



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. 34, No. 10 November 2022

This Month's Meeting . . .

Thursday, November 10th, 2022 at 8:00 PM

Phillips Auditorium

Center for Astrophysics (Harvard & Smithsonian)

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

ATMoB will attempt to simulcast the November meeting.
Please [select this Zoom link to attend the 957th Meeting of the Amateur Telescope Makers of Boston.](#)



Stonehenge. Image: 2007 [garethwiscombe](#), Wikimedia Commons (CC BY 2.0).

Stonehenge: An Epic Enigma

Our speaker this month is our own Kelly Beatty. Kelly will talk about the history and possible usage of Stonehenge in the ancient world.

Some 5,000 years ago, a Neolithic civilization in southern England erected the world's most famous standing-stone monument. Yet its builders left no written records, so why and how they constructed it remains a mystery. Many of the smaller pillars, known as bluestones, were hauled to the site from

central Wales, more than 100 miles away. And while Stonehenge is most famous for its alignment with the rising Sun during summer solstice, some researchers have suggested that it could have been constructed to serve as a daily calendar or even an eclipse calculator. Whatever its true purpose, Stonehenge remains an iconic enigma visited by 800,000 people each year.

Kelly Beatty joined the staff of *Sky & Telescope* in 1974, specializing in planetary science and space exploration. In 2018, after 44 years of pounding the keyboard, he retired from full-time work but remains actively involved in many S&T projects. You'll occasionally hear his interviews on The Weather Channel and National Public Radio. Kelly holds a Bachelor's degree in geology from the California Institute of Technology and a Master's degree in science journalism from Boston University. Asteroid 2925 Beatty was named on the occasion of his marriage in 1983, and in 1986 he was chosen one of the 100 semifinalists for NASA's Journalist in Space program.

Please join us for a pre-meeting dinner discussion at [House of Chang, 282 Concord Ave., Cambridge, MA.](#) at 6:00 pm before the meeting.

~ Cory Mooney – President ~

President's Message . . .

I've been really enjoying the return of club outreach. Over the past couple of months we've assisted with over half a dozen or so events, and there are even more on the horizon. Outreach is one of my favorite aspects of amateur astronomy. It's always incredible to enable someone's first view of the Moon, Saturn, or Jupiter. It's wonderful to see their absolute shock, awe, amazement, or sometimes surreal disbelief in seeing them for the first time. The excitement usually goes both ways; I'll never get tired of looking at the Moon or planets myself, but it is invigorating to vicariously re-experience the initial thrill you had when you first saw these objects for yourself.

On top of that, you never know who you might be inspiring, setting the spark for a lifelong journey. I got into amateur astronomy on my own at college. I don't know why I didn't start sooner. I've always been interested in optics, space, math, and science but I guess I never really had any exposure to the amateur side of astronomy as a kid. Who knows what a glimpse of the Moon would have done to me back then.

Outreach is also a great way to meet other club members and see different equipment. I remember volunteering for my first outreach soon after joining ATMoB. I didn't know any members at the time, and I was (and am) by no means an expert with the sky, but it was a great experience. I kept my scope on the one or two easy objects that I knew at the time, and the guests had a great time. Getting to meet and talk with the other club members before, during, and after the outreach really helped me to put some names to faces and make friends whom I could talk to at future club meetings. It was a really great way to break down any anxiety I had as a new member and a novice.

There's really no right or wrong way to do outreach. Some folks bring big monster scopes with the aim to impress with awe inspiring views; some bring more attainable smaller scopes to inspire people with what they could easily see with their very own affordable scope. Recently some electronic live stacking telescopes have started to pop up, allowing guests to see some of the fainter deep sky objects (DSO's) from under light polluted skies. With that said, there is no requirement to run a telescope at outreach events. Even showing people what they can see with binoculars can be enlightening, since many already have a pair at home and just haven't thought about using them at night. Even simpler, you don't need any equipment at all to point out some of the constellations and some of the brighter stars (although a laser pointer does help).

