

January / February 2018

★ BUFFALO ASTRONOMICAL ASSOCIATION ★

THE SPECTRUM

**Turn Supermoon
Hype into
Lunar Learning**

PHENOMENA, 2018?

TABLE OF CONTENTS

UPCOMING EVENTS	4
ANNOUNCEMENTS	5
OBSERVATORY REPORT	6
ARTICLE SUPERMOON	8
ARTICLE PHENOMENA	10
STAR CHARTS BUFFALO	12
MAPS & INFORMATION	15

Our 2017 Holiday party was a great success, thanks to everyone who made it possible.



ABOUT THE COVER

Here is an image of the Horsehead nebula region imaged by Gene Timothy.



DID YOU KNOW?

-Do you know this? 33 light years from us, there is an exoplanet, which is completely covered in burning ice.

-Astronauts say that, space smells like hot metal, welding fumes and seared steak

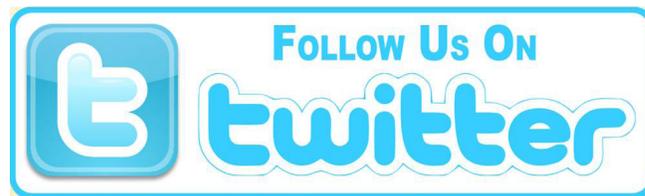
-275 million new stars are born every day according to estimates of astronomers

-225 million years is the time taken by our solar system to rotate around the Milky way. Dinosaurs just began to roam on the Earth, the last time Earth was in its current position.

-Olympus Mons(A large shield volcano) on Mars is almost three times the height of Mt. Everest, which is 27 km tall. It is 550 km wide at the base.



Find us on
Facebook



Instagram

Online at

www.buffaloastronomy.com

Help Support The BAA by choosing the BAA as your charitable donation within Amazon. Every little bit helps!



UPCOMING EVENTS

CALENDAR

February 9	7:30 pm	General Meeting
March 17, 18	9am to 3pm	Maple Harvest Festival.
March 17, 18	6pm to 5am	Messier Marathon
March 17		New Moon
April 7	8pm	Public Night @ BMO
April 13	7:30pm	General Meeting
April 21	8pm	Public Night @ BMO

SEND CALENDAR EVENTS TO

Mike Humphrey thespectrum@buffaloastronomy.com

FOR THE LATEST INFORMATION ON CLUB EVENTS,

visit <http://www.buffaloastronomy.com/events>

MEMBERSHIP APPLICATION

You can join (or renew) at the organization web site,

<http://www.buffaloastronomy.com>.

Click the 'Join BAA' Tab. To Join by mail Send funds to address shown along with the following information: Name, Address, Phone Number, Special Interests in Astronomy, Do you own a Telescope? (If so, what kind?), and where you first heard of The BAA.

BAA Directory

CLUB OFFICERS

PRESIDENT

Mike Anzalone

VICE PRESIDENT

Mike Humphrey

SECRETARY

Neal Ginsberg

TREASURER

DaRand Land

AT-LARGE-DIRECTORS

Noah Erhart

Taylor Cramer

Steve Smith

COLLEGE OF FELLOWS

Rowland Rupp

BMS RESEARCH ASSOCIATE

Alan Friedman

OBSERVATORY DIRECTORS

Dan Marcus

Gene Timothy

SPECTRUM EDITOR

Mike Humprey

WEBMASTER

Gene Timothy

BAA MEETINGS

All meetings are held at the Buffalo State College classroom building. For directions to the location and more information see the last page.

GENERAL MEETING

7:30 P.M. room C122

Classroom Building

STELLAR NURSERY MEETING

(Kids under 10)

7:00 P.M. room C122

Classroom Building

"TUESDAY" NIGHT IMAGERS

MEETING

AS POSTED by Dan Marcus

via E-mail @ BMO

GENERAL MEMBERSHIP MEETING

The Buffalo Astronomical Association holds its regular monthly General Membership Meeting on the second Friday of each month.

BOARD OF DIRECTORS MEETING

The Board of Directors Meeting is held on dates and at locations scheduled by the board. Information provided to The Spectrum will be published. The meetings are open to all members of the Society in good standing. Attendance is encouraged.

JANUARY GENERAL MEETING

JOIN US FOR THE JANUARY GENERAL MEETING

Our January general meeting has been rescheduled to January 19th and is still being held at the Williamsville North Planetarium at 7pm. Join us as member Mark Percy guides us through a current night sky tour as well as Cleopatra's universe and Phantom of the Universe.

