



Event Horizon



Volume 30, Number 9
September 2023



From The Editor

I hope everyone enjoyed their summer!

It's back to school, and also, back with the EH with the arrival of the September edition!

Once again, a big Thank You to those of you who contributed!

Happy Reading and Clear Skies!

Bob Christmas,

Editor

editor 'AT' amateurastronomy.org



Chair's Report by Bernie Venasse

Since I last wrote...

June 17, Binbrook... 15 members including a few Astro101 participants and a couple of enthusiastic brand-newbies showed up for a wonderful night of getting to know one another while enjoying some Timbits (thank you!). There was even some astronomy taking place!

June 24, Bayfront... unfortunately was cancelled due to inclement weather.

June 25, Lakeland... A couple dozen people stopped by to view the Sun. There were a couple of awesome prominences to enjoy. For something new, I created a circle on a chalkboard to represent the Sun and then had people add a feature that they had seen. Everyone felt that they were contributing!!

June 28, Binbrook... The park was opened by Jeff Parsons. Thanks, Jeff. Mars and Venus were seen at about 4° apart.

July 5, Binbrook... Jeff opened the park this night also (Thanks Jeff!!) "We had 6 cars, about 12 people. Decent skies until after midnight, then clouds."

July 14, Binbrook... Cancelled due to threatening weather.

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Chair's Report (continued)

July 16, Lakeland... Outreach of one but I had fun. Started a new activity where people who viewed the Sun were encouraged to add their impressions to a collective chalkboard drawing of the Sun. I found that this encouraged people to observe longer and study the Sun.

July 22, Grimsby... Not as much traffic as we would have liked but a good group of people attended.

Aug 6, Lakeland... Clouded skies but a few people were here for outreach.

Aug 11 Perseid public event... Clouded skies and a bit of rain. Still had about 80 guests there to watch the clouds go by.

Aug 12 Perseid club event... Daytime and early evening thunderstorms brought the postponement of the picnic portion of the evening. Later, there were about 10 members who sat and enjoyed the meteor shower.

Aug 19, Binbrook... We had 8 members enjoying the skies. Not a bad number considering many others were at StarFest or Backus for darker skies.

TIDBITS...

Business cards... have arrived and will be available in limited quantities at the Member Services table at each meeting. Please be sure that you have a FEW to distribute to people that are interested in astronomy.

Solar Glasses... have arrived and will be distributed club-wide in time for the October partial eclipse to those who desire them.

Inreach and Outreach events

| | | |
|----------------------------|----------------------------|------------------------|
| Friday, September 8, 2023 | McMaster Innovation Park | Membership Meeting |
| Friday, September 15, 2023 | Binbrook Conservation Area | Membership Observing |
| Friday, September 22, 2023 | Lakeland Park | Astronomy Day - Mixed |
| Friday, October 13, 2023 | McMaster Innovation Park | Membership Meeting |
| Saturday, October 14, 2023 | TBD | Partial Solar Eclipse |
| Friday, October 20, 2023 | Binbrook Conservation Area | Membership Observing |
| Saturday, October 21, 2023 | Bayfront Park | Int'l Observe the Moon |
| Friday, November 10, 2023 | McMaster Innovation Park | Membership Meeting |
| Friday, November 17, 2023 | Binbrook Conservation Area | Membership Observing |

Watch your Email for additions, notices, and changes!!

Our Previous Meeting

Our previous meeting was on June 9, 2023, at McMaster Innovation Park. Our speaker was Dr. John Percy, Professor Emeritus, University of Toronto. His topic: Variable Stars.

Our May meeting was recorded and is available on YouTube:

www.youtube.com/results?search_query=hamilton+amateur+astronomers

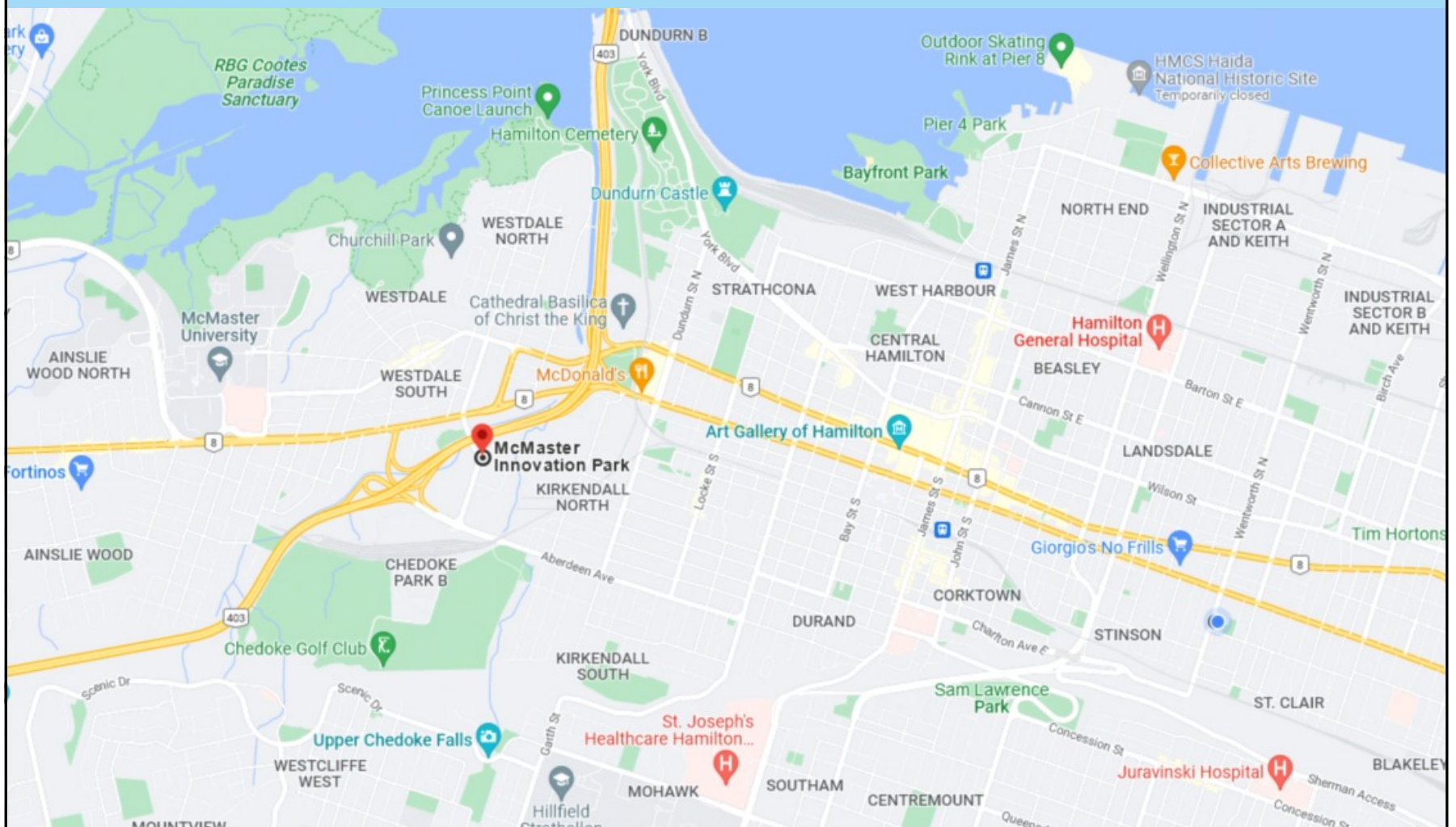
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Masthead Photo: *The Crescent Nebula (NGC 6888)*, by Alex Kepic.

