



STAR FIELDS

Newsletter of the
Amateur Telescope Makers of Boston
Including the Bond Astronomical Club
Established in 1934
In the Interest of Telescope Making & Using

Vol. 28, No. 7 July 2016

This Month's Meeting . . .

Thursday, July 14th, 2016 at 8:00 PM
Phillips Auditorium

Harvard-Smithsonian Center for Astrophysics

Parking at the CfA is allowed for the duration of the meeting

Member Night



Back by popular demand (and a voice vote from the membership at the June meeting) is our July Member Speaker Program. Among the home-grown talent presenting are Alan Sliski, his son Aaron, and Ken Launie, who will discuss their visits to Chile to review the redeployment of the AAVSO Photometric All-Sky Survey (APASS) telescope system. More info on this program can be gleaned from the AAVSO website at www.aavso.org/apass.

Club Secretary Phil Levine will talk about last April's Nantucket Star Party.

Mario Motta will cap things off with an update on his research into the WD1145 exoplanet.

Please join us for a pre-meeting dinner discussion at Changsho, 1712 Mass Ave, Cambridge, MA at 6:00pm before the meeting.

President's Message . . .

At the June meeting, I was formally elected as ATMob President. It's an honor I won't take lightly. Also getting the nod for office positions were Tom McDonagh (Vice President), Phil Levine (Secretary), Eileen Myers (Treasurer), Chris Elledge (Membership Secretary), and Al Takeda and Bruce Tinkler (Members-at-Large). I think I speak for all the newly-elected members of the Board when I say we'll be doing our best to ensure that ATMob maintains its stature as one of the finest astronomy clubs in the country.

Summer offers mixed blessings for the amateur astronomer. Like most of the populace, we enjoy those long summer days when we can return home from work and still have some daylight hours to relax in the back yard. On the flip side, darkness doesn't set in until an ungodly late hour, and a summer evening can be ruined by hazy and humid conditions along with those pesky mosquitoes. The good news is that the days are gradually shortening and, during the latter half of summer, cool air masses sweep down from Canada to produce crystal clear sky conditions.

Summer is also astro-convention time, and we have several to look forward to. First up is the Astronomer's Conjunction (www.philharrington.net/astroconjunction), which will take place in Northfield, MA from July 8-12. July 24-30 brings the Maine Astronomy Retreat (MARS) to be held at Medomak, ME – details at www.astronomyretreat.com. From July 29 through August 6, the Rockland Astronomy Club will be hosting its Summer Star Party (www.rocklandastronomy.com/SSP) in Plainfield, MA. Foremost, of course, is the Stellafane Convention (www.stellafane.org), held at Springfield, VT from August 4-7. Several ATMob members, including Paul Courtemanche, Mario Motta, Rich Nugent, Phil Rounseville, Al Takeda, and yours truly will be presenting lectures and how-to seminars.

Summer may mean a hiatus from our monthly meetings, but ATMob will remain busy with observing at the Clubhouse on Thursday, Friday, and Saturday evenings, weather permitting. It's not unusual to have Clubhouse Committee members open up the Clubhouse on other evenings if clear skies are in the offering. On Friday nights from 7 to 10 pm, July 8 to August 12, John Maher will be running the Video Astronomy Course, "A Visual Guide to the Universe," More details can be found on our website and at www.thegreatcourses.com/courses/science/a-visual-guide-to-the-universe.html. For those of you new to backyard astronomy (or you old-timers who've been away from your scopes for a long time and need a refresher), I'll be offering a Summer Sky Survey at the Clubhouse on the evening of July 28 at 8pm (rain dates Jul 29 and 30). And don't forget the annual ATMob picnic slated for September 10 at 3 pm on the grounds of the Westford Clubhouse. Maybe summer isn't such a bad season for amateur astronomers after all! Hope yours is safe and happy with an abundance of clear nights. See you in September!

Clear Skies!

~ Glenn Chaple – President ~

June Meeting Minutes . . .