2017-2018 OBSERVATORY CAPITAL CAMPAIGN



In order to expand our outreach efforts and offer the membership state of the art equipment to view and image with the BAA is seeking Donations for the New Expansion. If you would like to Donate please contact Dennis Bartkowiak

CHECK THE WEBSITE

BUFFALOASTRONOMY.COM

The BAA website not only has news and information about our association, but also a variety of features to manage your membership and connect with other club members. Current members can post photos, trade gear, pay dues, manage discount magazine subscriptions, swap stories in the forum, and more. Questions about the site? Need a hand to get your account set up? Contact webmaster@buffaloastronomy.com

COLLEGE OF FELLOWS MEETING

The annual College of Fellows meeting is scheduled for 7:30 PM, March 1st, at my house at 132 Burroughs Drive, Snyder. Please let me know whether you can or cannot come. 839-1842 or raupp@verizon.net.

Rowland A. Rupp

DID YOU KNOW?

-If you were in a black hole and look out from inside, you would be able to see the bank of your own head and the entire universe in one small patch of the sky

-When water boils, it creates thousands of little bubbles on Earth. If water is boiled in space, it would produce one giant, undulating bubble, which is due to lack of buoyancy and convection.

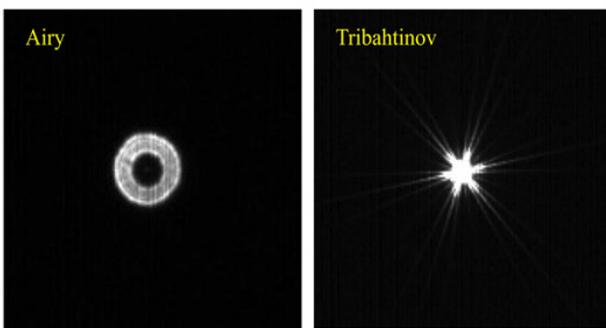
OBSERVATORY REPORT



By Dan Marcus

ATTENTION OBSERVATORY USERS: The roof rail covers are in place till March 2018! Please remove them before opening the roof and reinstall them when closing!! We are using bungee cords to keep them in place when they are covering the rails. We had problems last winter with the winds blowing them off (had to be some powerful wind, as the covers are heavy:-))

Now that Christmas has past, and we are all waiting for clear skies to play with our new toys. WE have more fun in the offering! Mike Israel has found a new procedure for collimating SCTs using a Tri-Bahtinov mask. As some of you know we have been struggling with getting the C-14 satisfactorily aligned using the stars airy disk method. The new technique using the Tri-Bahtinov mask helps deal with bad seeing. Here is a link to the site describing the procedure <https://github.com/cytan299/tribahtinov> , and a link to a mask generator <http://svg2.mbsrv.net/astro/Tri-Bahtinov.html> in case you want to fabricate your own mask. Here is what we hope to see when we are done!



Mike Plotar and I had a really steady night in November and were able to get a fairly good collimation, but we hope this will allow us to improve it even more. Anthony Davoli has made a mask for the C-14 at f7 for aligning with the focal reducer and the clubs cameras. If the procedure works (it is less dependent on good seeing than using the airy disk method) We will make one for the native f11 so we can really tweak it for Planetary work.

Tues nights at the Obs will continue! let's hope the weather stays nice and cold so the lake freezes and we can get some good nights. The Tues night crew has been having fun with the clubs ATIK camera (Donated by Derek Bill) and Mike Plotars Zwo 1600. At present we are using the ATIK on the NP101 and an off axis guider for autoguiding, while Mike's ZWO is the C-14 with the clubs focal reducer. Seems the off axis images of the C-14 are not sharp enough for either PHD or TheSkyX to autoguide on. So far we have had no problems getting 5 minute subs from the C-14. Have also been able to dither as well. That on top of using flats the images have improved tremendously. The only issue we are currently having besides lack of clear skies, is getting good focus (operator error as usual :-)). Mostly we need more practice in making sure our focus is as best as it can get.



NGC2276 upper left and ARP114, bright blob right and lower taken with Mike's ZWO1600 - 6-5min subs. The next image is of M-1 taken with the C-14 at f7, 5-5min subs. As you can see the data is getting better along with Mike's processing.

SOOOO if cloudy come on out and join in on the processing fun. We have lots of data that should be put to use. We are usually out there by 6pm, so you can get in 3 hours of fun and be home by 10pm. LIFE IS GOOD. Loaner Scopes - The Observatory has several loaner scopes you can check out for 4 weeks at a time. We

have a Celestron 8" on a tracking German Equatorial Mount and a 6" Dobson. If you wish to borrow one of these scope's see Gene Timothy on a "Tues" night.

Now that the BIG event is over (Great American Eclipse adventure that is) are you in the doldrums? with nothing to look forward to (besides the 2024 eclipse in Buffalo - 6 years from now)?? Well I have the cure for that. February and March are great Aurora times, I can always be convinced to take a trip to as far North as we can drive in 9 hours to freeze in the car and watch for auroras in Canada. Or if that is not tame enough, how about a trip to watch an asteroid occult a star and to some timings of it. Then there is always a grazing occultation of a star by the Moon adventure. Well if that is still too much how about a trip to watch the ISS transit the Sun or Moon???? Do I hear any takers? Might even be convinced to travel to a Star party some place far away (have to make it drivable or a really cheap trip though :-)). Let's get some action going here, life is getting DULL. You know Dan's rules, Rule #1 Make sure you are having fun, and Rule #2 see rule #1. On that note how about a Messier Marathon? Who is game? See next paragraph!

