



Mid-Hudson Astronomical Association

January, 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, December 16, 2014

The meeting was called to order at 7:33 PM by President Willie Yee in the Coykendall Auditorium at SUNY, New Paltz, NY.

It was moved and seconded that the minutes of the last meeting as published in the newsletter be approved. The motion passed.

Officer's Reports:

Membership: Caryn Sobel was not present. One new member introduced himself to the group. There are currently 33 paid members (7 new members) for 2015, 4 life members, and 1 guest member. A discussion was had regarding "Advocate members". Willie will review the current list and update it as necessary. REMINDER: Annual dues are to be paid in January. They are currently \$25.00 per year.

Treasurer: Ken Bailey present. See his report in the newsletter. We currently have about \$1496 in the checking account compared to over \$3000 last year.

Treasurer's Report for the month of December, 2014

Date: 17 January, 2015

Bank Balance: \$1496.19
Outstanding Checks: \$ 43.00
Outstanding Deposits: \$ 416.76
Ending Bank Balance: \$1869.95
Checkbook Balance: \$1869.95
Balance with Bank: Yes

Ending balance total: \$1869.95

Notes: Outstanding checks are a reimbursement for NSN outreach pins. Outstanding deposits are from PayPal and payments for memberships.

Respectfully submitted: Ken Bailey
Treasurer

Outreach: Candace Wall reported on upcoming events:

- **Tivoli Free Library:** cancelled due to lack of interest.
- **Saugerties High School Science Fair:** March 13, 2015.

Publicity: Paul Chauvet was present and reminded the group to send him information for publicity.

Webmaster: Paul Chauvet present. No issues reported.

Upcoming programs: Joe Macagne present.

- January – Keith Murdoch on planetary nebulae.
- Willee reported that Candace has 4 speakers lined up for early next year. If you have any suggestions, let Candace or Willee know.

Old Business:

- Annual High Point Scientific shopping spree is scheduled for Saturday, January 10.
- Annual dinner at the Would Bar & Grill scheduled for Saturday, February 7th.
- 2015 Star Party dates scheduled:
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Date	Time	Sunset	End Civil Twilight	Nearest New Moon
January 16th	7:30 PM	4:51 PM	5:22 PM	January 20th
February 13th	7:30 PM	5:26 PM	5:55 PM	February 18th
March 20th	8:00 PM	7:08 PM	7:36 PM	March 20th
April 17th	8:30 PM	7:39 PM	8:08 PM	April 18th
May 15th	8:30 PM	8:09 PM	8:41 PM	May 17th
June 19th	8:30 PM	8:34 PM	9:09 PM	June 16th
July 17th	8:30 PM	8:28 PM	9:01 PM	July 15th
August 14th	8:30 PM	7:58 PM	8:28 PM	August 14th
September 11th	8:00 PM	7:13 PM	7:41 PM	September 12th
October 9th	7:30 PM	6:25 PM	6:52 PM	October 12th
November 13th	7:30 PM	4:37 PM	5:07 PM	November 11th
December 11th	7:30 PM	4:25 PM	4:56 PM	December 11th

- Club video library is available. List is in the file section on the website.
- Club telescopes and resources:
 - o 13 inch dob mirror to be recoated. Jack Chastain still working on arranging it.
 - o Meade 125 ETX and 100 mm Celestron AP are available.
- Election of officers:
 - o Willee asked for nominations from the floor; there were none.
 - o The slate of officers presented at the last meeting was voted on and accepted. The officers for 2015 are:
 - **President** – Willee Yee
 - **Vice President** – Candace Wall
 - **Secretary** – Jim Rockrohr
 - **Treasurer** – Ken Bailey
 - **Newsletter Editor** – Rick Versace
 - **Webmaster** – Paul Chauvet
 - **Directors** – Karl Loatman, Steve Carey, Joe Macagne, and Dave Lindemann

New Business:

- (none)

Visitors/New Members:

1 visitor introduced himself. There were a total of about 15 people present for the meeting.