Bob Naeye *

Minutes of the ATMoB meeting held on June 9, 2016 in the Phillips Auditorium at the Harvard Smithsonian Center for Astrophysics. President Glenn Chaple started the meeting at 8:00 pm.

Glenn presented the slate of candidates for the club's executive board. By voice vote, the membership elected Glenn Chaple (President), Tom McDonagh (Vice-President), Eileen Myers (Treasurer), Phil Levine (Secretary), Chris Elledge (Membership Secretary), Al Takeda (Member at Large) and Bruce Tinkler (Member at Large).

- Phil Levine gave the Secretary's report.
- Eileen Myers gave the annual end of fiscal year Treasurer's report.
- Tom McDonagh gave the Membership report. Tom introduced Chris Elledge as the new Membership Secretary. Tom mentioned that it is the time to renew your ATMoB membership, as we have just entered a new fiscal year.
- Glenn Chaple gave the Observing report. Glenn mentioned that Bruce Berger has been working to repair the ATMoB Research and Imaging Observatory (ARIO) shutter motor assembly. Glenn indicated that the ARIO facility has the technical sophistication to make contributions toward research projects sponsored by organizations such as the AAVSO.
- The Sue French Fan Club Object for the month for June is NGC 5701, a barred spiral galaxy in Virgo.
<http://www.kopernik.org/images/archive/n5701.htm>
- The Las Vegas Observers Challenge for the Month of June is M5, a globular cluster in Serpens.
<http://freestarcharts.com/messier-5>
- Steve Clougherty's Observing Picks for the month of June are:
[M3](#)

[M51](#)
[NGC 4565](#)
[M104](#)
[NGC 4754, NGC 4762](#)

- Steve Clougherty gave the Clubhouse Report.
- Steve summarized all of the activities performed by the membership this past year at the Westford Clubhouse during work parties. He noted that Thursday night is mirror-grinding night, Friday night educational videos are presented by John Maher, and Saturday is observing night. Steve indicated the Clubhouse Observing field is available for members wishing to observe on Thursday, Friday and Saturday nights.
- Announcements: none
- Old Business:
Maria Batista gave an update on the Club website progress. The website committee (Bernie Kosicki, Kristy Glidden and Maria Batista) eliminated two of the web services under consideration. The process to select a new web service provider for the club website is on-going. Bruce Berger, Brewster LaMacchia, Peter Richardson and Bernie Voltz were acknowledged for all their efforts spent maintaining the current club website.
- New Business:
Glenn Chaple mentioned that a new program to help foster observing will be introduced in the future. Glenn, Eileen Myers, and Steve Clougherty will be putting together some observing lists to be announced at future meetings.
- ATMoB monthly meetings are now being video recorded by our new Membership Secretary, Chris Elledge. Chris is uploading the meeting video to YouTube. Check the ATMoB Announce email or the club newsletter, *Starfields*, for link information. Glenn mentioned live streaming of the monthly ATMoB meetings is a possibility at some point in the future.
- Snacks for the evening were provided by Glenn Chaple.

Glenn Chaple introduced ATMoB member Bob Naeye as the guest speaker for the evening. Bob's talk was entitled: "Birth of a New Science: LIGO and the Discovery of Gravitational Waves". Bob's extensive background includes being the Editor in Chief at *Sky and Telescope* magazine, Senior Editor at *Astronomy* magazine, Researcher/Reporter at *Discover* magazine, Editor in Chief of *Mercury* magazine, Senior Writer at the Astrophysics Science Center at NASA's Goddard Space Flight Center, membership in a number of astronomy organizations, including ATMoB, and author of two astronomy books.