Taken through a Celestron C8 scope with a ZWO ASI294MC Pro camera on a Celestron AVX mount.

17 hours 54 minutes of total integration time, taken over 7 nights (May 25 to May 31, 2023).

Chair's Report (continued)



Our next meeting

Our upcoming meeting is scheduled for September 8th, 2023, at McMaster Innovation Park. MIP is located at 175 Longwood Rd. S. in Hamilton. Doors open at 7:00 and the meeting begins at 7:30. We will hear from *Isabella Lopes-Daniele*, the BASEF winner of the James A. Winger award. Following her, we will have a summer activity recap and then I will present my What I Did This Summer.

Membership growth...

We would like to take this opportunity to welcome new/returning members (Jun 1- Aug).

- Kelly Mallory, Oshawa. Individual membership.
- Melanie Lebel, Hannon. Individual membership.
- Mark Weller, Hamilton. Family membership.
- Kae Ramos, Hamilton. Family membership.
- Liam Premo, Burlington. Family membership.
- Muhammad Zia, Mississauga. Family membership.
- Sivakumar Annamalai, Beamsville. Family membership.

| | | | |
|---------------------|----------------------------|---|-----|
| Current membership: | 86 Individual memberships | = | 86 |
| | 62 Family memberships (x2) | = | 124 |
| | 1 Honorary membership | = | 1 |
| | 149 memberships | | 211 |

<https://www.amateurastronomy.org/membership/>

HAA's Loaner Scope Program



We at the HAA are proud of our Loaner Scope Program. It allows members who don't own a telescope to get more up close with the night sky, and it allows members to explore different types of telescopes! Paid members are welcome to

borrow a telescope for one month.

We have telescopes of varying expertise levels, a MallinCam, a spotter scope and various eyepieces.

Please visit the HAA website for more information!

If you are interested in borrowing a scope, please contact Paula Owen at

loanerscope@amateurastronomy.org.

Telescopes are loaned out on a first come basis.

HAA Helps Hamilton

The H.A.A. is once again accepting and collecting donations from our members and guests for local food banks at our general meetings.

The H.A.A. has always valued its relationships with food banks in the community, particularly [Hamilton Food Share](#).

If you can't make an in-person meeting, you can make a donation directly to your local food bank.



Reminders

Membership Renewal Reminder

Kind Reminder The Annual Membership is Coming due October 31 please Remember To Renew.

Any Questions please email: Membership@amateurAstronomy.org

If you do not hear back from me your email may not have come through please use Paula.owen2005@gmail.com

Loaner Scope Reminder

If you have a scope out please Remember to bring them to the September meeting or email me when you would like to bring them back.

Please Email me with Questions Loanerscope@amateurAstronomy.org

If you do not hear back from me your email may not have come through please use Paula.owen2005@gmail.com

— Paula Owen, Membership Director, H.A.A.



...A column for young astronomers - and those young at heart!

Something very special is happening in April of 2024! It's the Total Solar Eclipse that will occur in our area, here in Hamilton, Ontario, and this column will be focusing on it (no pun intended!) over the next year. Watch for resources and information in the months ahead! Let's go!

Exciting Eclipses!

So, what is an eclipse? What is a shadow? When did they begin? Where do they happen? How often do we see them? And, many more great questions... These will be answered over the coming year. For now, let's start at the very beginning...

But, first, a safety warning (get used to this message!):

First, a Safety Warning! The Sun is so bright that even a few seconds of looking at it can cause severe damage and you could lose your eyesight. DO NOT look directly at the Sun. The same goes for adults, so make sure they know, too! Astronomers use special filters which allow them to study the Sun. We will explore more about safety in upcoming articles.

Our Sun is a Star! (See the HAA Explorers article from May 2021 for more detailed information about our Sun.) Unlike planets and moons, it gives off its own light. Where there's light, there are also shadows. When something blocks the light, a shadow is created. A shadow is basically an area where there is no light, and will be dark. Have you ever made hand-shadows?