I want to thank Rich Nugent for keeping our explosive return to outreach coordinated and flowing. It's a lot of work to keep all of the information and moving parts where they need to be. I can't imagine what his email inbox looks like. I also want to thank the members who routinely participate and support the outreach events. I highly encourage anyone who is interested or on the fence, to sign up and give it a shot. I look forward to the upcoming outreach events, and I hope to see some of you out there. It's always a great time sharing the sky with folks who might not have otherwise looked up.

And on that note, keep looking up!

~ *Cory Mooney – President* ~

October Meeting Minutes . . .

ATMoB Meeting #956
October 13, 2022



Glen Cole on Zoom. *

Corey Mooney presented the President's welcome. Thanks to Rich Nugent for standing in for Corey last month. Rich officially passed the President's Gavel to Corey.

- Alva Couch presented the Secretary's report, including a summary of the wonderful September 8, 2022 talk by Dr. Carrie Nugent on detecting near-Earth asteroids.

- Eileen Myers presented the Treasurer's report, and reported inflows from memberships and Amazon Smile, leading to a healthy net inflow for September.
- Chris Elledge presented the Membership report and welcomed new members Paul, Lilly, & Ryan Craig, & Cory Blanchard; Kenneth Heide; Ruben and Natalia Salinas; Kenneth Scharf; and James Xu.
- Glenn Chaple and Rich Nugent presented the Observer's report. Huge satellites continue to be launched and threaten imaging and terrestrial astronomy in general. Events this month include the Orionid meteor shower peak on October 21st, and a double shadow transit of Europa and Ganymede on Jupiter on November 2nd. The October Observer's Challenge is M39 in Cygnus. Images were presented by Mario Motta, Doug Paul, Chris Elledge (with the Mittelman-ATMoB Observatory's 17-inch telescope), and a sketch by Glenn Chaple. The November Observer's Challenge is the NGC7184 galaxy in Aquarius.
- Al Takeda presented the Clubhouse report for Steve Clougherty. The last work party of the summer included mowing and cleaning up the William Toomey Observatory. We're going to try to open the Clubhouse on Friday and Saturday nights during "dark of the moon" weekends. On other weekends, members can set up on the field but the Clubhouse will not be open (unless two Clubhouse Committee members are present).
- Maria Batista presented the Website Committee report. We are finalizing content and images for the revised website. Site features include an observing page, including Clubhouse conditions, new member content including descriptions of observatories and telescopes, as well as descriptions of telescope-making supplies and equipment.
- Rich Nugent presented the Outreach Committee report. There were two very successful star parties in October in Chelmsford, MA. The first was for the Chelmsford Historical Society and Chelmsford Conservation Land Trust and the second was for the Chelmsford Cub Scouts at the Sunny Meadow Farm. Thanks to Kelly Beatty, Bruce Berger, Robert Blumstein, Michael Druar, Chris Elledge, Giancarlo Gonzalez, Corey & Keira Mooney, Phil Rounseville, Michael Touns, Venu Venugopal and Christine Zacharer for making these successful. Five more star parties are planned for the immediate future. Please consider helping out at these events. Each is listed on the club's event calendar and registration is recommended.
- Travel agent Marie Mabardi reported on plans for the April 8, 2024 Solar Eclipse. We continue to look for more rooms, and may need to wait until April when other hotels open up reservations. Reservations near the path center would be preferable to rooms in San Antonio, farther from the path center.

- Old business:

<https://smile.amazon.com> is a great way to donate to ATMob while shopping on Amazon.

- New Business:

Eileen Myers asked how many people want to order the Royal Society of Canada Observer's Handbook for pickup at the next in-person meeting.

- Bruce Berger reported that the Mittelman-ATMob Observatory is offline for at least a week due to mouse damage to the mount cabling.

