

# FirstLight

Newsletter of the Alachua Astronomy Club

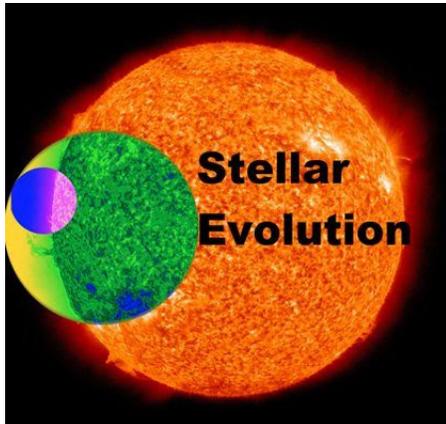


January, 2016 (Issue No. 138)

[AlachuaAstronomyClub.org](http://AlachuaAstronomyClub.org)

*North Central Florida's  
Amateur Astronomy Club*

**Serving Alachua County since 1987**



*Award Pin of the Astronomical League's  
"Stellar Evolution" observing program.*

All stars evolve, from the time they are born until the time they die. How fast they evolve depends mainly on their mass.

When you join the Stellar Evolution observing program, you will observe all kinds of stars at various stages of their evolution.

Join the [Observing Stellar Evolution](#) observing program!



Member Member  
[Astronomical League](#)



Member  
[NASA Night Sky Network](#)



# How will we finally image the event horizon of a black hole?

by Ethan Siegel  
Space Place Feature article

One hundred years ago, Albert Einstein first put forth his theory of General Relativity, which laid out the relationship between space-time and the matter and energy present within it. While it successfully recovered Newtonian gravity and predicted the additional precession of Mercury's orbit, the only exact solution that Einstein himself discovered was the trivial one: that for completely empty space. Less than two months after releasing his theory, however, the German scientist Karl Schwarzschild provided a true exact solution, that of a massive, infinitely dense object, *a black hole*.

One of the curious things that popped out of Schwarzschild's solution was the existence of an event horizon, or a region of space that was so severely curved that nothing, not even light, could escape from it. The size of this event horizon would be directly proportional to the mass of the black hole. A black hole the mass of Earth would have an event horizon less than a centimeter in radius; a black hole the mass of the sun would have an event horizon just a few kilometers in radius; and a super massive black hole would have an event horizon the size of a planetary orbit.

Our galaxy has since been discovered to house a black hole about four million solar masses in size, with an event horizon about 23.6 million kilometers across, or about 40 percent the size of Mercury's orbit around the sun. At a distance of 26,000 light years, it's the largest event horizon in angular size visible from Earth, but at just 19 micro-arc-seconds, it would take a telescope the size of Earth to resolve it – a practical impossibility.

But all hope isn't lost! If instead of a single telescope, we built an *array* of telescopes located all over Earth, we could simultaneously image the galactic center, and use the technique of VLBI (very long-baseline interferometry) to resolve the black hole's event horizon. The array would only have the light-gathering power of the individual telescopes, meaning the black hole (in the radio) will appear very faint, but they can obtain the resolution of a telescope that's the distance between the farthest telescopes in the array! The planned Event Horizon Telescope, spanning four different continents (including Antarctica), should be able to resolve under 10 micro-arc-seconds, imaging a black hole directly for the first time and answering the question of whether or not they truly contain an event horizon. What began as a mere mathematical solution is now just a few years away from being observed and known for certain!

*Note: This month's article describes a project that is not related to NASA and does not suggest any relationship or endorsement. Its coverage is for general interest and educational purposes.*



*Image credit: NASA/CXC/Amherst College/D.Haggard et al., of the galactic center in X-rays. Sagittarius A\* is the supermassive black hole at our Milky Way's center, which normally emits X-ray light of a particular brightness. However, 2013 saw a flare increase its luminosity by a factor of many hundreds, as the black hole devoured matter. The event horizon has yet to be revealed.*

## **Newberry Star Park**

by Andy Howell



New in-use outlet covers were installed at the eight observing pads earlier in December. They're constructed of rugged metal and should be less prone to damage or breakage when bumped into by machinery.

We always have ants that want to observe with us at the monthly star parties. We don't mean to be bad hosts, but we periodically sprinkle the observing area with ant killer.