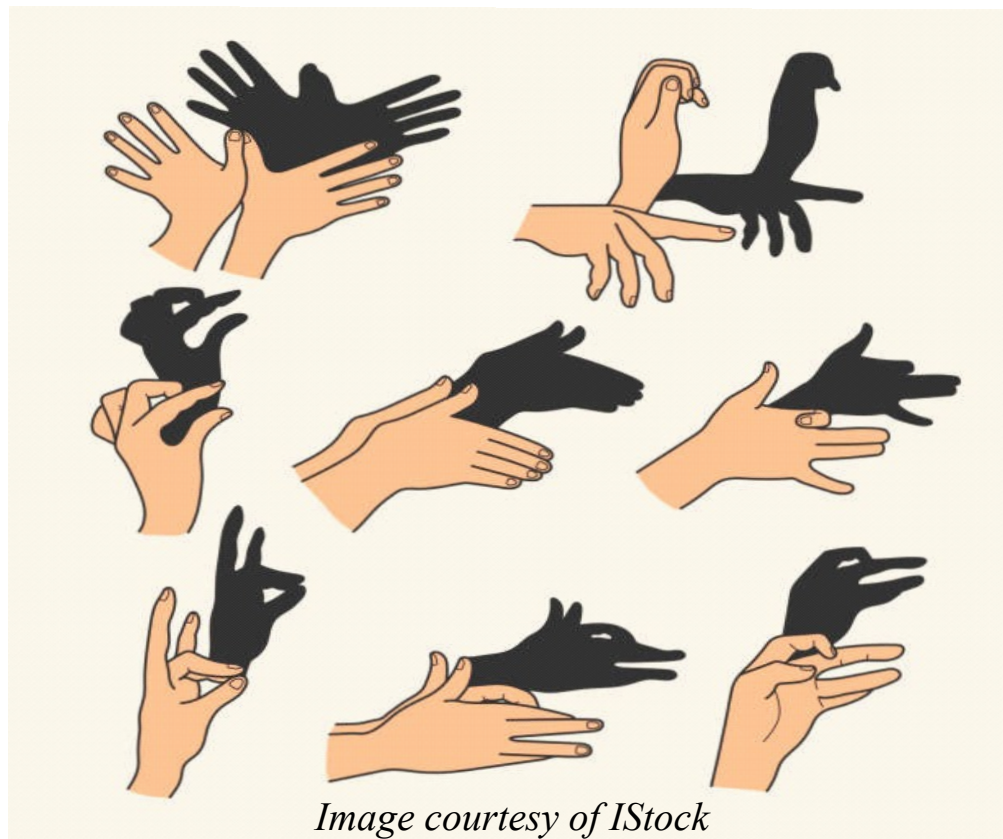


Image courtesy of IStock

The source of light would be a flashlight or lamp, your hand is the object blocking the light, and the shadow animal is the area on the wall where there is no light. Now, let's think about our Sun in place of the flashlight and our Moon or Earth as the object blocking light. Do you think a shadow is created? YES, because the Sun's light is blocked, there *is* a shadow! Although we can't always see ... or experience... that shadow. We can see Earth's shadow on the Moon during a Lunar Eclipse (more on this in a future article). And we can *experience* the Moon's shadow on Earth during a Solar Eclipse if we are in the shadowy area on Earth. Actually, the word "eclipse" is the Greek word for "abandonment", or in this case, the loss of light.

Experiencing the Moon's shadow on Earth during a Solar Eclipse was first recorded in China on October 22nd, 2137 *BC*. That's over 4,000 years ago! People were very frightened as they didn't know what was happening. In fact, some cultures thought of a Solar Eclipse as a bad sign, while others saw it as the Sun and Moon as visiting each other or checking on Earth. Over time, astronomers began using Solar Eclipses to learn more about the Sun's atmosphere and the Moon's edge. In more modern times, in their book The Backyard Astronomer's Guide, Terence Dickinson and Alan Dyer describe a Solar Eclipse as "the most powerful and moving sight you will ever witness in nature."¹ It is surely the "BEST sky show"² you will ever see!

(Continued on [page 6](#))

HAA Explorers (continued)



The Moon's shadow on Earth during a Solar Eclipse

*Image Credit:
Centre National
d'Etudes Spatiales
(CNES)*

What is so special, powerful and moving about a Solar Eclipse? Imagine a beautiful sunny day. As the Moon blocks the light from the Sun, areas on Earth that lie in the shadow will experience a gradually darkening sky where bright stars and planets appear, animals think it's nighttime and you may even see bats flying around, and the air gets cooler. Crickets will chirp and roosters may crow! There is a hush as birds think it's nighttime and stop their chirping. You will also hear a lot of cheering and clapping as people get very excited! Watch this video: [Excitement during Total Solar Eclipse](#). Many people find this experience so amazing that they travel around the world to experience Solar Eclipses. And, fun fact: there are no other solar eclipses that take place in our solar system! More on this later!

A final word on shadows, to help you understand the details of eclipses in future articles. Not all shadows have sharp edges. It depends on what type of light is creating the shadow. If a light source is small, it is called a point source of light, where all light rays leave from that one point. The shadow created has sharp edges and the shadow is called an umbra. If the source of light is larger, there is light coming from many areas of the light source. This creates an umbra and also an area around the umbra which is lighter than the umbra and is called the penumbra.

