



Mid-Hudson Astronomical Association

April, 2014

Website: www.midhudsonastro.org

Yahoo Group: MHAstro

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

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

Directors: Steve Carey, Dave Lindemann, Karl Loatman, & Tom Rankin

Meeting Minutes

Minutes of the monthly meeting of the Mid Hudson Astronomical Association, March 18, 2014

The meeting was called to order at 7:31 PM by President Willie Yee in the Coykendall Science Auditorium at SUNY, New Paltz, NY.

The minutes of the previous meeting were approved as published in the newsletter with 2 corrections (Joe Macagne has the Dynamax scope and the correct date for the Regulus occultation is March 20).

Officer's Reports:

Membership: Caryn Sobel was not present. Willie would like us to have a new member kit to handout to new members (star party etiquette, etc.).

Treasurer: Ken Bailey present. See his report in the newsletter.

Outreach: Candace Wall

Upcoming events include:

- **Boy Scout Jamboree** at the Dutchess County Fairgrounds May 16-18: They have asked us if we want to participate. Still some confusion about what they want but Candace will coordinate through the MHAstro mail list. They liked the idea of Eric's Solar System Model. Star Party Friday and Saturday nights. Indoor and outdoor booth on Saturday, 10 AM - 4 PM.
- **April Star Party:** Who will make weather call since Willie will be in Chile? – Ken Bailey volunteered.
- **Rosendale Bridge:** No news.
- **Globe at Night:** March 21-20. Please participate to improve light pollution data over the Hudson Valley.
- **NEAF:** April 11-12. We have posters available. Please post them.
- **Total Lunar Eclipse:** April 15. May be event at the Smolen Observatory.
- **Sun Day:** June 22. Willie organizing.
- **Stokes Star Party:** April 25-26. Northern New Jersey.
- **Earth Day:** April 27. Willie setting up solar scopes at Hugonot Church in New Paltz.
- **Rail Trail Star Party:** May 2. Fundraiser for Rail Trail. We supply a couple of scopes.
- **International Astronomy Day on the Walkway:** May 10. Bob Berman speaking.
- **Olana events:**
 - o Saturday, June 14, 6-9 PM (weather date June 15)
 - o Saturday, August 16, 2 PM (?), Sun Tour (weather date August 17)
 - o Sunday, September 21, 7-9 PM (no weather date)
- **Dutchess County Science Fair:** Saturday, March 29. Steve Carey looking for help in judging. Motion approved for \$50.00 for prizes. Also T-shirts and two 1 year memberships.

Publicity: Paul Chauvet present. He's working on handouts for the Boy Scout event including star charts. Eric is updating the Facebook page. Please post to it.

Webmaster: Paul Chauvet was present. The PayPal link is now working correctly. 10-12 have used it already to renew their memberships.

Upcoming programs: Joe Macagne

- March will be Willie Yee on his trip to Chile.
- We need speakers. If you have any ideas or leads, let Joe or Willie know.

Old Business:

- Club Library – Ken has the library if any paid member wants to check out a video.
- Club telescopes:
 - o **13.1" Club Telescope:** Jack Chastain has it and will bring it to club events.
 - o **8" Dynamax SCT:** Joe Macagne has it and it is available to paid members.
 - o **6" Bausch & Lomb SCT:** Tom Crepet has it and it is available to paid members.
 - o **4" Tasco Newtonian:** Paul Chauvet has it and is using it.

New Business:

- **Comet ISON Observing Awards:**
 - o Steve Carey observed ISON.
 - o Paul Dellechiaie observed ISON.
 - o Ken Bailey tried to see ISON.
 - o Jack Chastain tried to see ISON.
- **Outreach Awards:**
 - o Ken Bailey
 - o Candace Wall
 - o Paul Granich
- **Informal Club Dinners:** Willie has had some interest in having more club dinners; less formal, more spontaneous. Please make suggestions.

- **Mason Dixon Star Party:** July 23-27. It is their 25th anniversary. Motion by Ken Bailey to give a club t-shirt and sweatshirt to be raffled at the star party (Ken is attending). Approved.
- **Saugerties High School Science Fair:** April 9. It is their first science fair and they have asked us to attend. We can have a table. Fair is 5 – 7 PM, so probably not dark enough for observing. Possible solar scope.
- **Girl Scouts in Saugerties:** Contacted Ken to arrange a star party and work on badges. No date, yet, but 4/15 and 5/7 mentioned.
- **Cherry Springs Star Party:** Last weekend in June.