Who is up for a Messier Marathon?? March 16, 17 and 18 are a new Moon weekend and are around the Spring Equinox. Be a great time to hold on if clear, anyone want to run it? It also coincides with the Beaver Meadow Maple Syrup Festival to add to the fun.

TELESCOPE LOANER PROGRAM (AVAILABLE TO MEMBERS ONLY)

One benefit of membership in the Buffalo Astronomical Association is access to the variety of telescopes that are part of the BAA Loaner Scope Program. This program allows members who don't own or have access to a telescope to borrow one for touring the night sky. The program is coordinated by the Observatory Co-Directors. For more information contact them via the BAA website

As usual we have way too much fun at the observatory, We hope you'll join us at the observatory!

OBSERVATORY RULES

1. All users of the Observatory are required to record their arrival Date along with any comments in the Observatory logbook.
2. On arrival check the logbook and notice boards for any reports of damage to or failure of equipment.
3. Members visiting the Observatory must ensure that the Observatory is left clean and tidy at all times. All trash must be removed upon departure. (If you brought it in – take it out.) Any cans or bottles with deposits must also be removed.
4. Smoking in the Observatory or on the grounds is not permitted.
5. No lights other than red lights are permitted to be used on the field surrounding the observatory when the moon is below the horizon or imagers are present.
6. Do not operate any observatory equipment until you have been trained and certified by the Observatory Directors and your name has been posted on the list of authorized users. (This includes the roll-off roof, roof rails, C14 and 20inch telescopes and all other equipment.)
7. Due care and diligence must be taken by all members when conducting themselves and guest parties around the Observatory site. Remember the BAA are guests at Beaver Meadow.
8. Members may bring family and friends to the Observatory as guests provided that:
 - a. No personal profit or income is derived from the activity.
 - b. They have checked for planned public events or maintenance work being carried out.
 - c. Member is responsible for guest
9. Upon Departure ensure the locks are zeroed out before locking the various doors and/or cabinets. Ensure all doors are closed and locked before leaving.
10. Please do not drive cars on grass! The pathway to the observatory is for pedestrian use. Do not back-up to the piers to unload equipment.

Turn Supermoon Hype into Lunar Learning

Supermoons get lots of publicity from the media, but is there anything to them beyond the hype? If the term “supermoon” bothers you because it’s not an official astronomical term, don’t throw up your hands. You can turn supermoon lemons into lunar lemonade for your star party visitors by using it to illustrate astronomy concepts and engaging them with great telescopic views of its surface!

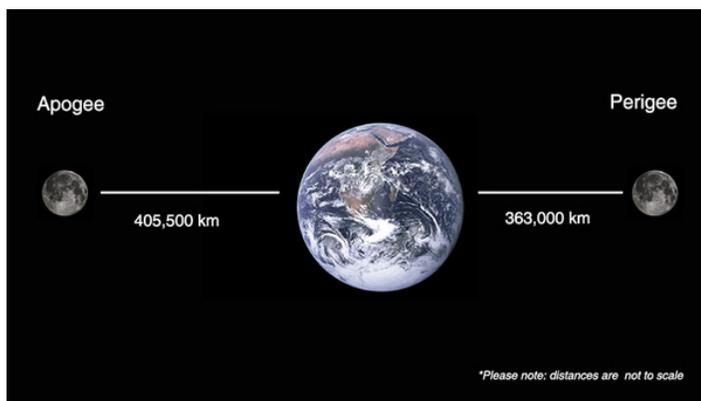
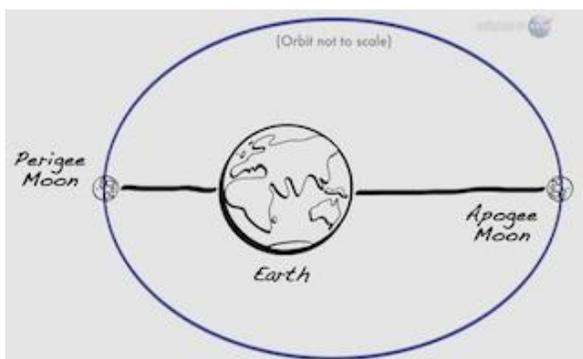