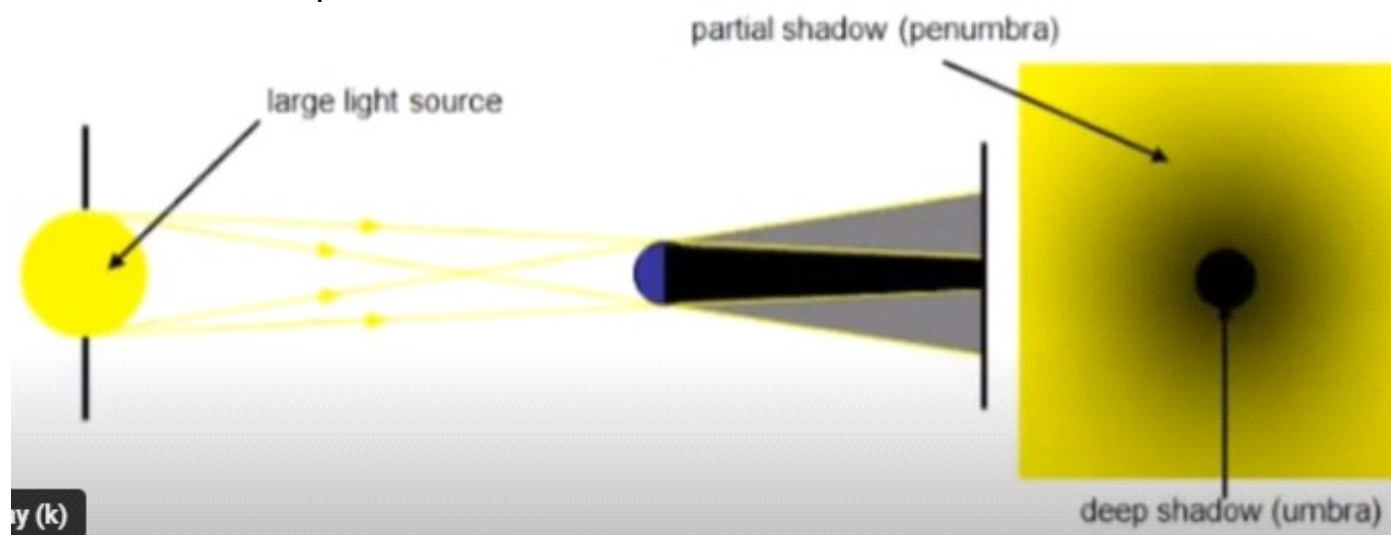


Image Credit: Screenshot from https://www.youtube.com/watch?v=0dTvah_EP1M

See you next month where we will explore types of Solar Eclipses and the Annular Eclipse of October 14th, 2023!
(Continued on [page 7](#))

Exciting Eclipses!

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M | O | O | N | C | L | R | M | A | U | A | A | R | A |
| C | R | A | A | P | S | U | A | U | M | B | R | A | S |
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| S | S | L | A | N | N | U | L | A | R | M | H | M | R |
| S | S | S | T | H | R | C | O | S | R | E | A | R | O |
| S | R | E | S | U | N | A | C | S | A | C | D | S | N |
| C | P | E | E | L | R | E | C | A | M | L | O | O | O |
| O | R | A | T | O | A | E | A | F | A | I | W | R | M |
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| T | O | T | A | L | T | O | T | Y | L | E | L | O | S |
| S | A | W | A | N | T | W | R | S | F | T | E | S | T |
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MOON
SAFETY
ANNULAR
ROOSTERS
SEE
LUNAR
TOTAL
ASTRONOMERS
CHINA
EXPERIENCE
ECLIPSE
SUN
STAR
SOLAR
SHADOWS
UMBRA
CULTURES

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Answers on page 9.

Things to do until next time **:

** Check with your parents or caregivers before checking out websites.

1. Watch this video about light and shadows: <https://www.youtube.com/watch?v=fy7eoMef3e8>
2. Watch this video about the umbra and penumbra: https://www.youtube.com/watch?v=0dTvah_EPLM
3. Watch the [Moon's shadow cross North America](#) during the 2017 Total Eclipse! Hint: In the YouTube setting for this video, you can slow the playback speed. I, and other HAA members, were in Missouri to see this eclipse!

(Continued on [page 8](#))

HAA Explorers (continued)

During September, check out:

1. On September 21st around 8:15 pm, check out the Moon near the red star Antares in the southern sky, and notice Saturn in the southeast:



2. On September 26th around 8:20 pm, see how the Moon has moved in the sky! It's now right under Saturn in the southeastern sky!



Images generated using Stellarium

(Continued on [page 9](#))

HAA Explorers (continued)

Finally:

What can be bigger than you, but doesn't weigh anything?

If you have a question that you would like answered in the newsletter, please send it to education@amateurastronomy.org

Answer: Your Shadow! 😊

Thank you to Ro for reviewing this article! 😊

Citations:

- ¹ Backyard Astronomer's Guide. Dickinson and Dyer. Firefly, 2021, page 239.
- ² National Geographic Kids: Ultimate Explorer Field Guide, 2016

References:

Astronomy for Kids. Astronomy. 2019.
The Backyard Astronomer's Guide. Dickinson and Dyer. Firefly, 2021.
Exploring the Sky: 100 Projects for Beginning Astronomers. Richard Moeschl. Chicago Review Press, 1989.
Great Experiments with Light. Scholastic. 2000.
National Geographic Kids: Ultimate Space Atlas, 2017.
National Geographic Kids: Ultimate Explorer Field Guide, 2016
Nightwatch. Dickinson. Firefly. 1998.

Page 7 Word Search Answers:



© TheWordSearch.com



Finally, the clouds of summer have given way to the clear skies of September, and earlier sunsets.

For me this will be a welcome change. Despite the Summer coming to an end, there's plenty in the sky to see this month.

First a recap of our Summer events.

The Supermoon - The Summer Armchair Astronomer's challenge

The *first* Full Moon on August 1st was the Sturgeon Moon. There may still be time to see the almost-full almost fully super, Super Blue Moonrise. There will not be another for 13 and a half years, in January 2037.