Visitors/New Members:

No visitors introduced themselves. There were a total of about 22 people present for the meeting.

Observing Reports:

Morning sky is nice right now: Moon, Mars, and Venus.

Willie reported on the COSMOS Premier that he and several of our members attended in NYC.

The meeting was adjourned at 8:04 PM.

The program that followed was a talk by Ted Blank, **Chasing Shadows for Planetary Science: How to Successfully Observe and Time the Upcoming Occultation of Regulus on 20 March 2014.**

Submitted by James Rockrohr, April 10, 2014.



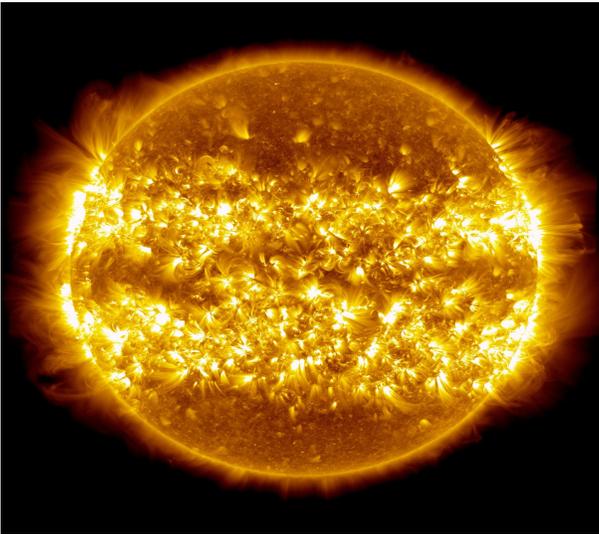
The Power of the Sun's Engines

By Dr. Ethan Siegel

Here on Earth, the sun provides us with the vast majority of our energy, striking the top of the atmosphere with up to 1,000 Watts of power per square meter, albeit highly dependent on the sunlight's angle-of-incidence. But remember that the sun is a whopping 150 million kilometers away, and sends an equal amount of radiation in all directions; the Earth-facing direction is nothing special. Even considering sunspots, solar flares, and long-and-short term variations in solar irradiance, the sun's energy output is always constant to about one-part-in-1,000. All told, our parent star consistently outputs an estimated 4×10^{26} Watts of power; one *second* of the sun's emissions could power all the world's energy needs for over 700,000 years.

That's a literally astronomical amount of energy, and it comes about thanks to the hugeness of the sun. With a radius of 700,000 kilometers, it would take 109 Earths, lined up from end-to-end, just to go across the diameter of the sun once. Unlike our Earth, however, the sun is made up of around 70% hydrogen by mass, and it's the individual protons — or the nuclei of hydrogen atoms — that fuse together, eventually becoming helium-4 and releasing a tremendous amount of energy. All told, for every four protons that wind up becoming helium-4, a tiny bit of mass — just 0.7% of the original amount — gets converted into energy by $E=mc^2$, and that's where the sun's power originates.

You'd be correct in thinking that fusing $\sim 4 \times 10^{38}$ protons-per-second gives off a tremendous amount of energy, but remember that nuclear fusion occurs in a *huge* region of the sun: about the innermost quarter (in radius) is where 99% of it is actively taking place. So there might be 4×10^{26} Watts of power put out, but that's spread out over 2.2×10^{25} cubic meters, meaning the sun's energy output *per-unit-volume* is just $18 \text{ W} / \text{m}^3$. Compare this to the average human being, whose basal metabolic rate is equivalent to around 100 Watts, yet takes up just 0.06 cubic meters of space. In other words, **you emit 100 times as much energy-per-unit-volume as the sun!** It's only because the sun is so large and massive that its power is so great.



It's this slow process, releasing huge amounts of energy *per reaction* over an incredibly large volume, that has powered life on our world throughout its entire history. It may not appear so impressive if you look at just a tiny region, but — at least for our sun — that huge size really adds up!

Upcoming Events

April 15 – Total Lunar Eclipse

April 25 – MHAA Star Party

April 25-27 – Stokes Star Party, New Jersey

April 27 – Earth Day Celebration, New Paltz

May 2 – Rail Trail Star Party

May 7 - “Lithic Alignments” Ancient Astronomy ?, Rosendale Library

May 10 - International Astronomy Day. Walkway event with Bob Berman

May 16 -18 – Boy Scout CamporALL – Rhinebeck Fairgrounds

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.