Glen Cole, Chief Engineer in charge of polishing the mirror segments of the James Webb Space Telescope (JWST), spoke on the technical challenges of creating the JWST mirrors. For 40 years, Glen has helped create the largest telescopes in the world. Creating the JWST required polishing three distinct mirror shapes to be combined with 18 mirror segments to form the whole telescope. These were made of solid beryllium with a honeycomb structure for support of the mirror surface. Although there were several times when the engineers "thanked God it wasn't glass," beryllium mirror making is very different from glass mirror making. Beryllium has a coefficient of thermal expansion near zero, but is toxic and fatal if dust is inhaled. The grinding facility had to keep the grinding and polishing machines wet at all times to avoid getting poison dust into the air. It took over two years to grind and polish each mirror segment via a process that included checking the mirror against conditions in vacuum at 40 degrees Kelvin to assess polishing progress. Unlike glass grinding and polishing, the chemistry of the grinding slurry is critical and determines whether grinding produces pitting or not. Glen characterized his job as that of a race car mechanic, whose efforts back up astronomers, who are the actual race car drivers!

~ *Alva Couch – Secretary* ~

Board Meeting . . .

October 28, 2022

Board members present:

Kai Cai (Member at large), Alva Couch (Secretary), Chris Elledge (Membership Secretary, Mittelman-ATMob Observatory Committee), Thomas McDonagh (Past President, Toomey Observatory Committee), Corey Mooney (President), Eileen Myers (Treasurer), Rich Nugent (Past President, Observing Committee), Glenn Chaple (Past President, Observing Committee), Alan Sliski (Member at Large; Mittelman-ATMob Observatory Committee), Christine Zacharer (Vice President).

Other guests attending:

Maria Batista (Website Committee chair), Kelly Beatty (Outreach Committee chair), Michael Druar, Al Takeda (Newsletter editor, Mittelman-ATMob Observatory Committee), Bruce Tinkler, Ramakrishnan Venugopal, Gary Willinski.

The board had a discussion on the Clubhouse oil tank removal/replacement that is being mandated by MIT. Various heating infrastructure options were discussed from only replacing the oil tank, replacing the furnace with a new HVAC system or a new Mini-Split heat pump system.

We discussed whether to hold the New Years' Eve party at the Clubhouse. In a very uncertain COVID environment we decided to defer this decision until early December.

We also discussed potentially raising membership fees, and decided not to do so at this time. However, the board did act to close one loophole in the membership renewal process. At present, anyone who joins in January, whether as a new member or a renewal, receives 18 months of membership. The board voted unanimously to only extend this privilege to new members, and not to renewing members, who must renew again in the following June.

We discussed whether to sell the now unused C14 that was previously housed in the William Toomey Observatory. We decided to hold off on the sale of the C14 until the Toomey Observatory is functional in its new configuration.

Finally, we discussed 3D printing policies, and there was consensus that we will not accept 3D printing jobs that last beyond one Clubhouse session. This will limit the 3D printer to printing relatively small parts, but the risks involved in allowing multi-day printing sessions outweigh the benefits.

Meeting Recordings . . .

The recording of ATMob meeting #956 is available on YouTube: <https://youtu.be/JG1Ogk0-Bws>

I would like to thank Glen Cole for giving his talk.

This link is to the publicly available cut of the meeting recording. To view the member only recording of the meeting please see the Announce Forum on the ATMob Website <https://www.atmob.org/forums> or ask me for a link (membership@atmob.org).

~ *Chris Elledge - Membership Secretary* ~

Membership Report . . .

I am pleased to welcome our newest members: AnitaCristina Calcaterra; Suriyan, Aroon, & Thien Lohavichan and Christine Liu; Derek Oakley; Kenneth Scharf; and Kristopher Teti.

As of October 28th, 2022 we have 309 memberships covering 400 members. This is broken down as follows:

- 121 Regular Members
- 128 Senior Members
- 8 Student Members
- 50 Family Memberships covering 141 Members
- 2 Honorary Members

Renewals for FY2022-2023 are past due. Members who have not renewed will be removed from the club membership on December 1st. Please visit the website at <https://www.atmob.org/renew> to begin your renewal. You may need to login and revisit the link to proceed. If you want a printed newsletter mailed to you each month, then you need to select one of the membership levels that include "with Mailed Newsletter" in the type.

You can also download the membership application from the website at <https://www.atmob.org/signup> by clicking on the "Download an application" link.

Please contact me if you need any help with renewing or logging into the website.

~ *Chris Elledge – Membership Secretary* ~

Clubhouse Report . . .