Bob began by presenting an overview of gravitational waves (GW), which were predicted by Albert Einstein in his 1916 and 1918 published papers. <http://space.mit.edu/LIGO/more.html>. Gravity can be thought of as a distortion in space-time due to the presence of a massive body of matter. GW are manifested as

“ripples” in the fabric of space-time, and are considered to be a “weak force”. Bob compared electromagnetic waves with gravitational waves. Both travel at the speed of light and are subject to signal weakening due to the inverse square law. Unlike electromagnetic waves, gravitational waves are not impeded or effected by interstellar dust and might provide more accurate information about distant objects in the cosmos. GW are incredibly hard to detect. The effect of GW from a distant galaxy has an almost infinitesimally small measurable impact here on Earth. Bob indicated that the measured effect of a GW from a distant galaxy, as measured here on Earth, would be about 1/1000th the width of a proton.

The astronomical tool used to detect gravitational waves, the Laser Interferometer Gravitational Wave Observatory (LIGO), is actually two widely separated facilities. The Hanford Observatory is in Washington State, and the Livingston Observatory is located in Louisiana. These two observatories utilize laser light and a series of mirrors, and compare their recordings to verify detection of GW. Bob indicated that the LIGO mechanism is the most precise instrumentation ever made by humanity.

<https://www.ligo.caltech.edu/page/gravitational-waves>
<https://www.caltech.edu/content/brief-history-ligo>

While GW are likely widespread throughout the cosmos, a promising source of GW, strong enough for us to detect, are merging pairs of massively dense objects. Likely sources are the merging of two neutron stars, two black holes, a neutron star and a black hole or a Supernova.

<https://www.ligo.caltech.edu/page/gw-sources>

The highly publicized LIGO confirmation of GW, announced in the press on February 2016, has led to three of the principle investigators, Rainer Weis, Ronald Drever, and Kip Thorne, being awarded the Gruber Prize in Cosmology for 2016. In addition, the trio have also been awarded the Kavli Prize in Astrophysics and The Special Breakthrough Prize in Fundamental Astrophysics.

<http://gruber.yale.edu/cosmology/2016/ronald-w-p-drever>
<http://space.mit.edu/rainer-weiss-wins-kavli-prize-astrophysics>
<https://breakthroughprize.org/News/32>

Bob gave us some historical background regarding early pioneering efforts to detect GW. In the 1960’s Joseph Weber designed a GW detector using a large cylindrically shaped aluminum bar and claimed to have detected gravity waves. Although the scientific community was unable to verify Weber’s results and rejected his findings, his early pioneering work was notable. The American Astronomic Society prize for instrumentation is named after Joseph Weber. The “Weber Bar”, with a commemoration plaque, is now located at the Hanford LIGO facility.

http://phys.colorado.edu/sites/default/files/gravity_waves_and_neutrinos.PDF

Indirect evidence of GW were reported by the team of Joseph Taylor and Russell Hulse, from their 1974 study of radio waves

emanating from a binary pulsar PSR 1913+16. Taylor and Hulse were awarded the Nobel Prize for Physics in 1993 for their work.

http://www.nobelprize.org/nobel_prizes/physics/laureates/1993/press.html

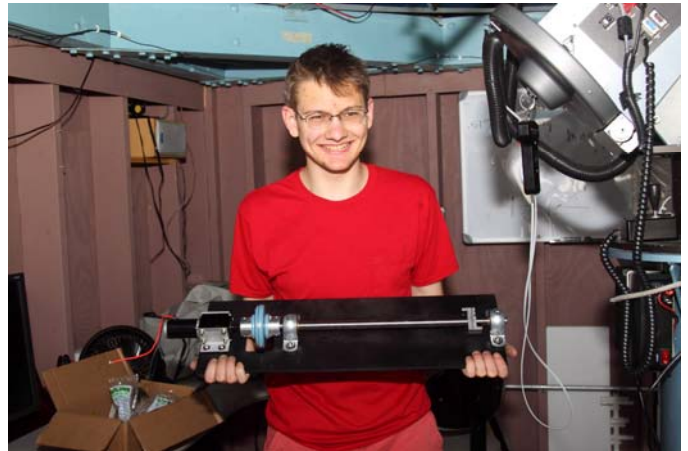
In 2004, a binary pulsar, PSR J1829+2456, was detected and exhibited a short orbital period of 3.4 hours. This meant that the relativity effect should be very strong, making it a promising GW research object for LIGO.