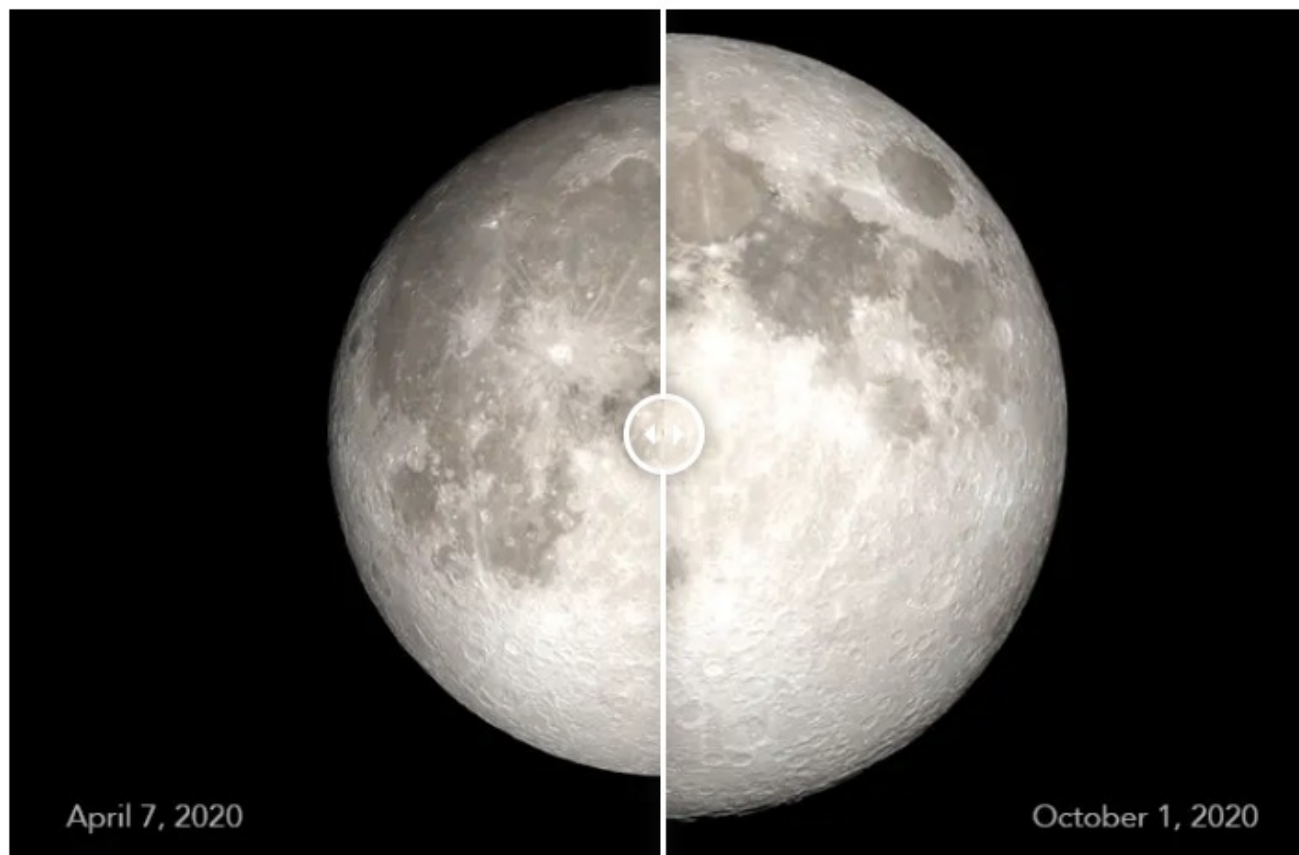
If you don't see it rise, try to get it at some other time of night, with some object in the frame for scale, either distant trees or manmade objects.

The moonrise times over 3 days are:

- August 30: 8.13 pm az 107.8 degrees 99.99 percent
- August 31: 8:38 pm, az 98.17 degrees, 98.68 percent
- September 1: 9.01 pm, az 88.34 degrees, 94.34 percent

Here is a cool toy: <https://moon.nasa.gov/news/197/super-blue-moons-your-questions-answered/>

And don't forget the cool video of the moon formation, <https://youtu.be/kRlhCWplqk> that shows a huge secondary blob falling back onto the Earth too, which would have wiped out more than just dinosaurs.



Not-So-Super Moon vs. Supermoon

Credit: NASA's Scientific Visualization Studio

Use the slider to compare and contrast the Moon's apparent size at its farthest and nearest points to Earth.

(Continued on [page 11](#))

The Sky for September 2023 (continued)

The Perseids

The Perseids night on Saturday August 12 was a grand success. There were not many people who braved the evening, but the sky was clear, and the Meteors appeared. I personally saw about 4 sporadics and 11 Perseids.

Despite the park not being open, probably 300 people parked on Harrison road and walked into the park. That's OK.

Alas, I was not looking when the fireball went by. (Just kidding, there was no fireball) Some of the meteors did make nice glittering trails that would have been visible from anywhere in Hamilton under clear skies.

That's the key detail. Although dark skies can enhance your appreciation of the rest of the view, and lacking the Moon helps you see more faint meteors, you did not come for the faint ones. The meteors worth seeing can be seen from anywhere.

I appreciate being with friends and timbit buyers for the evening, but you and I could have done this from a soccer field nearby too, and seen all the 'satisfying' meteors while missing some of the 'I saw somethings'.

Likewise all those 300 who came. Fortunately, they had fellowship and shared experience, which is the goal of the armchair challenge too.

This APOD from August 9 2023 is probably what you would see in a whole night's watching from a dark sky peak.

Note that there are some long bright trails, and a lot of short 'not so' trails. All of them count in the 'Zenithal Hourly Rate' figures for meteor showers. *(Continued on [page 12](#))*