Observing Reports:

- A few people reported seeing a few Geminid meteors.

The meeting was adjourned at 7:54 PM. Next meeting is on January 20.

The program that followed was two presentations by our members and holiday goodies brought in by the members:

- “Art in Astronomy” by Karl Loatmann
- “Pointers to Constellations” by Joe Macagne and Willee Yee

Submitted by James Rockrohr, January 13, 2015.

From the President:

HOW YOU CAN HELP THE MHAA

Our club exists and carries out its activities through the dedicated and often thankless work of its members, especially its officers who do stuff that has to get done every month, such as our Treasurer, Ken Bailey, and our Newsletter Editor Rick Versace just to name two. Me, I get to do have all the fun doing whatever I want. Our Steering Committee has recently activated itself and will be setting some priorities for the MHAA.



That being said, there are lots of opportunities for any member to help. To begin with, the Steering Committee is pursuing a number of **fund raising** activities to increase our treasury a bit, which will enable us to support outreach efforts, maintain our club equipment, and pay our speakers. Anybody is welcome to submit other ideas, or even **make a contribution** beyond your annual dues. Remember, it is tax-deductible.

Candace Wall has agreed to continue functioning as **Outreach Coordinator** for the coming year in addition to her work as Vice President and Speaker Coordinator. She says she can handle both, but we do not want to burn her out, so someone stepping forward to do that at some point might be good.



Dark Sky advocacy is something we have done little of. This could be as overwhelming a job as anyone could want, with lights everywhere under various jurisdictions that could be improved. At this time there is a plan to replace some lights in Kingston with LEDs. It would be nice to have someone to participate in the city's discussion about that.

The club has acquired a good bit of **equipment** over the years, and it all **needs to be kept track of**, so we do not end up with a piece of equipment abandoned and deteriorating as happened with our Dob a while back. I have posted a list on the Yahoo group in the Files section, and I will attempt to keep it up to date for now. I will be glad to hand over this task to someone else.

We could use a **Club Historian and Archivist**. I believe there is a history of the early MHAA somewhere, though I do not see it in the Yahoo Files section. It should be updated, we should have a list of all past officers, and we should keep a file of newspaper articles about us. For now, Candace is keeping such a file.

We need a program to **welcome new members**. We had started a discussion last year about a new members packet, but that seems to have run out of steam. We have plenty of resources and materials, and could put together both online and dead tree packets. We need to decide what to include, have someone to gather everything together, and someone to see that it gets distributed.



We are always looking for **better viewing locations**. Joe Macagne has been pursuing a number of sites in the Minnewaska area. More is better, even if we only use them occasionally.

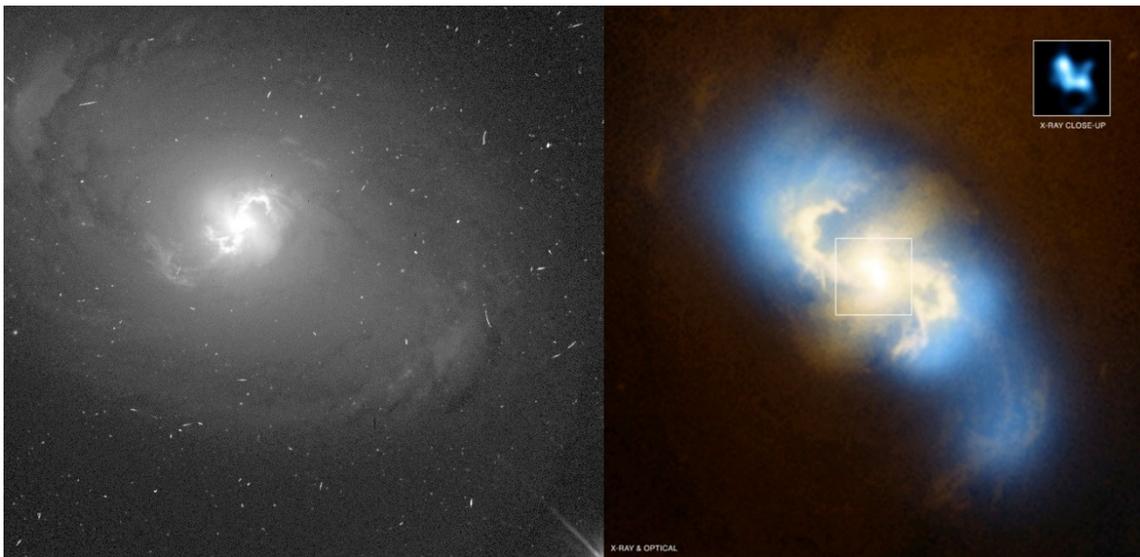
Don't want to do any of the above. **Make a suggestion**. No ideas? OK. Your membership is still valued. Why? Because you can bring your **enthusiasm and love for astronomy** to the MHAA. That's why we do this.