<http://astro.phys.au.dk/~hans/pulsar/artikel04.pdf>

Bob concluded that the study of gravitational waves promises to enhance our understanding of the cosmos. It provides a clearer window to observe and a better understanding of astrophysical objects and phenomena. It has the potential to aid in the development of new technologies. Collaborative research with other countries should enhance the study and analysis of these waves. <http://www.ligo.org/partners.php>

~ Phil Levine - Secretary ~

Clubhouse Report . . .



Charlie Gettys holding his improved shutter drive assembly *

June 2016 Clubhouse Report

The June work party was held under sunny skies on Saturday the 18th, and approximately twenty volunteers helped out with a variety of Clubhouse projects.

Brush clearing and “weed whacking” continued, primarily along the west side of the observing field, thanks to Maria Batista, Al Takeda and Paul Courtemanche. John Blomquist used his new pole mounted chain saw to sever branches that were interfering with lawn mowing. Phil Levine, Bill Toomey and John Blomquist cleared brush on the lower field. During the month John had also hauled his tractor mower and mowed the entire property.

After receiving a large gravel drop from Wayne Legacy earlier this month, members shoveled and spread gravel around the low spots in the driveway. Thanks to Chris Elledge, Phil Rounseville and Bill Toomey for their hard work.

Tom Wolf spent a couple of hours scraping loose paint from the upper part of of the front porch and this area will be stained during the Summer.

Maria Batista and Al Takeda fabricated Permethrin laced "tick tubes" and placed them around the observatories. This homemade tick defense is made by placing Permethrin laced cotton balls inside paper towel and/or toilet paper cardboard rolls. The tubes are then placed in areas where rodents are present. Mice will take the cotton material and use it for nest building. The active Permethrin will kill any ticks on them but will not harm the mice. Conversely, Sai Vallabha, Maria and Al positioned mouse traps in each observatory.

Steve Clougherty, Joe Henry and Sai Vallabha cut out and installed heavy screening material onto the back of the 17-inch mirror cell to keep the mice from nesting inside their favorite telescope!

Steve and Phil Rounseville demonstrated cleaning their 18-inch and 10-inch mirrors outdoors at the work party.

John Maher installed the newly purchased 80-mm APO refractor on the 10-inch Meade Schmidt-Cassagrain telescope (SCT).

Bruce Berger, Jim and Charlie Gettys worked on the shutter mechanism for the ATMob Research and Imaging Observatory (ARIO). We expect that the dome and shutter will be operating smoothly very soon.

Thanks again to John Reed, Sai Vallabha, Eileen Myers and the lunch crew for all of their efforts!

Members and friends stayed late on Saturday night for some planetary observing.

Thanks to the following members who have contributed time to the ATMob Clubhouse: Bruce Berger, Sameer Bharadwaj, Maria Batista, John Blomquist, Steve Clougherty, Paul Courtemanche, Chris Elledge, Charlie Gettys, Jim Gettys, Joe Henry, Sergio Lafontaine, Phil Levine, John Maher, Mike Mattei, Eileen Myers, John Reed, Phil Rounseville, Art Swedlow, Al Takeda, Bill Toomey, Sai Vallabha and Tom Wolf.

~ *Clubhouse Committee Chairs* ~
 ~ *Steve Clougherty, John Reed and Dave Prowten* ~

Clubhouse Evening Schedule	
Thursday Night Mirror Making	7:00 pm - #
Friday Night Educational Videos	7:00 pm - 10:30 pm #
Saturday Night Observing	7:00 pm - ##
# Closing time is determined by the organizers	
## Closing time is determined by the "A" members on duty	
Note: The Clubhouse is closed on the 2nd Thursday of the month for our monthly meeting in Cambridge.	
Due to inclement weather or cloudy conditions on Saturday evenings, the "A" members on duty may elect to close the Clubhouse. Please call the Clubhouse at (978) 692-8708 or check for messages posted to ATMOb-ANNOUNCE.	