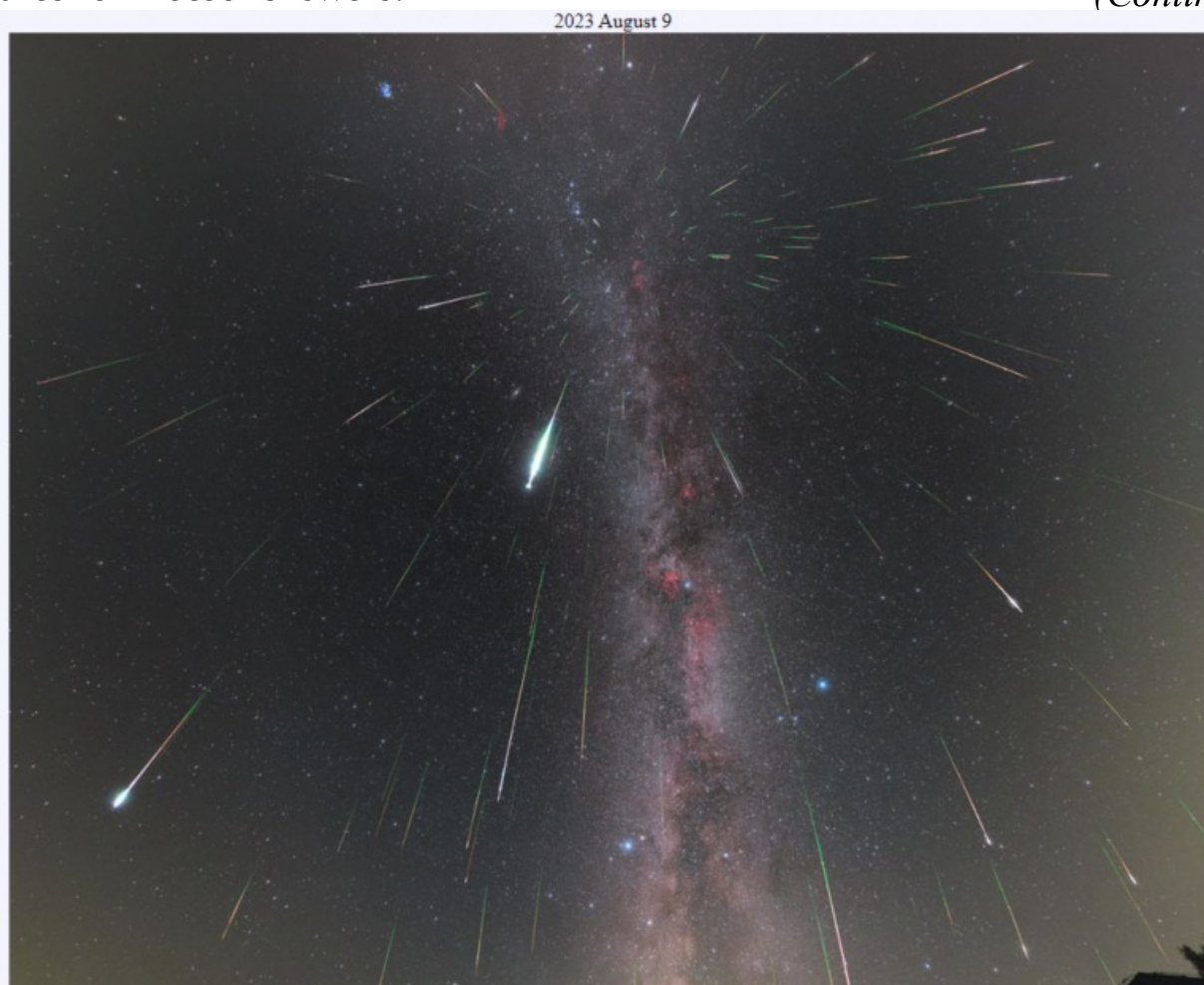


Image Credit: NASA/APOD/Petr Horálek <https://apod.nasa.gov/apod/ap230809.html>

The Sky for September 2023 (continued)

Summer observation reports

So far, one of our members has sent me reports of seeing *P1 Nishimura* and got a cool photo of it too.

I will showcase the photos at our upcoming monthly meeting on September 8th.

The New Comet

There are some prominent comets in the sky right now. Anything above magnitude 8 is going to need photography to see. Pegasus is almost circumpolar, so who's up for a photo of that *E1 ATLAS*?

Comets

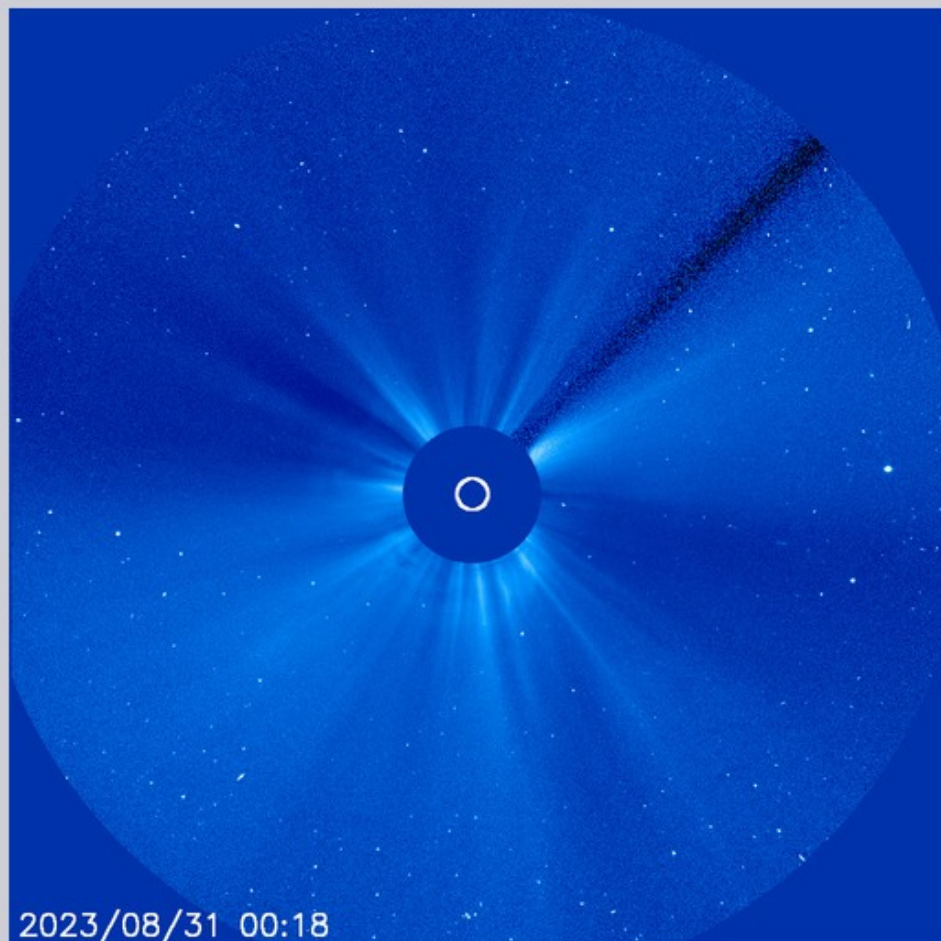
This table shows the brightest currently observable comets. Click on the name of the comet to get more details, including finder charts.

| Comet | Brightness | Date of last reported observation | Angular separation from Sun | Altitude | Azimuth | Constellation |
|-------------------------------------|------------|-----------------------------------|-----------------------------|----------|------------|---------------|
| C/2023 P1 Nishimura | 7.2 | 2023-Aug-29 | 33° | -7.1° | 312° (NW) | Cancer |
| C/2023 E1 ATLAS | 9.4 | 2023-Aug-28 | 157° | 17.6° | 90° (E) | Pegasus |
| C/2020 V2 ZTF | 9.8 | 2023-Aug-28 | 117° | -47.4° | 48° (NE) | Eridanus |
| C/2021 T4 Lemmon | 10.2 | 2023-Aug-21 | 71° | 21.8° | 209° (SSW) | Libra |
| C/2020 K5 PANSTARRS | 12.0 | 2023-Aug-19 | 58° | -3.3° | 338° (NNW) | Auriga |

Chart generated using HeavensAbove

In particular, *P1 Nishimura* is very bright, and in the constellation Cancer which is on the ecliptic, and therefore, will rise overnight.