James Chamberlain re-installing the repaired all sky camera. *

Our monthly work session at the Clubhouse was held on Saturday, October 8 under partly cloudy skies. We had a very good turnout with a total of 24 members and friends in attendance.

First order of business was lawn mowing and trimming which was led by Chris Elledge once again. We expect to have to mow one more time during our November work session before retiring the mowers for the season.

Next, our composting toilet was cleaned (as it is every year in the Fall). New ingredients were added to the green bucket which is located in the bathroom. The mix includes peat, wood shavings, Perlite and topsoil in equal parts. The mix is posted on the bucket. The bathroom was also cleaned.

Thanks to our volunteers for removing the old furniture and debris which had accumulated on the Clubhouse porch. We now have both our Library and Office/Archive rooms free of clutter!

The 25-inch telescope experiences occasional tracking issues due to a loose shaft collar located on the equatorial platform. This can be remedied by re-tightening the collar, but a better long term solution is needed. We welcome any guidance from expert club members for a solution to this persistent problem.

Thanks to the ongoing efforts of Rich Nugent and Chris Elledge we now have a monthly Clubhouse duty schedule fully implemented. Each month "A" members from our Clubhouse committee (comprised of 30 member-volunteers) will cover new Moon and last quarter Moon weekends. Our goal is to open the Clubhouse each Friday and Saturday evening on those weekends throughout the year, weather permitting. All such weekend duty dates with assigned members will be included in *Starfields* and on our website under "events."

Thanks to James Chamberlain for re-installing the all-sky weather camera.

Thanks to Eileen Myers for providing a wonderful home-cooked lunch!

Thanks to the following members who volunteered during October:

Bill Bakos, Bruce Berger, John Blomquist, Marsha Bowman, James Chamberlain, Glenn Chaple, Paul Cicchetti, Steve Clougherty, Nina Craven, Chris Elledge, Maureen Galevi, Eric Johannsen, Tim Karos, Ed Los, Corey Mooney, Keira Mooney, Eileen Myers, Rich Nugent, John Reed, Phil Rounseville, Kenneth Schari, Rasil Sheikh, Al Takeda and Christine Zacharer.

Our next work session is scheduled for Saturday, November 5.



All sky and meteor camera platform. *

Clubhouse Friday and Saturday Night Duty Schedule	
Saturday, Nov. 5	WORK PARTY # 8
Friday, Nov. 18	Joe Henry
Saturday, Nov. 19	Brian Maerz
Saturday, Dec. 10	WORK PARTY # 9 (Tentative)
Friday, Dec. 16	John Stodieck
Saturday, Dec. 17	Eileen Myers
Friday, Jan. 14	Tom McDonagh
Saturday, Jan. 15	Eric Johansson
Friday, Jan. 20	Slav Mlch
Friday, Jan. 21	Nina Craven

~ Clubhouse Committee Chairs ~

~ Steve Clougherty, John Reed and Dave Prowten ~

Observer's Challenge** . . .

November, 2022

NGC 7184 Barred Spiral Galaxy in Aquarius

Magnitude 10.9

Size 6.0' X 1.5"



NGC 7184, 32-inch, f/6.5, 1 hour Luminance, 1 hour Blue, 30 min. Green, and 45 min. Red filters, ZWO ASI6200M camera. Image by Mario Motta.