Clubhouse Saturday Schedule		
July 16	WORK PARTY # 7 John Maher **	
July 23	Glenn Meurer	Rich Nugent
July 30	Brian Maerz	John Panaswich
August 6	CLUBHOUSE CLOSED STELLAFANE	
August 13	Karl Dean	Mike Hill
August 20	WORK PARTY # 8 Eileen Myers **	
August 27	Dave Siegrist	Bill Toomey
September 3	Steve Clougherty	Al Takeda
September 10	Bruce Berger	Jim Gettys

**Duty member is supplemented by a work crew volunteer. If a volunteer is not available, the work crew closes the Clubhouse

Membership Report . . .

Hello everyone! I'm the new club Membership Secretary, Chris Elledge. I look forward to working with everyone to help keep the club running smoothly. With that said, it's time to perform my duties.

I am pleased to welcome our newest members:

Dan Hogan
 Anis Khimani
 James Luening
 Nimesh Patel
 Manjunath Venkatram

As of June 24th, 2016 we have 311 members. Of that number we have 59 members that are either new as of 2016 or have renewed for 2016, so we still have a long way to go. Please renew today if you are not one of those 59 members.

Members that have their subscriptions to *Sky and Telescope* and *Astronomy* magazines can avoid interruption of their subscription deliveries by renewing as soon as possible.

I'm including Tom's thorough description of the online renewal process below:

Please log into the www.ATMoB.org website using your email on record with the club as your login ID. If you cannot access the website or have forgotten your password, please contact the Membership Secretary via email at membership@atmob.org.

- Once you have successfully logged in, click the "Your Details" tab found on the top right portion of the page.
- In the middle of the page, click on the "Renewals" tab.
- Click on the "Renew your membership" tab and follow the instructions. One can pay using PAYPAL or personal check. Members that joined in 2016 are not required to renew until June 2017.

For members who prefer to renew by mail, we are including a renewal application form with this newsletter that you can fill out and mail to my address provided on the form. The form is also available online at

www.atmob.org/about/join/atmobmemapp.pdf

If you need any help in the renewal process, please contact me by email, phone, or mail. My contact information is available on the cover page of the newsletter and on the website.

~ *Chris Elledge – Membership Secretary* ~

Annual Club Picnic –Sat, Sept 10 . . .

All Members and their Families are invited.

Saturday, September 10th is the date of this year's Annual Club Picnic at the Clubhouse in Westford, start time 3:00 P.M. Enjoy a day with good food and lots of astronomy talk with other ATMoB members.

Please bring a favorite dish to share - salad, main dish, dessert, soup, appetizer, fancy bread,... A serving utensil would be helpful. We will provide hamburgers, drinks, potato chips, ketchup, mustard, coffee, paper goods and plastic cutlery.

Club members, their families and friends are invited. There will be astronomy activities for kids. Other planned activities are a tour of the clubhouse facilities, a demonstration of mirror grinding, and the ever popular walk "up the hill", stopping along the way to talk about the MIT Haystack Observatory facility.

Share your astronomy stories and experiences. Bring any astrophotography you would like to show. There will be daytime H-alpha and white light solar viewing, and night sky observing after sunset (all, weather permitting). Celestial attendees include 1st Q Moon, Venus, Saturn, Mars, Uranus and Neptune.

The picnic is on rain or shine. Bring lawn chairs or blankets to sit on. Bring your favorite suntan lotion and mosquito repellent. Observing will continue until Midnight if the sky is clear, so bring your telescope and your observing clothing and gear. The club's scopes will be open too.

Directions to the clubhouse can be found on the last page of Star Fields and at the club website www.atmob.org.