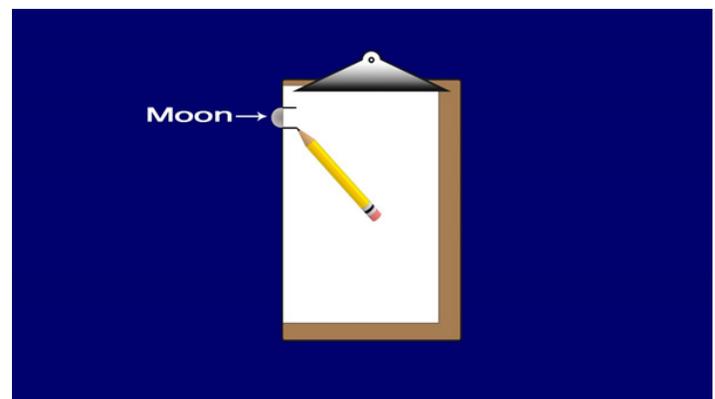
Illustration of the position of the Earth’s moon at apogee and perigee. source image credit: NASA (Earth) Gregory R. Revera (Moon)

Many astronomers find the frequent supermoon news from the media to misleading, if not a bit maddening. Unlike the outrageously wrong “Mars is as big as the moon” pieces that appear like clockwork every two years during Mars’s close approach to Earth, news about a huge full moon is more of an overstatement. The fact is that while a supermoon will indeed appear



somewhat bigger and brighter in the sky, it would be difficult to tell the difference between an average full moon and a supermoon with the naked eye.

There are great bits of science to glean from supermoon discussion that can turn supermoon questions into teachable moments. For example, supermoons are a great gateway into discussing the shape of the moon’s orbit, especially the concepts of apogee and perigee. Many people may assume that the moon orbits Earth in a perfect circle, when in fact its orbit is elliptical! The moon’s distance from Earth constantly varies, and so during its orbit it reaches both apogee (when it’s farthest from Earth), as well as perigee (closest to Earth). A supermoon occurs when the moon is at both perigee and in its full phase. That’s not very rare; a full moon at closest approach to Earth can happen multiple times a year, as you may have noticed.



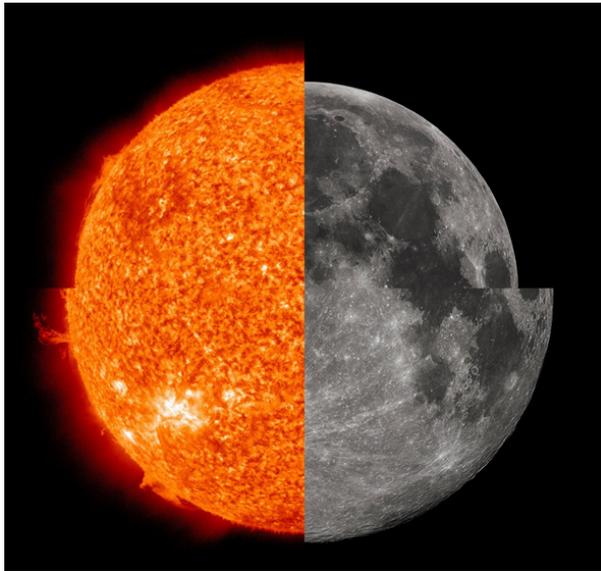
While a human observer won’t be able to tell the difference between the size of a supermoon and a regular full moon, comparison photos taken with a telephoto lens can reveal the size difference between full moons. NASA has a classroom activity where students can



measure the size of the full moon month to month and compare their results: “Measuring the Supermoon.”

Student can use digital cameras (or smartphones) to

measure the moon, or they can simply measure the moon using nothing more than a pencil and paper! Both methods work and can be used depending on the style of teaching and available resources. Find out more here: <https://www.jpl.nasa.gov/edu/teach/activity/measuring-the-supermoon>



Apparent sizes of the Sun and moon depicted to scale at apogee (top right) and perigee (bottom).

There is actually a way for naked eye observers to observe the different apparent sizes of the moon in our sky, but oddly enough it's not when the moon is full and brilliant, but the opposite: when the moon is new and dark, during eclipses! For eclipse chasers, the apparent size of the moon matters very much to what they will see. For example, a total eclipse can happen in conjunction with a supermoon as many in the USA saw on August 17, 2017. The apparent size



Image Credits: Dale Cruikshank (Annular Eclipse)/ NASA/ Aubrey Gemignani (Total Eclipse)

of the moon was large enough to completely block

the disc of the sun in our skies along a narrow path for a couple of minutes. If the moon was further away from the Earth, especially if it was at apogee- its furthest point - then a total eclipse would not occur. Instead, an annular eclipse would be seen instead, where a "ring of fire" would seem to circle the black disc of the new moon.

This discussion of the different phases of the moon and can also make for a fun, simple, long-term project for a classroom. Students can observe the phases of the moon every day (when weather permits) over a thirty day period and write down their observations of the moon's phases and what times of day and night they can actually see the moon during this period. This can also be paired at some point with the crafty "Make a Moon Phases Calculator and Calendar" activity. You can find out more about the "Observing the Moon" classroom activity at: <https://www.jpl.nasa.gov/edu/teach/activity/observing-the-moon>

A related moon phases activity, which is perfect for a crafty event, can be found at [this link](#). You can find a more detailed discussion of the science of supermoons on NASA's "What is a Supermoon and Just How Super Is It?" page from their "Teachable Moments" blog. You can find links to the above activities there, along with more lunar science that can be used to make the hype about Supermoons teachable moments for your star party visitors.