Minor mergers have massive consequences for black holes

By Dr. Ethan Siegel

When you think of our sun, the nearest star to our world, you think of an isolated entity, with more than four light years separating it from its next nearest neighbor. But it wasn't always so: billions of years ago, when our sun was first created, it very likely formed in concert with thousands of other stars, when a giant molecular cloud containing perhaps a million times the mass of our solar system collapsed. While the vast majority of stars that the universe forms—some ninety-five percent—are the mass of our sun or smaller, a rare but significant fraction are ultra-massive, containing tens or even hundreds of times the mass our star contains. When these stars run out of fuel in their cores, they explode in a fantastic Type II supernova, where the star's core collapses. In the most massive cases, this forms a black hole.

Over time, many generations of stars—and hence, many black holes—form, with the majority eventually migrating towards the



Images credit: NGC 3393 in the optical (L) by M. Malkan (UCLA), HST, NASA (L); NGC 3393 in the X-ray and optical (R), composite by NASA / CXC / SAO / G. Fabbiano et al. (X-ray) and NASA/STScI (optical).

centers of their host galaxies and merging together. Our own galaxy, the Milky Way, houses a supermassive black hole that weighs in at about four million solar masses, while our big sister, Andromeda, has one nearly twenty times as massive. But even relatively isolated galaxies didn't simply form from the monolithic collapse of an isolated clump of matter, but by hierarchical mergers of smaller galaxies over tremendous timescales.

If galaxies with large amounts of stars all have black holes at their centers, then we should be able to see some fraction of Milky Way-sized galaxies with not just one, but *multiple* supermassive black holes at their center!

It was only in the early 2000s that NASA's Chandra X-ray Observatory was able to find the first binary supermassive black hole in a galaxy, and that was in an ultra-luminous galaxy with a double core. Many other examples were discovered since, but for a decade they were all in ultra-massive, active galaxies. That all changed in 2011, with the discovery of two active, massive black holes at the center of the regular spiral galaxy NGC 3393, a galaxy that must have undergone only minor mergers no less than a billion years ago, where the black hole pair is separated by only 490 light years! It's only in the cores of active, X-ray emitting galaxies that we can detect binary black holes like this. Examples like NGC 3393 and IC 4970 are not only confirming our picture of galaxy growth and formation, but are teaching us that supermassive relics from ancient, minor mergers might persist as standalone entities for longer than we ever thought!

Check out some cool images and artist reconstructions of black holes from Chandra:

<http://chandra.harvard.edu/photo/category/blackholes.html>

Kids can learn all about Black Holes from this cool animation at NASA's Space Place: <http://spaceplace.nasa.gov/black-holes>.

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. Call the Club Hotline for updated information. Everyone should meet at the gate at the scheduled time. The gate will be closed after that time.
- ♦ 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.