Questions - Email Eileen Myers at starleen@charter.net

Don't miss the fun!

Organized by ATMoB's Good Times Co-Hosts and Co-Chefs, Julie Kaufmann, John Maher, Eileen Myers and Al Takeda.

~ *Submitted by Eileen Myers – Treasurer* ~

Stellafane Convention . . .



Don't Miss this year's Stellafane Convention, Springfield, VT

Thurs – Sun, Aug 4-7

Only 2-3 hour drive from Boston, camp or stay at nearby lodging

- Support the six ATMoB members who will be presenting this year
- See fantastic homemade telescopes and other instruments
- Participate in the first Stellafane Observing Olympics: find 15 of the objects on the list and win a lapel pin (don't miss Larry Mitchell's talk if you enjoy observing with a telescope)
- Fantastic programming for beginner, intermediate and advanced levels: astrophotography in motion, making APO refractors, building large binoculars, Soviet astronomy, effects of LED street lighting, geology, mirror testing, exoplanets, collimating Cassegrain-type systems, AAVSO, occultation timing, evolution of the telescope, observing orbiting satellites, history of Stellafane, getting started in astronomy, and many more topics:
<http://stellafane.org/convention/2016/2016-schedule.html>
- Outdoor barbecue; breakfast, lunch dinner, snacks available on site
- Dark skies and great view of the Milky Way
- Solar observing
- Mirror and telescope making demonstrations all day
- Activities for kids and teens
- Astrophotography workshop Thursday at the Hartness House
- Friday night short talks presented by convention attendees
- 2017 Solar Eclipse advice from "Mr. Eclipse" Fred Espenak

~ *Submitted by Eileen Myers – Treasurer* ~

Sky Object of the Month . . .

July 2016

Courtesy LVAS Observer's Challenge***

M92–Globular Cluster in Hercules

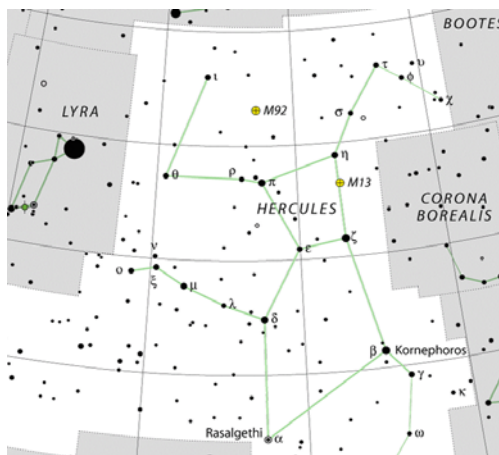
(Magnitude 6.5, Size 14')



Image by Mario Motta MD

This month's LVAS Observer's Challenge takes us to the "other" Messier globular in Hercules. Overlooked in favor of the brighter and easier to find M13, M92 is a noble object in its own right. Discovered by Johan Bode in 1777, it was independently found and catalogued by Messier four years later. Its distance of 26,000 light years is similar to that of M13.

Locating M92 isn't all that difficult. It's bright enough to be picked up with binoculars and finder scopes. Just scan the region about two-thirds of the way from eta (η) to iota (ι) Hercules and look for a hazy round patch about half the size of M13. The challenge isn't in observing M92, but in determining the smallest aperture that will resolve this cluster.



IAU and Sky and Telescope

***The purpose of the LVAS Observer's Challenge is to encourage the pursuit of visual observing. It is open to everyone who is interested, and if you are able to contribute notes, drawings, or photographs, the LVAS will be happy to include them in their monthly summary. If you would like to contribute

material, submit your observing notes, sketches, and/or images to either [Roger Ivester \(rogerivester@me.com\)](mailto:rogerivester@me.com) or [Fred Rayworth \(fred@fredrayworth.com\)](mailto:fred@fredrayworth.com). To find out more about the LVAS Observer's Challenge or access past reports, log on to lvastronomy.com/observing-challenge.