SOHO LASCO C3 Latest Image



It is only 33 degrees from the Sun right now, so you will have to be up early in the morning, but you will be rewarded with a comet that screams out of the eyepiece!

It is still approaching the Sun, but it will be lost in glare soon. It will be almost impossible to see as it gets closer to the sun, BUT, you can watch it on SOHO, at this website:

<https://soho.nascom.nasa.gov/data/realtime/c3/512/>

You can see the Sun, background stars, and any passing comets. For reference, most of those stars are magnitude 3.

Try if you can, to compare this SOHO image to the Heavens-Above image showing the Sun against the starfield. I must admit I am puzzled, which stars I am seeing. Is Regulus in the frame? (yes) (Continued on [page 13](#))

The Sky for September 2023 (continued)

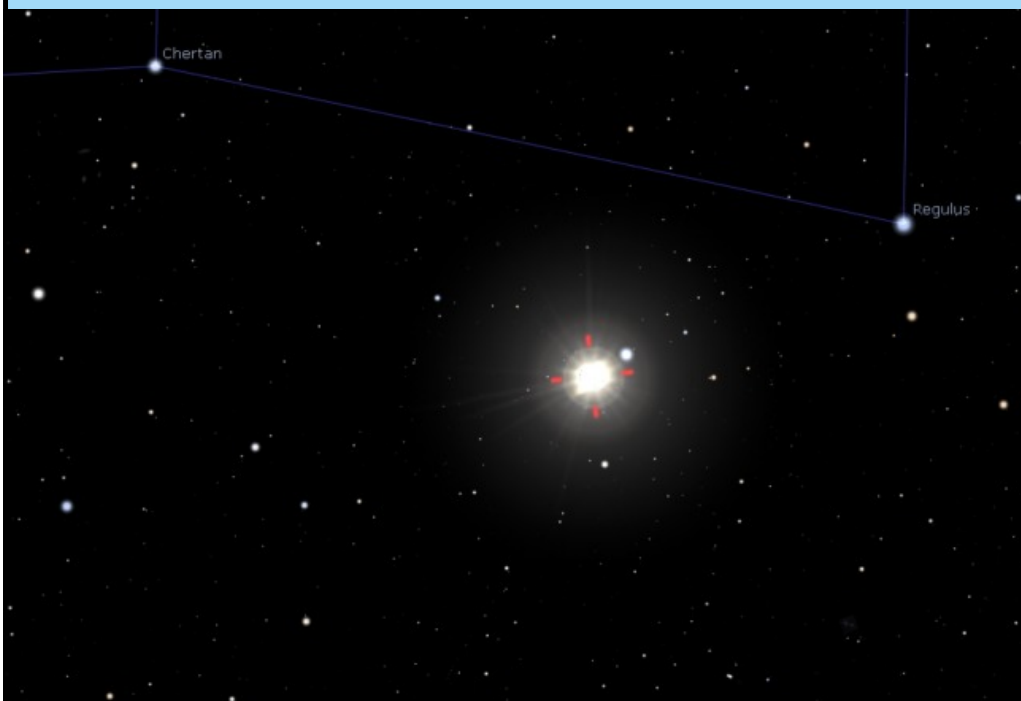


Image generated using Stellarium

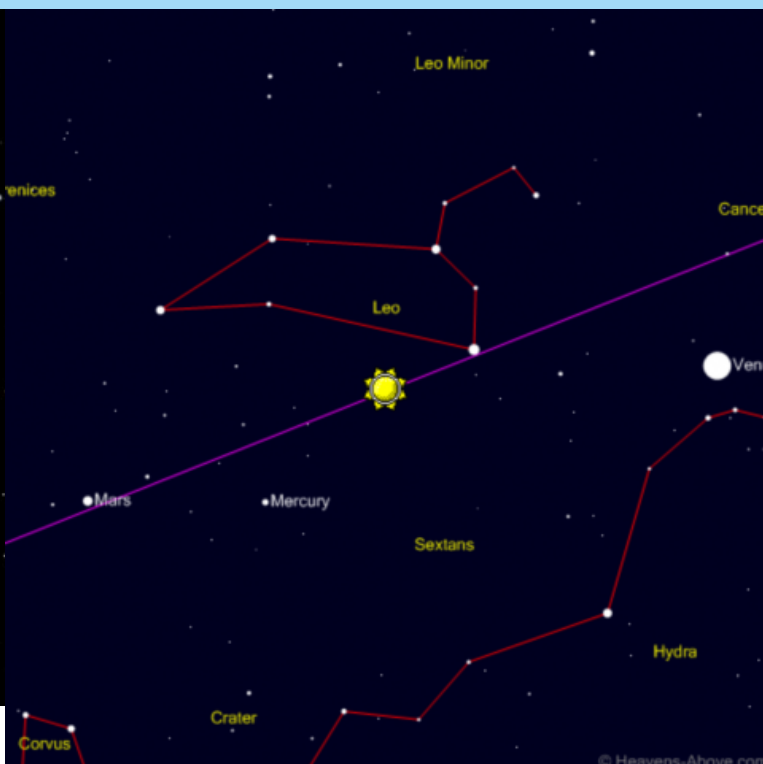


Image generated using Heavens-Above

Would you believe I struggle to flip the image in Stellarium? (control shift v or h). Stellarium to the rescue!

The comet will pass between the Earth and the Sun at about September 17th. My question is, will it be in the view range of SOHO? (The Solar Heliospheric Observatory)? It needs to be as close to the Sun as Regulus appears to Al Geiba in Leo. It will maybe graze the upper left part of the field of view of SOHO about September 17th.

The long and the short of it is, you need to rise early and see it for yourself, the sooner the better.