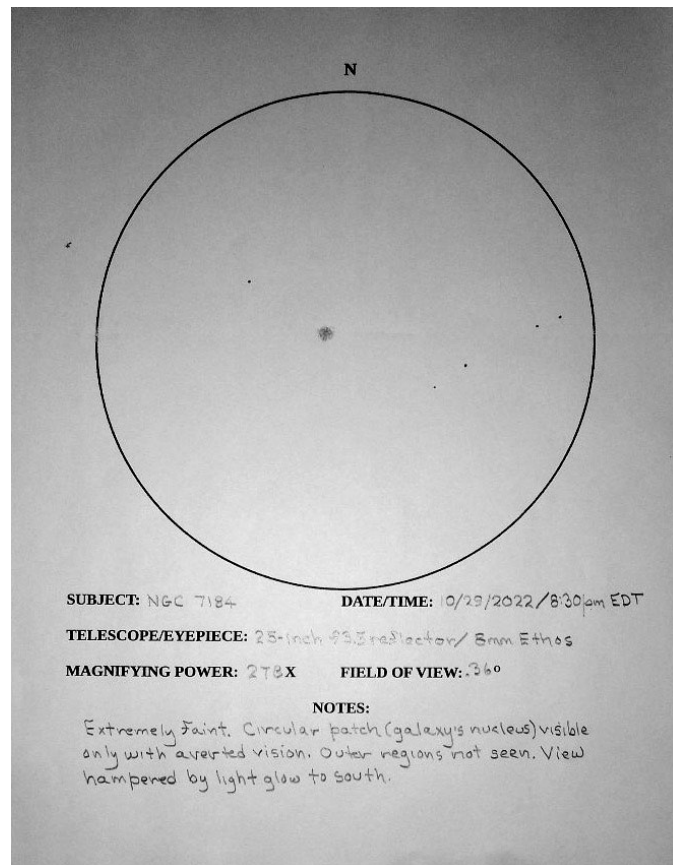
Visual astronomers are always advised to observe a sky object when it's as high above the horizon as possible. This month's Observer's Challenge, the barred spiral galaxy NGC 7184, makes this piece of advice difficult to follow. Located in the constellation Aquarius at a declination of nearly -21 degrees, it's never very high above the southern horizon for astronomers living in mid-northerly latitudes.

NGC 7184 is located at the 2000.0 coordinates RA 22h02m39.8s, Dec. -20o48'46". It can be found by star-hopping from the stars gamma (γ) and delta (δ) Capricorni (the stars that form the tail of the Sea-Goat). An alternate and more direct route can be had with a westerly star-hop from the 5th magnitude star 41 Aquarii.



NGC 7184, Canon Ra, 1200mm f/8 lens, ISO 1600, 192 x 2min. Total= 6.4 hours (taken over 6 nights), 2/3 scale, North up. Image by Doug Paul.

When William Herschel discovered this object on October 28, 1783, he described it as "Faint, considerably large, much extended, brighter in the middle, easily resolvable." Faint it is, especially if you live in an area cursed by a light-polluted southern horizon!



NGC 7184, ATMob 25-inch, f/3.5 Dobsonian at 278X, 0.36 degree field, Sketch by Glenn Chaple. [Click this link for an enlarged view.](#)

My initial attempt at NGC 7184 with a 10-inch f/5 reflector drew a blank – a bigger scope would be needed! A few nights later, I teamed up with fellow ATMob member Steve Clougherty to use the club's 25-inch f/3.5 Dobsonian-mounted

reflector. I was able to aim the big scope at the desired location, but it was Steve's trained eye that picked out NGC 7184. The 25-inch failed to reveal the outer spiral arms, capturing only a circular smudge that proved to be the galaxy's core. Bright lights from a shopping center a few miles to our south proved to be our undoing.

Imagers or visual observers working with medium to large aperture scopes under dark sky conditions will make out the details Steve and I missed. Most notable is a bright inner ring formed by the spiral arms. Whether you capture this intricate detail or merely catch a fleeting glimpse of a hazy circular smudge, you're looking at light that left this galaxy some 115 million years ago.



Chart A - Wide-field chart. Bright stars in upper right are the "tail" stars in Capricornus. γ and δ Cap. Magnitude 5.1 and 5.3 stars at lower left are 41 and 47 Aquarii, just west of the Helix Nebula. North is up; limiting magnitude is 9.0. thelivesky.com.

