UF Department of Astronomy invites the University of Florida and the Gainesville communities to celebrate the International Year of Astronomy. October's lecture series features Professor Anthony Gonzalez of the University of Florida (shown in inset photo). The topic will be Cosmology.

Location to be announced. Check the website www.astro.ufl.edu/IYA/lectures.html for more details.

Just One Thing

By: Bill Helms

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brightness of Cepheid Variable stars and their period of brightness variation. Edwin Hubble used this relationship for Cepheids in the Andromeda nebula to prove it was not, in fact, a nebula within our galaxy, but a distant galaxy all its own. Today we call it the Andromeda Galaxy.

Color is the way our eyes and brain interpret differences in the wavelength of photons. The shorter the wavelength, the higher the frequency of change in the electromagnetic field strength, and the higher the energy carried by the photon. Our eyes are sensitive to only a narrow part of the electromagnetic spectrum. The spectrum begins with long wavelength, low frequency, and low energy Extra Low Frequency radio waves, used by the Navy to call submarines to the surface to receive message traffic. These ELF radio waves are the only ones that can penetrate water. They are not used for astronomy.

The next shorter wavelength, higher frequency waves are those of AM, FM, and television broadcasts. Radio telescopes such as those at Jodrell Bank in England, Aricebo in Puerto Rico, and the Very Large Array in New Mexico are used to probe the lobes and jets of radio-loud active galaxies and quasars. Radio telescopes are ground based, because they need massive antennae to achieve adequate resolution.

Above these are microwaves used for radar, satellite communications, and microwave ovens. Bell Lab researchers Arno Penzias and Robert Wilson, while working with an antenna designed to receive radio signals bounced off NASA's Echo satellite, discovered a persistent background of microwave radiation from the sky, which was identified by Robert Dicke and others as the primordial radiation from the Big Bang. Penzias and Wilson shared the Nobel Prize in Physics in 1978 for their discovery of cosmic background microwave radiation. The Nobel Prize in Physics for 2006 was awarded to John Mather and George Smoot for their work with NASA's Cosmic Background Explorer satellite which resulted in what Mather called "The Very First Light," and Smoot called "Wrinkles in Time" in the titles of their respective books.

Then comes infrared energy, which you can feel when you stand in sunlight, or close to a fireplace. Infrared telescopes have to be located at high altitudes or in orbit since the faint energy of distant objects does not penetrate our atmosphere well. They also must be cooled, usually with liquid nitrogen or helium, since they are trying to measure the heat of distant stars and galaxies. NASA's Spitzer Space Telescope has shown objects such as a glowing stellar nursery; a swirling, dusty galaxy; a disc of planet-forming debris; and organic material in the distant universe. As one of its most noteworthy observations, in 2005, SST became the first telescope to directly capture the light of extrasolar planets, namely the "hot Jupiters."

Next comes the visible spectrum of red, orange, green, blue, indigo, and violet light. Even in amateur telescopes, these varying wavelengths reveal to us the red giant star Betelgeuse, the Red Planet Mars, the golden hues of Saturn, the creamy face and orange-brown belts of Jupiter, and the blues of the Blue Snowball and Neptune. And we are all familiar with the exquisite color photographs of galaxies, nebulae, and star clusters through the Hubble Space Telescope. Ground-based visible spectrum telescopes are typically located at high altitudes to minimize the effects of atmospheric distortion and absorption.

Above violet is ultraviolet light. UV has high enough energy for the UV in sunlight to damage our skin, causing sunburn and skin cancer. NASA and the European Space Agency have launched a variety of missions that include ultraviolet telescopes and spectrometers, including an instrument on the Hubble Space Telescope. Through them astronomers observe very young massive stars and very old stars and galaxies, growing hotter and producing higher-energy radiation near their birth or death.

At even higher energies are x-rays, like those as those used for medical diagnostic procedures. X-rays are absorbed by the earth's atmosphere, and must be observed from sounding rockets, balloons, or satellites.

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Scorpius X-1, the first cosmic X-ray source, was discovered during a sounding rocket flight in 1962 and let to the discoverer, Riccardo Giacconi, receiving the Nobel Prize in Physics in 2002. X-rays are generated as gas molecules are accelerated into the massive gravitational fields of neutron stars and black holes.