The next supermoon arrives the night of January 1, 2018 - a perfect time to ring in the new year with some solid lunar science!



PHENOMENA, 2018

7 VISIBILITY OF PLANETS

MERCURY can only be seen low in the east before sunrise, or low in the west after sunset (about the time of beginning or end of civil twilight). It is visible in the mornings between the following approximate dates: January 1 to February 4, April 10 to May 29, August 17 to September 11 and December 3 to December 31. The planet is brighter at the end of each period, (the best conditions in northern latitudes occur in early January, late August and in mid-December and in southern latitudes from mid-April to mid-May). It is visible in the evenings between the following approximate dates: February 28 to March 25, June 14 to August 1, and October 4 to November 21. The planet is brighter at the beginning of each period, (the best conditions in northern latitudes occur in mid-March and in southern latitudes in the first three weeks of July).

VENUS is too close to the Sun for observation until the end of the third week of February when it appears as a brilliant object in the evening sky. In late October it again becomes too close to the Sun for observation until the start of November when it reappears in the morning sky. Venus is in conjunction with Mercury on March 5, March 18 and October 14.

MARS is visible as a reddish object in Libra in the morning sky at the beginning of the year. Its westward elongation gradually increases, and in February it moves through Scorpius and Ophiuchus (passing 5° N of Antares on February 10), into Sagittarius from mid-March and Capricornus from mid-May. It is at opposition on July 27 when it is visible throughout the night. The planet returns to Sagittarius in late August and then moves through Capricornus, Aquarius and into Pisces in late December. From early December it can only be seen in the evening sky. Mars is in conjunction with Jupiter on January 7 and with Saturn on April 2.

JUPITER is visible in the morning sky in Libra at the beginning of the year. Its westward elongation gradually increases and from the second week of February it can be seen for more than half the night. It is at opposition on May 9 when it is visible throughout the night. By early August it can only be seen in the evening sky. From mid-November it becomes too close to the Sun for observation until in early December it reappears in the morning sky in Scorpius. It moves into Ophiuchus in mid-December (passing 5° N of Antares on December 20). Jupiter is in conjunction with Mercury on October 30 and December 21 and with Mars on January 7.

SATURN is too close to the Sun for observation from the beginning of the year until the start of the second week of January when it rises just before sunrise in Sagittarius, in which constellation it remains throughout the year. Its westward elongation gradually increases and in early April it becomes visible for more than half the night. It is at opposition on June 27 when it can be seen throughout the night. From late September until mid-December it can only be seen in the evening sky and then becomes too close to the Sun for observation for the remainder of the year. Saturn is in conjunction with Mercury on January 13 and with Mars on April 2.

URANUS is visible at the beginning of the year in Pisces and by mid-January can only be seen in the evening sky until late March when it becomes too close to the Sun for observation. It reappears in mid-May in the morning sky in Aries and is at opposition on October 24. Its eastward elongation then

gradually decreases passing into Pisces once again from early December where it can be seen for more than half the night.

NEPTUNE is visible at the beginning of the year in the evening sky in Aquarius and remains in this constellation throughout the year. In the second week of February it becomes too close to the Sun for observation and reappears in late March in the morning sky. Neptune is at opposition on September 7 and from early December can only be seen in the evening sky.