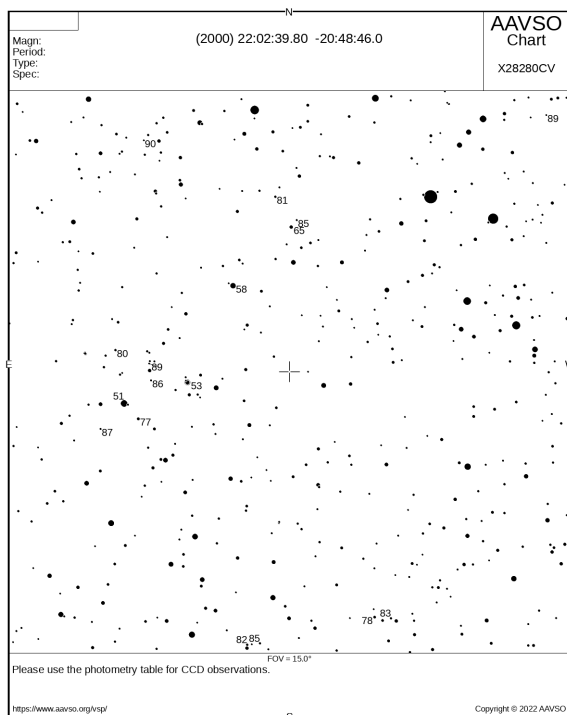


Chart B - Created using the AAVSO's Variable Star Plotter (VSP). Numbers are stellar magnitudes, decimals omitted. Stars plotted to 9th magnitude. North is up in this 15 degree field.

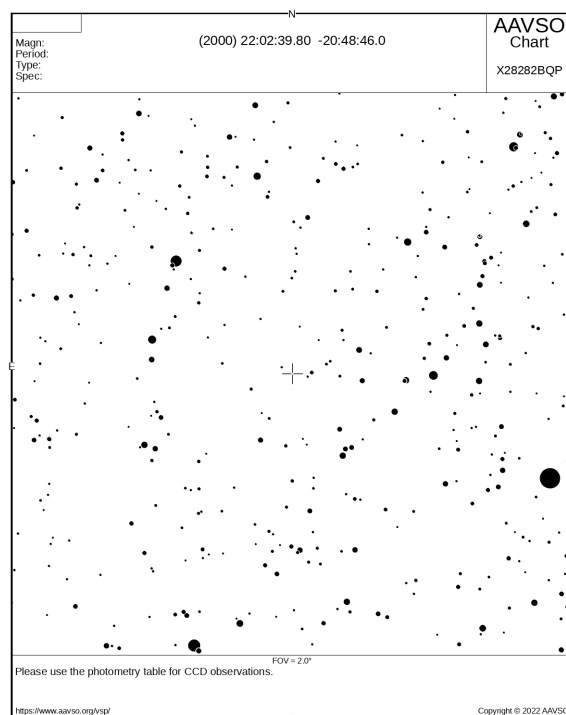


Chart C - Created using the AAVSO's Variable Star Plotter (VSP). Numbers are stellar magnitudes, decimals omitted. Stars to magnitude 13.5. Bright star at lower right is the star near the bottom center of Chart B. North is up in this 2 degree field.

**The purpose of the Observer's Challenge is to encourage the pursuit of visual observing. It is open to everyone who is interested. If you'd like to contribute notes, drawings, or photographs, we'll be happy to include them in our monthly summary. Submit your observing notes, sketches, and/or images to Roger Ivester (rogerivester@me.com). To find out more about the Observer's Challenge or access past reports, log on to <https://rogerivester.com/category/observers-challenge-reports-complete/>.

~ Submitted by Glenn Chaple ~

IDA MA Annual Meeting . . .

"Dear Defenders of the night,

Save the date! Our 2022 annual meeting is scheduled for:

Saturday, November 19 from 1:30 - 4 pm, in person
At Smith College's MacLeish Field Station
80 Poplar Hill Rd
Whately, MA
(11 miles north of Northampton)

The [MacLeish Field Station](#) is a gorgeous 250-acre wooded and pastureland former farm in the foothills of the Berkshires. There are miles of walking trails, views across the Connecticut River Valley, a ropes course, a campfire circle, an apple orchard, a chestnut grove, and outdoor art. Our meeting will be held in the lovely Bechtel Environmental building, one of the first buildings to be certified through the [Living Building Challenge](#).

Please consider car-pooling — use [this Google form](#) to enter your info so you can find a match if possible. Unfortunately there are no good public transportation options to the field station.

