



Mid-Hudson Astronomical Association

December, 2015

Website: www.midhudsonastro.org

Yahoo Group: MHAstro

President : Willie Yee
Secretary: Jim Rockrohr
Newsletter Editor: Rick Versace
Publicity: Paul Chauvet
Parks Liaison:

Vice President: Candace Wall
Treasurer: Ken Bailey
Membership Coordinator: Caryn Sobel
Webmaster: Paul Chauvet
College Liaison: Dr. Amy Forestell

Directors: Karl Loatman, Steve Carey, Joe McCagne, and Dave Lindemann

Minutes of the monthly meeting of the Mid Hudson Astronomical Association, November 17, 2015

The meeting was called to order at 7:32 PM by President Willie Yee in the Auditorium of the Coykendall Science Center at SUNY, New Paltz, NY.

The minutes of the last meeting were approved as published in the most recent newsletter.

Officer's Reports:

Membership: Caryn Sobel was not present. Ken Bailey reported he has received 1 new membership.

Treasurer: Ken Bailey was present, but see his latest report as published in the newsletter.

Treasurer's Report for the month of November, 2015

Date: 12 December, 2015

Bank Balance: \$1727.82
Outstanding Checks: \$ 0
Outstanding Deposits: \$ 12.50
Ending Bank Balance: \$1740.32
Checkbook Balance: \$1740.32
Balance with Bank: Yes

Ending balance total: \$1740.32

Notes: Outstanding deposit is a ½ year membership payment via check to Caryn.

Respectfully submitted: Ken Bailey
Treasurer

Outreach: Candace Wall was present and the following were discussed:

- **Mohonk Preserve:** November 20, Joe Macagne, Jack Chastain, Rick Versace, and Candace Wall (125 people have already signed up!)
- **Rockland Astronomy Club Exoplanet talk at Rockland Community College:** Dec 4, presented by Willie Yee and Jennifer.
- **James Evans Elementary School** (Wappingers Falls): Looking for a brief presentation and outdoor star gazing in April/May for 6-12 year olds.
- **Montessori Schools** (New Paltz?): Looking for a regular (monthly?) presentation.
- **Stone Ridge Public Academic Fair:** Saturday, April 2, requesting a S.T.E.A.M. Focused (Science, Technology, Engineering, Arts, and Mathematics) presentation.

Publicity: Paul Chauvet was present. Send him info on public events.

Webmaster: Paul Chauvet present. No issues known.

Upcoming programs: Candace Wall present. December will be annual party and member talks (Willie, Paul Chauvet, Karl Loatmann, and Jack Chastain, so far.) Be sure to bring some goodies to share!

Old Business:

- Star party schedule for 2016:
 - Moved, seconded, and approved as last published on the Yahoo group:
 - January 8th - 7:30 PM
 - February 5th - 7:30 PM
 - March 11th - 7:30 PM
 - April 8th - 8:00 PM
 - May 6th - 8:30 PM
 - June 10th - 8:30 PM
 - July 1st - 8:30 PM
 - July 29th - 8:30 PM
 - September 2nd - 8:00 PM
 - September 30th - 7:30 PM
 - October 28th - 7:30 PM
 - November 25th - 7:30 PM
 - December 30th - 7:30 PM

As always, these are Friday dates with the following Saturday as backup for weather.

- Nominations for 2016 officers: The following slate was accepted to be voted on at the December meeting:

- President: Willie Yee
- Vice President: Candace Wall
- Publicity: Paul Chauvet
- Web Master: Paul Chauvet
- Secretary: Jim Rockrohr
- Treasurer: OPEN (although Ken Bailey will continue for a few more months).
- Newsletter Editor: Rick Versace
- (Membership Coordinator: Caryn Sobel? - not included in list presented at meeting)
- Director: Karl Loatmann
- Director: Joe Macagne
- Director: OPEN
- Club Telescopes:
 - 13" Dobsonian in use (Jack Chastain). Mirror removed. Have estimates from 6 sources ("all over the map"). Working on collecting more info and prices.
 - Criterion 8" SCT is available. Tabletop use (no tripod). See Willie.
 - ETX 125 has a focuser issue. Joe Macagne will fix it with a JMI remote focuser add-on.
 - 4" with Paul Chauvet.
 - 8" Dobsonian with Karl Loatmann.
- We agreed to donate an ETX 125 to a new club. Who has this 'scope?

New Business:

- (None)

Observing Reports:

- **Last Star Party** (November 14): Ken was the only person who showed up along with some Boy Scouts. No telescope, too windy.
- **Maker Faire** (November 14): Jack and Rick each had a table. Well attended. Lots of interest.
- **Saugerties High School Science Fair** (November 13): Jack and Ken attended. Cloudy, although several people inquired about the club.
- **Leonids peak tonight** (November 17).

Visitors/New Members:

There was a total of about 24 people in attendance.