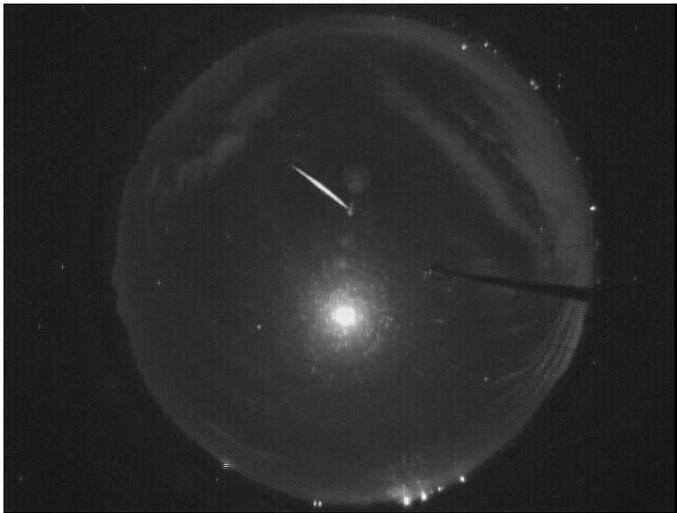
Otherwise, ants would come over and bite observers when they're kneeling on the ground as they peer through finder scopes.

The new paint job and bold, black lettering are holding up well to the weather. We still need to replace damaged skirting around the base of the building. Another thing that needs doing is spreading drainage gravel under the eaves to prevent dirt splashing up onto the siding during rain storms.

It would be good to install a fence perimeter with a setback of about five feet to prevent vehicles from getting too close to the building. Early last year, an RV bumped into the WiFi antenna, tearing it loose from the building. As a preventive measure, a temporary fence should probably be installed prior to big events when RVs park on the property.

Newberry Star Park is being used 24/7 with the Mallincam all-sky camera that operates day and night. See what sky conditions are now by clicking [HERE](#). The SkySentinel meteor camera at Newberry Star Park also operates during nighttime. During the past half year, it's imaged over 100 fireballs with a spectacular mag -18 fireball appearing early in November.

The Mallincam and SkySentinel cameras are automated so that they are almost always collecting data. Thanks to a grant from Charlie Jarman, we'll be installing a 1TB hard drive to archive Mallincam images at one-minute intervals. When something interesting like a bright fireball makes its appearance, then we'll be able to play it back for further study.



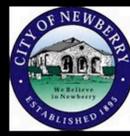
Pictured on the left is a fireball that appeared at 3:36am in the skies over Newberry Star Park on the morning of December 29. North is up, and West is to the right. Imagine lying on the ground, flat on your back, with head to the north. That will make the image match what you would see with your eyes.

Next star party & outreach at Newberry Star Park is scheduled January 16, Saturday from 5:30-11:00pm. Join us!

Register [HERE](#) for January's Public Star Party & Outreach at Newberry Star

Park.

 **Public Star Party @  
Newberry Star Park**  
(weather permitting)  
**January 16, 5:30-11:00pm**



US 27/41

Easton Newberry Sports Complex

Ball Fields

Star Park

1.6 miles

Newberry

Request arrival before sunset

[alachuaastronomyclub.org](http://alachuaastronomyclub.org)

# Star Parties

by Lisa Eager and Ivo Rabell



**Newberry Star Park Star Party/Public  
Outreach  
December 12, 2015**

Photo below is a terrific image of the Orion Nebula taken by David Liles using his 9.25 inch Celestron Schmidt-Cassegrain telescope at December's star party and outreach at Newberry Star Park. David traveled all the way from Live Oak to join in the fun. Thank you, David!



Andy did a really spot on job of calling the conditions for Saturday night's Star Party at NSP. Early on we got to see a sliver of a moon as it set with some wispy clouds going on. Ed, aka Cloud, was a bit skeptical and didn't hurry putting up his equipment, but then took a chance and ended up being the last one to leave!

We hosted about 9 guests with just a few telescopes. Everyone enjoyed the sights and information that we shared with them, so we may have a new AAC member or two (?)

As Andy predicted around 9 pm things started to clear up so we went sky hopping and showing guests a myriad of deep sky objects, which means that Tass was around, so a hopping we did go! And the guests had a blast trying to absorb it all.

While most of us were on a whirlwind tour of the universe, Andy stayed busy helping Rick get the club's LCM 114 Celestron up to speed, then he worked with some guests troubleshooting with their telescope. I guess he can add "telescope repairman" to his list of job duties! Andy, we all REALLY, REALLY, appreciate all that you do for the club!