Stay tuned for details; the afternoon will definitely include:

- * at least two guest speakers
- * a workshop on getting effective dark-sky bylaws passed in Mass. cities and towns
- * plenty of time for informal networking, including after the meeting ends at 4 pm
- * light refreshments
- * a brief business meeting (election of officers, Treasurer's report)
- *...and, if the weather permits, stargazing from Whately's medium-dark skies (Bortle Class 4) after the meeting ends.

We plan to stream the plenary sessions of the meeting by Zoom; stay tuned for link.

The city of Northampton, 11 miles from the MacLeish Field Station, has abundant restaurant options for lunch before and/or dinner after our meeting.

We so look forward to seeing you there!

Best wishes to all from Northampton.”

James Lowenthal
President, International Dark-Sky Association Massachusetts Chapter Vice-President, IAU Commission on Site Protection Member, American Astronomical Society Committee on Light Pollution, Radio Interference, and Space Debris

IDA Meeting Details

Time to sign up to attend our annual meeting on Saturday, November 19!

Free Registration

Capacity of the Bechtel building at the MacLeish Field Station is 35 people, so we're asking everyone please to register. Registration is free — we just want to make sure we don't overfill the place.

Here is the registration page:

<https://www.eventbrite.com/e/ida-mass-annual-meeting-registration-tickets-461887125827>

Speakers

- Massachusetts-based lighting designer and dark-sky evangelist **Jane Slade** will talk about her work as a dark-sky-friendly lighting professional.
- **Rémi Boucher** from Mont Mégantic Observatory in Quebec will share his experience with controlling light pollution from greenhouses (to be confirmed).

- Nantucket Lights leader **Gail Walker** and/or Cambridge-based lighting designer **Glen Heinmiller** will share their expertise in writing successful lighting bylaws for Massachusetts towns.

COVID vaccines and testing

We request that everyone attending please be fully vaccinated and boosted, and please take a COVID rapid or PCR test within 48 hours before the meeting. We don't want our event to be a super-spreader — thanks for your consideration of your friends and colleagues.

~ *Submitted by Mario Motta* ~

Star Parties . . .

I can tell the COVID pandemic is waning by the number of star party requests we are receiving. I am not booking any more events for now. Here's the current list of upcoming events we have been asked to support:

- Tuesday, November 29: Evening of Astronomy for Boston Public Library (Mattapan Branch) (Cloud date Nov. 30).
- Saturday, December 03: Acton Conservation Trust Evening of Astronomy, NARA Park, Acton (Cloud date Dec. 4).

We can only support these outreach events with your help. If you live in or near the town or if your scope is portable enough to travel with it, PLEASE consider helping at these events. Each is listed on the club's event calendar and registration is recommended.

Thanks in advance!

~ *Rich Nugent - Public Outreach Committee Chair* ~

Correction: Last month's Meeting Minutes title should have been "September Meeting Minutes".

*Editor: * Photos by Al Takeda unless otherwise noted.*

December Star Fields DEADLINE
Sunday, November 20th

Email articles to Al Takeda at
newsletter@atmob.org

Articles from members are always welcome.

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

EXECUTIVE BOARD 2022-2023

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ASSOCIATE EDITOR:	Eileen Myers	

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STAR PARTIES:	Bernie Kosicki	
	Laura Sailor	
	John Harrington	

How to Find Us...

Web Page www.atmob.org

MEETINGS: Held the second Thursday of each month (September to July) at 8:00 PM in the Phillips Auditorium, Center for Astrophysics (Harvard & Smithsonian), 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 on Last Quarter and New Moon Fridays and Saturdays from 7 p.m. to late evening (see duty schedule). 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 phone #: (978) 692-8708.

Heads Up For the Month . . .

To calculate Eastern Standard Time EDT subtract 5 from UT.

Nov 8 Total Lunar Eclipse [08:01 - 13:56 UT] (03:01 - 08:56 EST)

Nov 8 Full Moon

Nov 9 Uranus at opposition

Nov 16 Last Quarter Moon (Moonrise at midnight)

Nov 12 North Taurid meteors peak

Nov 18 Leonid meteors peak [0 UT] (19 EST, previous day)

Nov 23 New Moon

Nov 30 First Quarter Moon (Moonset at midnight)

Dec 1 Mars at closest approach