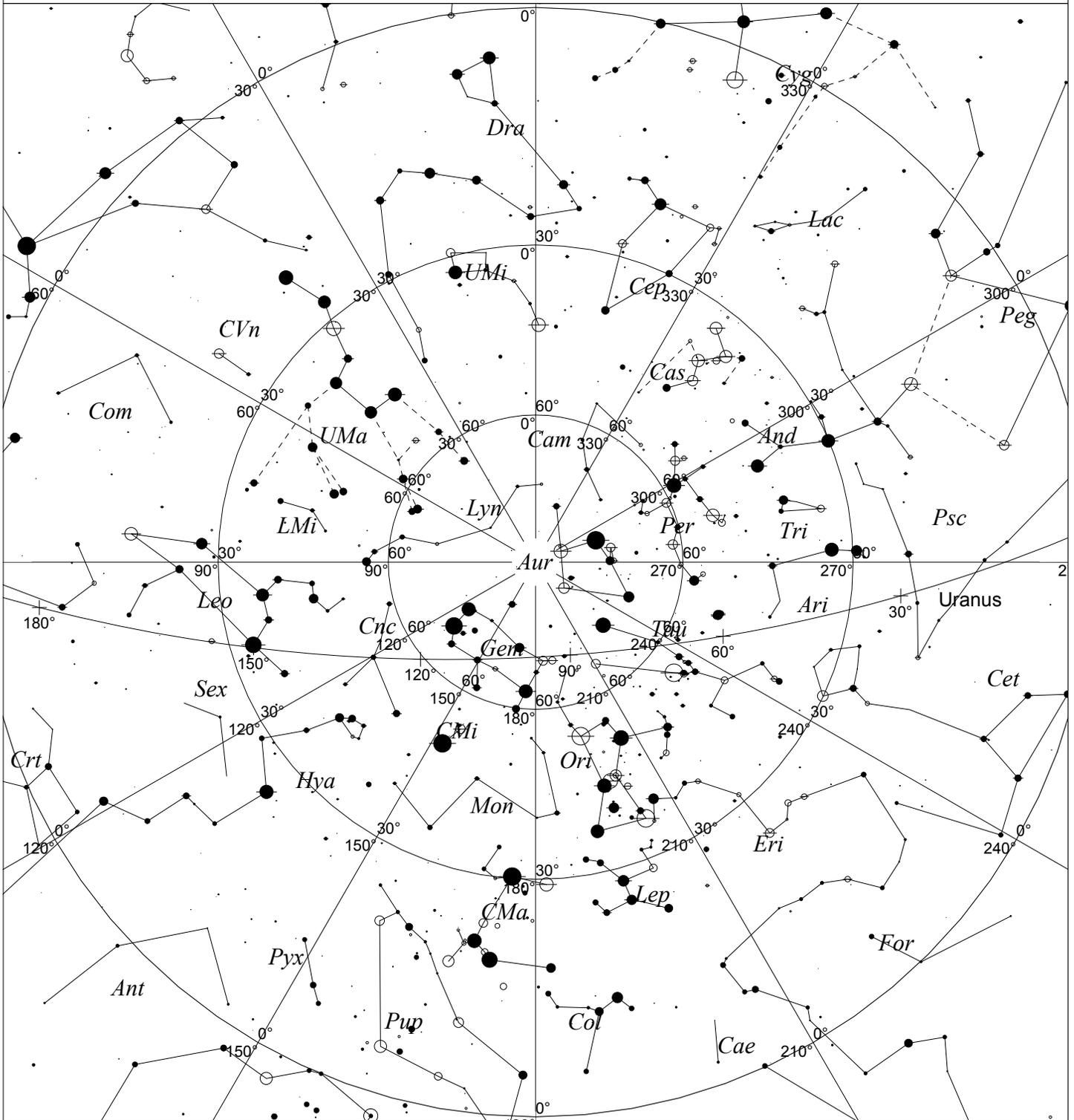
DO NOT CONFUSE

- (1) Jupiter with Mars in the first half of January and with Mercury in late October to early November and in the second half of December; on all occasions Jupiter is the brighter object.
- (2) Mercury with Saturn in mid-January when Mercury is the brighter object.
- (3) Mercury with Venus in late February to late March when Venus is the brighter object. (4) Mars with Saturn in late March to mid-April when Mars is the brighter object.

VISIBILITY OF PLANETS IN MORNING AND EVENING TWILIGHT

	Morning	Evening
Venus	November 1 – December 31	February 20 – October 22
Mars	January 1 – July 27	July 27 – December 31
Jupiter	January 1 – May 9 December 9 – December 31	May 9 – November 13
Saturn	January 8 – June 27	June 27 – December 16

1/16/2018 23:00:00 Buffalo, NY



STARS		SYMBOLS			
● <1	● 3.5	● Multiple star	□ Dark nebula	△ Radio source	
● 1.5	● 4	○ Variable star	⊕ Globular cluster	× X-ray source	
● 2	● 4.5	☄ Comet	⊙ Open cluster	○ Other object	
● 2.5	● >5	☉ Galaxy	⊕ Planetary nebula		
● 3		□ Bright nebula	⊕ Quasar		