Here's who showed up for members:

Rick Garnsey with the club's LCM 114 Celestron

- Winnie McDavid
- David Liles with his 9 1/4" Celestron SCT on a CGEM mount
- Tass Karahalios
- Spinuzza Family
- Ed Honkus with his 10" SCT
- JoAnn Stevener
- Andy Howell
- Lisa Eager with my 10" trusty Dobsonian

Imagine my shock at seeing David showing up to NSP for a star party, a Christmas miracle? Well, maybe not up to "miracle" status, but not an everyday occurrence. He had his Nikon 1V1 with FT1 adaptor at ISO1600. an IR remote trigger. His criteria for imaging was "pick a sucker hole and shoot". We'll share some of those photos. There were visitors that were very interested in photography and got a lot of information from David.

Some of the visitors that came out to enjoy were:

- Carlton Oglesby
- Jing Zhung
- Jerome Medeli
- Steven Mothersheal
- Nikki Evers
- Jeremy Evers
- Barbara Schmidt
- Randy Webb

Some of the favorites for the night were the Geminid meteors and everyone loved NGC 2262 Hubble's Variable Nebula, Caroline's Rose NGC 7789 was pretty impressive also.

So all in all a successful star party with some challenges going on from the laser tag folks next door. We'll have to work on getting them to put on their parking lights when they come and go. Until next year, clear skies!

Lisa Eager

Public Outreach Coordinator

**Holiday Party at the Barnett Residence  
December 5, 2015**



Once again this year, Mark and Cindy Barnett graciously opened their home to host the annual Alachua Astronomy Club Holiday Party. And what a party it was! Approximately 50 members accompanied by family members attended. There was excellent food and drink, prizes, the famous astro quiz, and awards presentations.

Mike Toomey and Tim Malles were recognized with Star Awards for their contributions to the Club. Mike Toomey, in case you don't know, is the current schools coordinator. In previous lives, Mike has served as President, Secretary, FirstLight Editor, and Star Party Coordinator. Tim Malles is the coordinator of the annual Kanapaha Botanical Gardens Moonlight Walk, scheduled again for May 14th this year. Tim served as Programs Chair several years ago and did great work in this very important volunteer position. Tim had a big role in erection of the Solar Walk along 8th Avenue, installed in 2002. (Visit our [Solar Walk](#) web page [HERE](#).)

The following members received certificates of recognition for their contributions of time and energy during the year:

Brendan Barraclough	Jared Feldman	Andy Howell	Frances Seiler
Chuck Broward	H.A. Grabbe	Alicia Kemper	Susan Sorrell
Jerry Cheney	Marlene Grabbe	Robert Munyer	JoAnn Stevener
Howard Cohen	Gay Haldeman	Pam Mydock	Mike Toomey
Marian Cohen	Joe Haldeman	Ivo Rabell	Cheryl Troupe
Lisa Eager	Richard Hennig	Rich Russin	John Troupe

Recognition was based on information logged in the Track It Forward web site accessible [HERE](#). Log your time when doing volunteer work for the Club!



Mark and Cindy Barnett, hosts of the annual Holiday Party, receive "Year of Pluto" T-shirts from AAC president Andy Howell. Thank you, Mark and Cindy, for hosting the party!

**Starry Night at FMNH  
November 13, 2015**

Starry Night at the Florida Museum of Natural History was incredible!



From left to right are AAC members Ivo Rabell, Chuck Broward, Judy Broward, and Tim Malles. Starry Night at the Florida Museum of Natural History is one of the premiere Alachua Astronomy Club outreach events during the year.

Over 2200 visitors toured the museum and looked through our telescopes. But only six of our members brought telescopes. Needless to say, we were all overwhelmed.

Saw Greg Beckner before the madness started and said he was going to show the Dumbbell Nebula. If he was able to show the dumbbell, I'm sure it looked like a fuzzy thumbprint due to parking lot and garage lights not being covered. Put a crimp on what was a very clear night sky.

Starting around 5:30 pm saw Don Loftus and lovely wife showing 2 day old waxing crescent Moon on his home crafted 6" Newtonian to a long line of visitors. Starry Night was not supposed to start until 6:00 pm. You would have never known!

Across the street Rich Russin set up his reflector and showed Albireo and I believe the Ring Nebula.

Bill Elliot set up his reflector next to Greg and had long lines. Bill was sky hoping from Nebulas to Galaxies.

With all the light pollution Lisa Eager with her 10" Dob and eagle eyes was able to spot the double in Perseus.

Jerry Cheney got the worst of the crowds. After a couple of hours of showing Albireo I switch to the Pleiades with my binoculars. I had to instruct viewers how to use the

binoculars and it was taking so long that I started directing visitors lined up on my telescope to Jerry's line. Poor guy, he almost lost his voice.

We all talked non-stop for a minimum of 4 1/2 hours explaining sky denizens on our scopes eye pieces to visitors. Most of us have sore throats this morning.