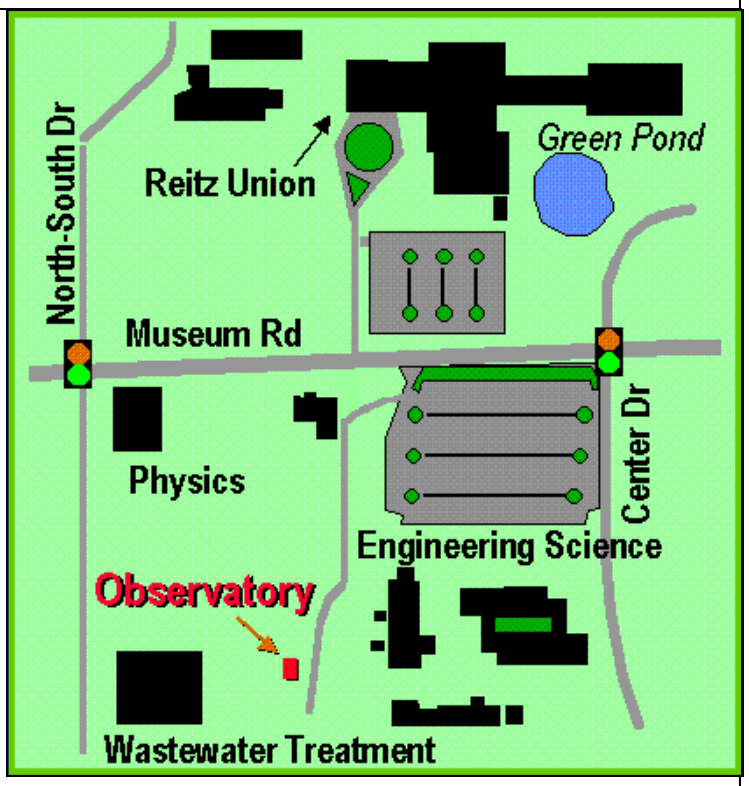
Finally come Gamma Rays, the most energetic of all photons, which result from processes such as solar flares and violent supernova explosions. Vela satellites, intended to detect nuclear bomb explosions anywhere on Earth, also detected so-called gamma ray bursts from space. These high-energy flashes suddenly appear then fade away in seconds or minutes, before powerful telescopes can be trained on them. NASA's SWIFT satellite has detected and swiftly (!) focused X-ray and other telescopes on the afterglow of some 400 gamma ray bursts. The brightest, briefly visible without a telescope, occurred shortly after the death of noted science fiction writer Arthur C. Clarke.

As you read an astronomy book, or listen to a lecture, I hope you will appreciate and marvel at the fact that virtually everything we know about the universe has come to us via photons, the analysis and study of their direction, intensity, and wavelength (energy).

Bill Helms
Alachua Astronomy Club
President@FloridaStars.org

Public Night at UF Observatory

The University of Florida, Department of Astronomy and Dr. Francisco Reyes hosts an on-campus Teaching Observatory for educational and public programs. These events are free to the public. The observatory is open Friday evenings, from 8:30 to 10:00, whenever UF classes are in session.



The September schedule features:

Sept 4	Jupiter, Full Moon, globular clusters
Sept 11	Jupiter, Neptune Ring Nebula
Sept 18	Jupiter, Uranus, Neptune, Andromeda galaxy, globular clusters
Sept 25	Starry Night—moved to Museum of Natural History

The October schedule features:

Oct 3	Jupiter, Uranus, Neptune
Oct 10	Jupiter, Uranus, Neptune, Moon
Oct 17	Jupiter, Uranus, Neptune, Ring nebula, globular clusters,
Oct 24	Homecoming. No Public Night
Oct 31	Uranus, Neptune, Ring nebula, The Gator Star, Andromeda galaxy

The November schedule features:

Nov 7	Uranus, Neptune, Ring Nebula, Andromeda galaxy, Pleiades cluster, Globular clusters
Nov 14	Uranus, Neptune, Moon, Ring Nebula, Andromeda galaxy, Pleiades cluster, Globular clusters
Nov 21	Uranus, Ring Nebula, Andromeda galaxy, Pleiades cluster, Globular clusters, Orion Nebula
Nov 28	No Public Night - Thanksgiving Holiday

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Photo Credit: Howard Eskildsen. Oceanus Procellarum 071125. Three photo composite centered at 01:04 UDT
Seeing 4/10, Clarity 4/6, Meade 152 cm Refractor, Orion StarShoot II, Ocala, Florida, USA

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Newsletter of the Alachua Astronomy Club, Inc.
P.O. Box 141591
Gainesville, Florida 32614-1591

Web: www.floridastars.org
Email: firstlight@floridastars.org