~ Glenn Chaple – Observing Committee ~

One Member's Tick and Mosquito Repellent Uniform . . .

As we all know, being outdoors exposes us to insect-borne diseases through insect bites and stings. Many of us enjoy hours of outdoor observing at the Clubhouse, creating a unique problem to solve to safeguard our health. I would like to inform the membership about a personal process that seems to help repel ticks and mosquitoes.

Create a dedicated uniform for observing. Items of clothing should include:

- A baseball hat or equivalent
- T-Shirt (for warm nights)
- Outer shirt with long sleeves
- Long Pants (Not shorts!)
- Socks
- Old sneakers (closed toed shoes)
- Medium sized towel

Treat the above articles of clothing with Permethrin. This is a spray that can be purchased at most stores that sell insect repellants, ie. Wal-Mart, your local garden center or sports store.

Be very careful to read and follow the instructions on the packaging and let the clothing air dry for at least 6 hours before wearing. **DO NOT APPLY TO YOUR SKIN OR WEAR THE CLOTHING IF IT IS STILL DAMP FROM THE APPLICATION!**

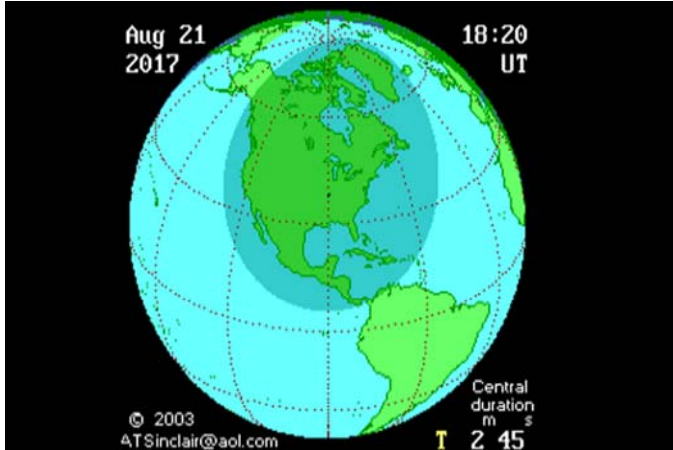
I wear this uniform for observing and if needed I drape the towel over the top of the baseball cap and shoulders, which allows me to look through the telescope eyepiece. The towel does seem to help keep the mosquitoes from biting my head and face. I also use REPEL Mosquito Wipes® on my hands and exposed skin if needed (but be careful as this contains 30 % DEET and will damage plastic parts such as hand controllers.

When I am done observing, I change my clothes and put this uniform into a heavy plastic bag (I use a rubber coated bag) to maintain the Permethrin treatment.

Wash the clothing when needed but they will need to be retreated after a few washes.

~ Submitted by John Maher ~

2017 Total Solar Eclipse . . .



The Total Solar Eclipse is now just over a year away (August 21, 2017). If you would like to join many other ATMoB members in the Columbia, MO area for this trip, please contact Bernie Volz or Mario Motta as we may be able to accommodate a few more.

Please see <http://atmob.org/events/travel.php> for more details and on how to contact us.

~ Submitted by Bernie Volz ~

Mario's AMA Report on LED Community Lighting Accepted . . .



LED Light. Credit Bob King

Editor: From Dr. Mario Motta's email dated 6/14/2016.

My report titled "Human and Environmental effects of Light Emitting Diode (LED) Community Lighting" was accepted unanimously at the American Medical Association (AMA) meeting today at the AMA annual meeting in Chicago. I will make this available after the meeting has concluded. George Brainard at Thomas Jefferson Medical School and Richard Stevens at the University of Connecticut (UConn) helped me to write this. I notified them minutes after it was passed. I just got a reply from George. He is giving a talk at the conference on the

effects of blue light on cancer and sleep disturbances. He is placing this announcement right into his slide deck. Impact on the same day!