I want to thank Chuck and Judy Broward for helping Pamela Mydock, who had a mob in front of her as early as 5:30 pm for helping with AAC table and handouts.

Crill Hintermister brought his binoculars and walked around showing the Pleiades and later Orion's Nebula.

Saw Robert Munyer, Matt Given and his spectacular girl friend Morgan Gates but I was so busy couldn't tell what they did.

As always, Joann Stevener went around bringing water bottles and food to all telescope volunteers.

Tim Malles had he gorgeous 3D space art displayed inside of Museum.

Last but not least, I really appreciate AAC President Andy Howell, for last minute cruising all the way to Newberry to retrieve AAC's huge banner and setting it up. Whoops, on me!

My deepest gratitude to all Alachua Astronomy Club volunteers, you all did one amazing job!

Ivo Rabell, Outreach Coordinator

## Schools and Outreach

by Mike Toomey



Our next evening school star party will be at an elementary school on the east side of Gainesville on Thursday, January 24 (please register on the website or contact me for the exact location). We expect at least 70 – 80 students in addition to many parents, so we'll be needing at least 4 or 5 telescopes and operators. The sun will set shortly before 6pm, so we'll be up and running at 6:15pm. The 5 day old moon will be well positioned in the sky even before sundown.

On Tuesday, January 19, we need volunteers for an afternoon program, also on the east side. These are short programs (a little under an hour) typically for 15 – 20 students in 4th and 5th grades. The kids are hyper-enthusiastic so the hour really flies

by. Again, please use the website to register and discover more details of these after-school programs.

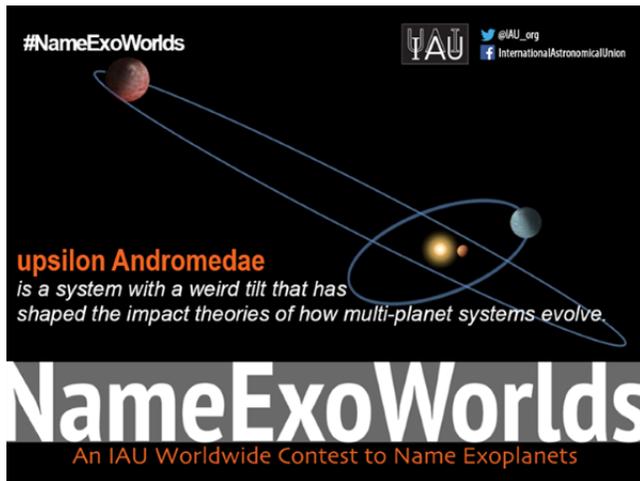
Unfortunately, we were rained out for our December school program. I will try to reschedule that for later in the year. However, before I can do that, we really need an influx of new volunteers. It will be difficult to sustain our programs otherwise. You do not need to be an expert in astronomy to be an outreach volunteer. You do not even need to own a telescope! You can shadow current volunteers at events, ask our Sky Mentor Bill Helms or other members for one-on-one assistance with your telescope, or be brought up to speed

with one of several club-owned telescopes. Binoculars are also excellent astronomical instruments that can be hand-held or tripod-mounted.

Mike Toomey has served the AAC in many capacities since 1998, including President, Secretary, FirstLight Editor, Star Party Coordinator and School Outreach Coordinator. Mike resides in Gainesville.

## Name ExoWorlds Winners Announced!

by Andy Howell



International Astronomical Union (IAU) Press Release (12/15/2015): The votes are in — the names of 19 ExoWorlds (14 stars and 31 exoplanets orbiting them) have been chosen by public vote in the NameExoWorlds contest and accepted by the IAU. Reflecting the truly international interest in astronomy, over half a million votes from 182 countries and territories have contributed to the new official designations of the alien worlds.

Learn more: [IAU Press Release](#)

Alachua Astronomy Club earned 2nd Place in the vote to rename Upsilon Andromedae. Based on an internal Club vote earlier during 2015, we had proposed the following names to the International Astronomical Union:

- Upsilon Andromedae (star) - Verne
- Upsilon Andromedae b (planet) - Heinlein
- Upsilon Andromedae c (planet) - Asimov
- Upsilon Andromedae d (planet) - Clarke

**Oh so close!** Out of the thousands of votes cast, we fell just 83 votes behind the winning proposal submitted by the Vega Astronomical Club (Morocco). Regardless, we thank Gay Haldeman and all who voted in the contest on behalf of our (nearly) winning submission. Our proposal garnered over 2,000 votes, just 83 shy of the winning proposal by Vega Astronomical Club.