The meeting was adjourned at 8:02 PM. Next meeting is on December 15th. The program that followed was "Harmony of the Spheres Revisited: The Solar System as a Harmonic Overtone Series" by Dr. Michael Bank. Dr. Bank has been a professional jazz pianist and composer since 1988 and studied stride piano, harmony, and composition with master musician Jaki Byard. Dr. Bank is a graduate of Harvard College and received his medical degree from the Columbia College of Physicians and Surgeons. He is a former member of MHAA and currently practices medicine in upstate New York.

Submitted by James Rockrohr, December 11, 2015.

From the President:

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To the Moon I

I recently acquired yet another book, on a tip from Cloudy Nights. "**What's Hot on the Moon Tonight?: The Ultimate Guide to Lunar Observing,**" by Andrew Planck is available through Amazon.

The core of the book consists of one chapter for each day or so of the lunar cycle. The major targets that are visible along the terminator that night are described in some detail, along with varying amounts of background information relating to the history of the moon. There are a few pictures of particular objects of interest, but this book requires a

moon atlas to be used concurrently. The author has keyed his chapters to Sky & Telescope's **Field Map of the Moon**.

This is a book designed for field use. The cover folds back and the spiral binding allows it to lie flat. There are also abundant blank observing forms to put in notes and sketches as you work your way through the book.

Since I do not have the S & T moon map, I use the "**21st Century Atlas of the Moon**," by Charles A. Wood and Maurice J. S. Collins. If I could only have one moon book, this would be it. It is the one that goes with me to any lunar observing event. The maps in this volume are made from the Lunar Reconnaissance Orbiter Spectacular Mosaic, so they represent the most accurate representation you could want. There are close up pictures of various features as taken from lunar orbit, so you can see them not squashed out ("foreshortened") by the curvature of the moon.

This is also spiral bound, and is printed on glossy paper, which is nice when everything gets covered in dew. Some may find it limited by the fact that the moon is presented in normal orientation, the way it appears naked eye or through binoculars, and does not include a reverse view as seen by refractors. Also, there is over a page of errors, mostly spelling in the initial edition.

Another recent acquisition is "**Craters of the Near Side Moon**," by John Moore. This is a fat paperback book that is a useful reference. Over 700 pages long, it includes one page each for nearly that many craters from Abenezra to Zupus. Each page includes a photo from the LRO, a wide angle photo to help you locate and orient to surrounding features, a photo from directly above, and a good size paragraph telling what is worthwhile to observe. It is bound as a paper back, so using it in the field may be a bit clumsy.

After getting this book, a number of us wished for a second volume that would cover the many other objects on the moon aside from craters. Voila! John Moore gave us "**Features of the Near Side Moon**." This book is about half the size of "Craters," and is organized by type of feature: Catanae, Dorsa, Dorsum, Lacus, etc. Each page has three photos of the feature and a small picture of the whole moon with the feature marked for orientation. There is no text for each feature, but a brief discussion at the beginning of each chapter briefly describing the type of feature, and sometimes its origin.

And I have some other great moon books, which I will discuss in a future column.

Links:

What's Hot on the Moon Tonight?

http://www.amazon.com/Whats-Moon-Tonight-Andrew-Planck/dp/099087690X/ref=sr_1_1?ie=UTF8&qid=1449235924&sr=8-1&keywords=what%27s+hot+on+the+moon+tonight

Field Map of the Moon

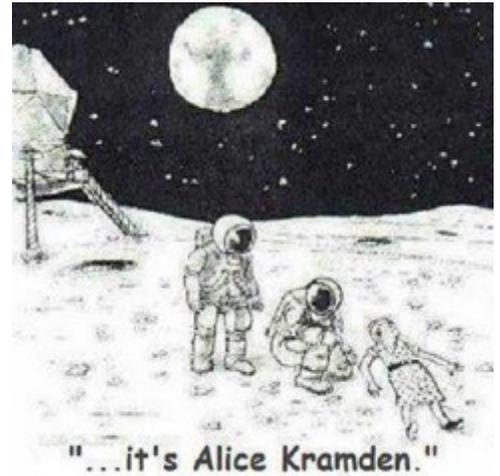
<http://www.shopatsky.com/sky-and-telescope-field-map-of-the-moon>

21st Century Atlas of the Moon

http://wvupressonline.com/wood_21st_century_moon_atlas_9781938228803

Craters of the Near Side Moon

<http://www.amazon.com/Craters-Near-Side-Moon-Moore/dp/1497324440>



Features of the Near Side Moon

[http://www.amazon.com/Features-Near-Side-Grayscale-](http://www.amazon.com/Features-Near-Side-Grayscale-Edition/dp/1502944952/ref=pd_bxgy_14_img_2?ie=UTF8&refRID=17RC521TPPXZAMZ8E5WT)

[Edition/dp/1502944952/ref=pd_bxgy_14_img_2?ie=UTF8&refRID=17RC521TPPXZAMZ8E5WT](http://www.amazon.com/Features-Near-Side-Grayscale-Edition/dp/1502944952/ref=pd_bxgy_14_img_2?ie=UTF8&refRID=17RC521TPPXZAMZ8E5WT)

P.S. It looks like What's Hot, Craters, and Features are available as a package on Amazon.