Local Time: 23:00:00 16-Jan-2018

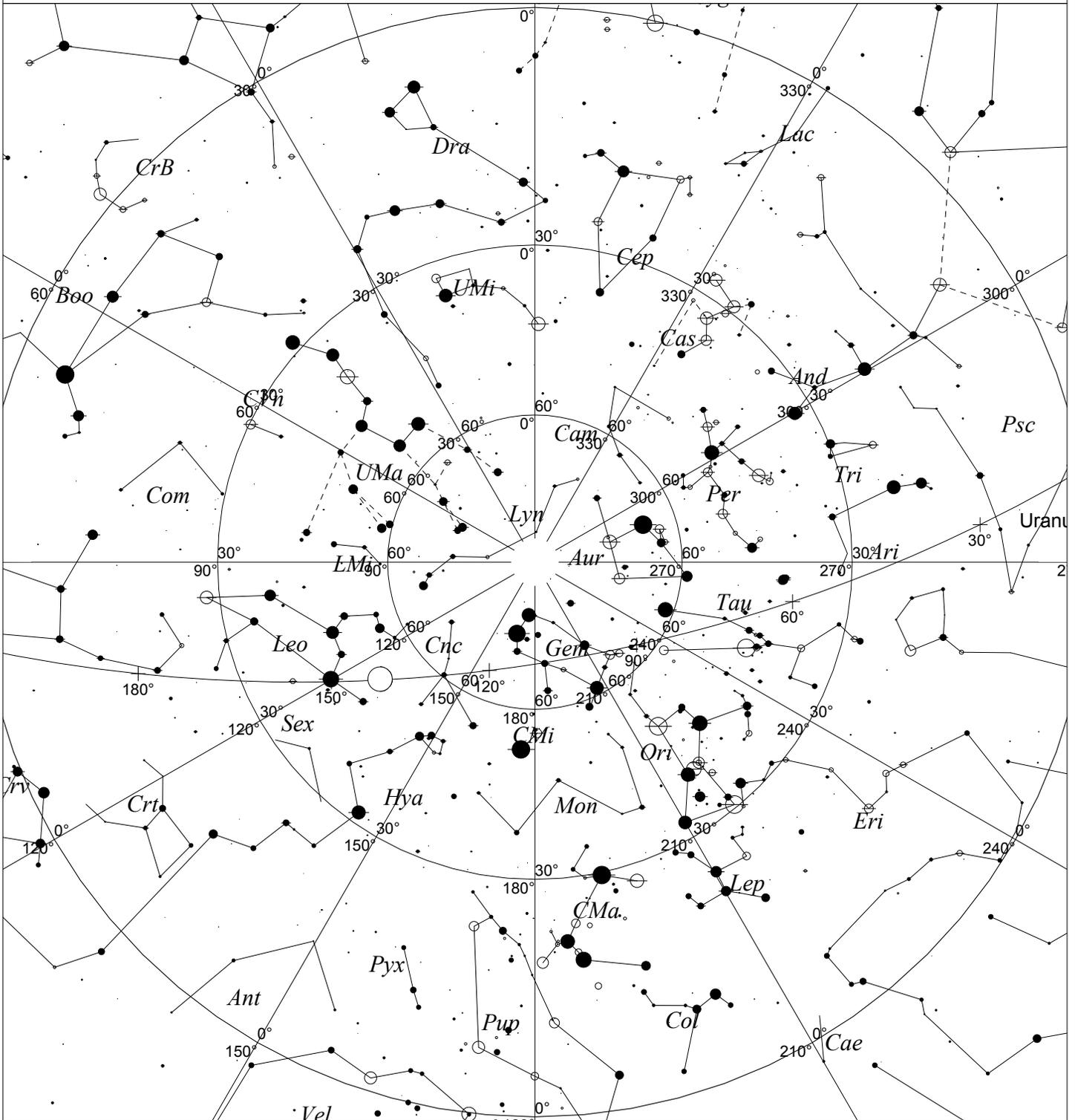
UTC: 04:00:00 17-Jan-2018

Sidereal Time: 06:30:38

Location: 42° 52' 48" N 78° 52' 12" W RA: 6h30m39s Dec: +42° 52' Field: 182.0°

Julian Day: 2458135.6667

1/31/2018 23:00:00 Buffalo, NY Lunar Eclipse



STARS

- <1
- 1.5
- 2
- 2.5
- 3
- 3.5
- 4
- 4.5
- >5

SYMBOLS

- Multiple star
- Variable star
- ☾ Comet
- ☾ Galaxy
- ☐ Bright nebula
- ☐ Dark nebula
- ☉ Globular cluster
- ☉ Open cluster
- ☉ Planetary nebula
- ☉ Quasar
- △ Radio source
- × X-ray source
- Other object