I got many delegates to stand up and support this. In fact, they are thanking me for bringing up this whole issue to them for the past 8 years. They are really on board.

This will now be an AMA public policy that will encourage all municipalities to use 3000K or lower lighting for their streetlights.

FYI, I was recently notified that GE now has a policy of adopting, as accepted science, the impact of bad lighting on human disease. They will produce better lights, and specifically reference my 2012 report on human health effects of bad lighting. WOW, can you believe that! This is a huge win.

Editor: Here is the link to the released AMA report; [Human and Environmental Effects of Light Emitting Diode \(LED\) Community](#).

~ Submitted by Mario Motta, MD ~

Clear Skies at the Clubhouse . . .



Clubhouse Observing Field *

After weeks of dismal weekend weather, we were finally treated to clear skies on Saturday, July 2nd. Fantastic views of the planets Jupiter, Mars and Saturn delighted us in the early evening. Later we could see Cygnus the Swan rising above us, heralding the return of the Milky Way to the Summer sky. Every concrete pad was in use and scopes were set up on the grass.

Editor: * Photos by Al Takeda unless otherwise noted.

**September Star Fields DEADLINE
Sunday, August 21st**

**Email articles to Al Takeda at
newsletter@atmob.org**

Articles from members are always welcome.

POSTMASTER NOTE: First Class Postage Mailed July 11, 2016

Amateur Telescope Makers of Boston, Inc.
c/o Chris Elledge, Membership Secretary
99 College Ave
Arlington, MA 02474
FIRST CLASS

EXECUTIVE BOARD 2016-2017

PRESIDENT: Glenn Chaple (978) 597-8465

VICE PRES: Tom McDonagh

SECRETARY: Phil Levine (781) 956-6509

MEMBERSHIP: Chris Elledge (781) 325-3772

TREASURER: Eileen Myers (978) 456-3937

MEMBERS AT LARGE: Bruce Tinkler (781) 862-8040

Al Takeda (508) 494-7877

PAST PRESIDENTS:

2012 - 14 Mike Hill (508) 485-0230

2010 - 12 Bernie Kosicki (978) 263-2812

COMMITTEES

CLUBHOUSE: John Reed (781) 861-8031

Steve Clougherty (781) 784-3024

David Prowten (978) 369-1596

OBSERVING: Bruce Berger (978) 387-4189

NEWSLETTER Al Takeda newsletter@atmob.org

PUBLIC OUTREACH

STAR PARTY COORDINATOR:

Virginia Renehan starparty@atmob.org

How to Find Us...

Web Page www.atmob.org

MEETINGS: Held the second Thursday of each month (September to July) at 8:00PM in the Phillips Auditorium, Harvard-Smithsonian Center for Astrophysics, 60 Garden St., Cambridge MA. For INCLEMENT WEATHER CANCELLATION see www.atmob.org and check your email on the ATMOB-ANNOUNCE list.

CLUBHOUSE: Latitude 42° 36.5' N Longitude 71° 29.8' W

The Tom Britton Clubhouse is open every Saturday from 7 p.m. to late evening. It is the white farmhouse on the grounds of MIT's Haystack Observatory in Westford, MA. Take Rt. 3 North from Rt. 128 or Rt. 495 to Exit 33 and proceed West on Rt. 40 for five miles. Turn right at the MIT Lincoln Lab, Haystack Observatory at the Groton town line. Proceed to the farmhouse on left side of the road. Clubhouse attendance varies with the weather. It is wise to call in advance: (978) 692-8708.

Heads Up For The Month . . .

To calculate Eastern Daylight Time (EDT) from Universal Time (UT) subtract 4 from UT.

July 11 First Quarter Moon (Moonset at midnight)

July 19 Full Moon

July 26 Last Quarter Moon (Moonrise at midnight)

July 29 Delta Aquariid Meteor Shower

Aug 2 New Moon

Aug 10 First Quarter Moon (Moonset at midnight)

Aug 12 Perseid Meteor Shower