**Coming Up:** After extensive deliberation, the IAU Committee decided to annul the vote for one particular ExoWorld — tau Boötis — as the winning name was judged not to conform with the IAU rules for naming exoplanets. To this end, the IAU will organise a new contest to decide the name of tau Boötis in the future.

## Meetings

**AAC Public Meeting**  
**Tuesday, January 12, 2016**  
**7:00pm**

Join us for an exciting and interesting evening at the Kika Silva Pla Planetarium (Santa Fe College), 3000 NW 83rd Street, Building X-129, Gainesville, FL 32606

**Speaker:** James Albury, Planetarium director and co-host of the weekly TV show "Stargazers."



## New Members since November 1!



Jonathan Bear  
Del Schier  
William Elliott  
Steven Freymann  
Basset Gilles  
Ankur Jain  
Phil Nolden  
Burton Patterson

**President**  
Andy Howell

**First Light Editor**  
Laura Wright



# Happy New Year!

I have good news and bad news. The good news is that club membership counts 143 members. This is up well over 50% in the past three years!

The bad news is that volunteer participation is not growing at the same rate. For all of 2015, volunteer participation was as follows:

Category	# Volunteers	Hours
Public Outreach	13	143.5
School Outreach	7	89.5
Star Parties	12	84.5
TOTAL	19	350.0

(Data Source: [Track It Forward](#) volunteer tracking database.)

This is a meager 13% (19/143) participation rate. We can (and should) do better!

There are two key TAKEAWAYS:

1. When you volunteer for the Club, please LOG YOUR TIME at [Track It Forward](#). First, we want to recognize your volunteer contributions at the annual holiday party. (If you didn't attend last month's party, you missed a great one!) Second, we are a non-profit with one of our missions being to "make astronomy more accessible and visible to the general public." When membership doesn't support the mission, it hurts!

2. Critically, Alachua Astronomy Club NEEDS YOU to get involved in schools and public outreach. The consequence of not getting more membership participation is that we may have to scale back our outreach activities for 2016.

PLEASE VOLUNTEER. Our school outreach and public outreach events are



Andy Howell suggested taking a look at Gay Haldeman's recommended link below. It is a scale model of the solar system, when the moon is 1 pixel wide.

["A Tediously Accurate Map of the Solar System"](#)

I am always amazed at the many observing programs and clubs available on the Astronomical League's website. This month the Observing Stellar Evolution program with Bill Pellerin from Houston, TX as coordinator caught my eye. In his introduction he says " Everything that you see in the night sky is visible to you because of light from a star. We exist because stars exist." "The purpose of this club is to develop in the observer an appreciation for the most common objects that they see in the night sky-stars. Understanding 'stellar evolution' is important to understanding how the universe works." This program will be of interest to beginning observers as well as more experienced observers and many objects in the list are easy naked eye objects.

Please, check on rules and regulations for this observing program at

[www.astroleague.org](http://www.astroleague.org)

Best regards, Laura



always FUN! It's even more fun when YOU are involved. Please RESOLVE to participate in one or more of our fabulous AAC outreach events this year!

Watch for event announcements! Or, email one of our outreach leaders and tell them you want to do something good for yourself and Alachua Astronomy Club.

[Ivo Rabell](#) (Public Outreach)

[Lisa Eager](#) (Star Parties)

[Mike Toomey](#) (School Outreach)

### The Night Sky this Month

January events from [seasky.org](http://seasky.org)

**January 3, 4 - Quadrantids Meteor Shower.** The Quadrantids is an above average shower, with up to 40 meteors per hour at its peak. It is thought to be produced by dust grains left behind by an extinct comet known as 2003 EH1, which was discovered in 2003. The shower runs annually from January 1-5. It peaks this year on the night of the 3rd and morning of the 4th. The third quarter moon will block out all but the brightest meteors this year, but it could still be a good show if you are patient. Best viewing will be from a dark location after midnight. Meteors will radiate from the constellation Boötis, but can appear anywhere in the sky.

**January 10 - New Moon.** The Moon will be located on the same side of the Earth as the Sun and will not be visible in the night sky. This phase occurs at 01:30 UTC. This is the best time of the month to observe faint objects such as galaxies and star clusters because there is no moonlight to interfere.

**January 24 - Full Moon.** The Moon will be located on the opposite side of the Earth as the Sun and its face will be fully illuminated. This phase occurs at 01:46 UTC. This full moon was known by early Native American tribes as the Full Wolf Moon because this was the time of year when hungry wolf packs howled outside their camps. This moon has also been known as the Old Moon and the Moon After Yule.

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