Dr. Willie Yee
MHAA President

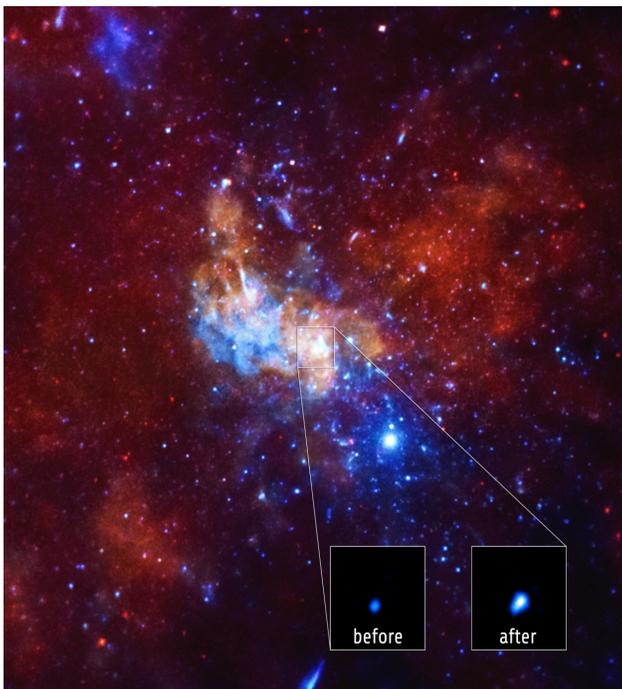


Visit spaceplace.nasa.gov to explore space and earth science!

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

By Ethan Siegel

One hundred years ago, Albert Einstein first put forth his theory of General Relativity, which laid out the relationship between spacetime 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 supermassive 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!

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.*

2016 Star Party Schedule

Date	Time	Sunset	End Civil Twilight	Nearest New Moon
January 8th	7:30 PM	4:42 PM	5:13 PM	January 9th
February 5th	7:30 PM	5:16 PM	5:45 PM	February 8th
March 11th	7:30 PM	5:59 PM	6:26 PM	March 8th
April 8th	8:00 PM	7:30 PM	7:58 PM	April 7th
May 6th	8:30 PM	8:01 PM	8:32 PM	May 6th
June 10th	8:30 PM	8:31 PM	9:05 PM	June 4th
July 1st	8:30 PM	8:35 PM	9:09 PM	July 4th
July 29th	8:30 PM	8:17 PM	8:49 PM	August 2nd
September 2nd	8:00 PM	7:27 PM	7:56 PM	September 1st
September 30th	7:30 PM	6:38 PM	7:06 PM	September 30th
October 28th	7:30 PM	5:55 PM	6:23 PM	October 30th
November 25th	7:30 PM	4:28 PM	4:59 PM	November 29th
December 30th	7:30 PM	4:34 PM	5:06 PM	December 29th

Directions To The Star Party Site—

[Lake Taghkanic State Park](#) is in the town Ancram, NY. The park entrance is on the Taconic Parkway 10 minutes north of the exit used for Wilcox park.

Star Parties at Lake Taghkanic are held in the West Parking lot, next to the beach. The skies are darker than in Wilcox, with less stray light to deal with. The horizon is also much lower, especially to the south and east, making many more targets possible.

IMPORTANT: all events at Lake Taghkanic State Park require an **RSVP** which includes license plate number of the car you are bringing (please do so via [Meetup](#)). The park is patrolled by state police, and all non registered cars will be ticketed and risk our use of the park.

General Information:

- ♦ For the foreseeable future, all indoor meetings will be held on the 3rd Tuesday of each month in Coykendall Science Bldg., SUNY New Paltz (directions above) at 7:30 PM. All indoor events are FREE! All are welcome. The presentations are generally geared towards teenagers and up. For more information, call the Club Hotline.
- ♦ Dates listed for star parties are the primary dates. The rain date is the following night unless otherwise noted. Only one session is held for a given weekend, usually on the primary date, Friday, unless postponed (usually due to inclement weather) to the backup date, Saturday. Exceptions to this are noted in the "Scheduled Events" section above.
- ♦ All outdoor events are FREE! All are welcome. If you bring small children, it is **your** responsibility to keep a close eye on them. Please do not bring white-light flashlights. Instead, bring a red astronomer's flashlight or an ordinary flashlight covered with several layers of red cellophane. If in doubt about the weather, check the status of the event at www.midhudsonastro.org.