Local Time: 23:00:00 31-Jan-2018

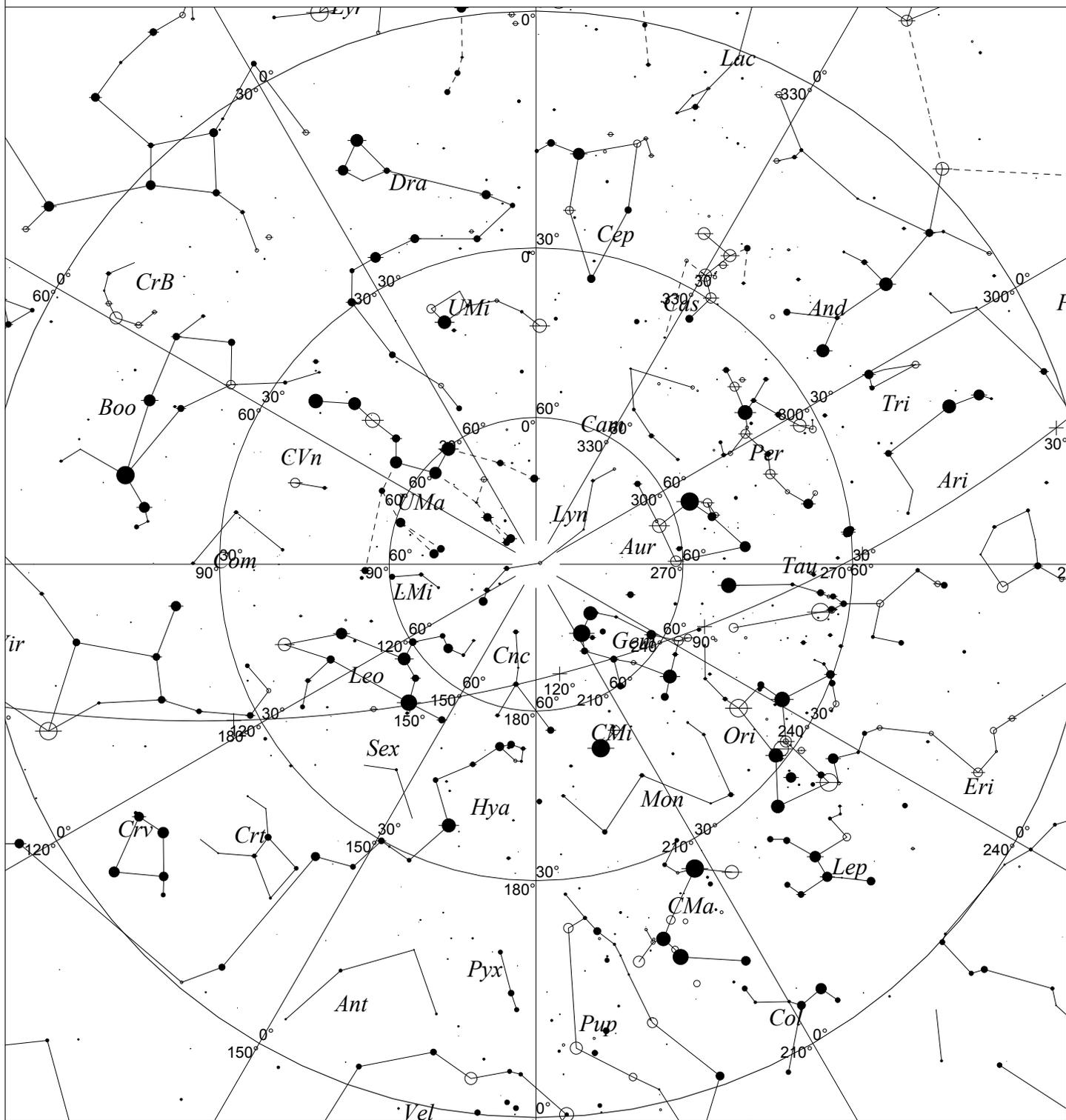
UTC: 04:00:00 1-Feb-2018

Sidereal Time: 07:29:47

Location: 42° 52' 48" N 78° 52' 12" W RA: 7h29m47s Dec: +42° 52' Field: 182.0°

Julian Day: 2458150.6667

2/15/2018 23:00:00 Buffalo, NY



STARS		SYMBOLS		
● <1	● 3.5	● Multiple star	◻ Dark nebula	△ Radio source
● 1.5	● 4	○ Variable star	⊕ Globular cluster	× X-ray source
● 2	● 4.5	☄ Comet	○ Open cluster	○ Other object
● 2.5	● >5	☉ Galaxy	⊙ Planetary nebula	
● 3		◻ Bright nebula	⊗ Quasar	

Local Time: 23:00:00 15-Feb-2018

UTC: 04:00:00 16-Feb-2018

Sidereal Time: 08:28:55

Location: 42° 52' 48" N 78° 52' 12" W RA: 8h28m55s Dec: +42° 52' Field: 182.0°

Julian Day: 2458165.6667

ABOUT THE BAA & MEETING INFORMATION

THE BUFFALO ASTRONOMICAL ASSOCIATION

(BAA) welcomes you to our organization.

The BAA is a group of dedicated amateur astronomers, most of whom are observers, but some are armchair astronomers, and imagers.

The benefits of membership are:

- Access to our Dark Sky observing site in North Java -- a great place to observe the universe!
- A telescope loaner program -- borrow a BAA telescope and try observing for yourself!
- A monthly kids meeting, site orientation meeting, and general meeting with speakers of interest. Access to meeting videos on the BAA web site. - Opportunities to participate in programs that promote astronomy to the general public (such as Star Parties)
- Meet other amateurs and share experiences, learn techniques, and swap stories.

The BAA is a non-profit corporation organized under section 501 (C) 3 of the Internal Revenue Code. The Society was formed for education and scientific purposes. All contributions and gifts are deductible for federal income tax purposes. General membership meetings are open to the public and attendance is encouraged.



Buffalo State
State University of New York
 1300 Elmwood Avenue
 Buffalo, NY 14222-1095
 (716) 878-4000
www.buffalostate.edu