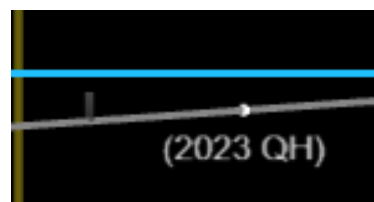
Near Earth Asteroids

Basically, I suggest you check this link here at least every couple of days, and watch for anything over a hundred meters and closer than a million miles.

<https://www.jpl.nasa.gov/asteroid-watch/next-five-approaches>

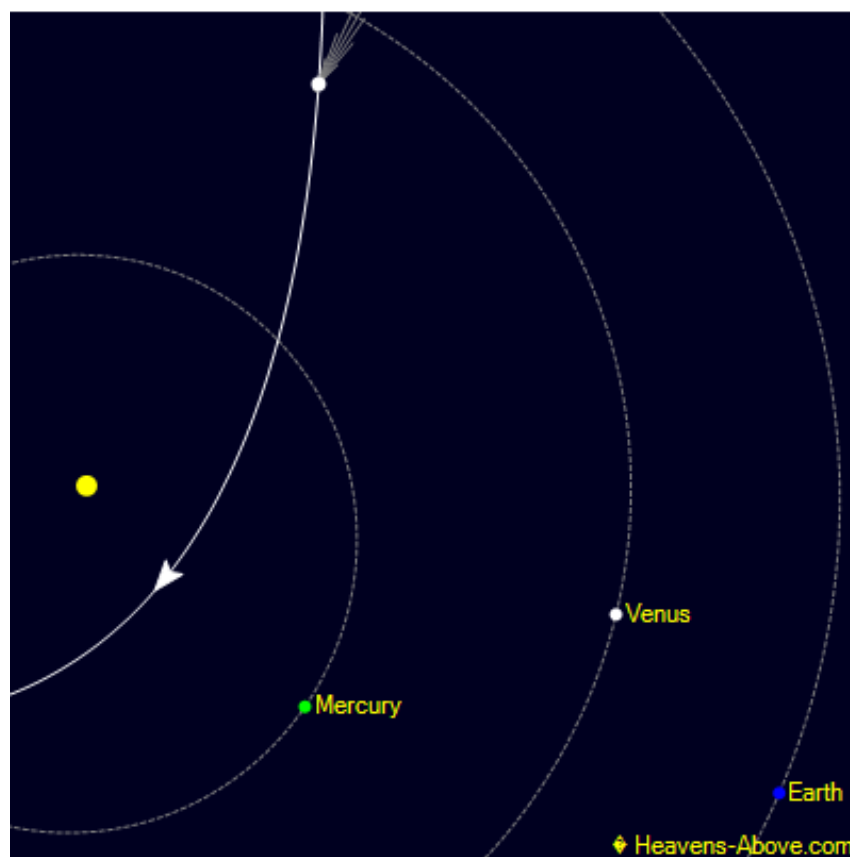
The next 5 asteroids are not so visible, but i think it's interesting to note the orbit paths that are shown.

For Asteroid 2023 QH (shown here) you can click to see the asteroid's orbit. 2023 QH, which at 61m is the size of a jetliner, was closest to Earth on August 31, 2023.



The website shows the asteroid crossing Earth's orbital plane, right at the orbital "line". That little mark shows how far below the ecliptic the orbit is. It changes direction at Earth's orbit.

(Continued on [page 14](#))



View from 90° above ecliptic plane

Image generated using Heavens-Above

The Sky for September 2023 (continued)

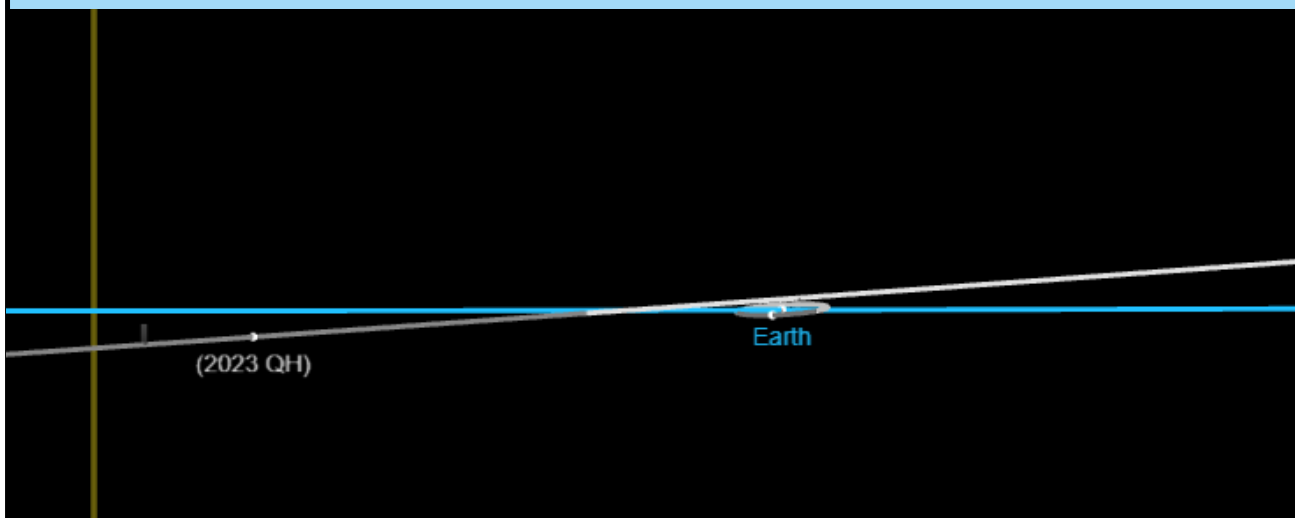


Image generated using Heavens-Above

In other words, save for some timing issues, they could be MUCH closer.

The Earth is about 12.7 thousand km in diameter, and its orbit is about 950 million km long, so Earth occupies 14 millionths of an orbit. So in roughly 73,000 years or more accurately in this case, asteroid orbits, Earth is present in every part of its orbit at a given time relative to another body. That means, that an earth crossing asteroid that actually crosses Earth's orbit precisely, will hit in about 73 thousand years.

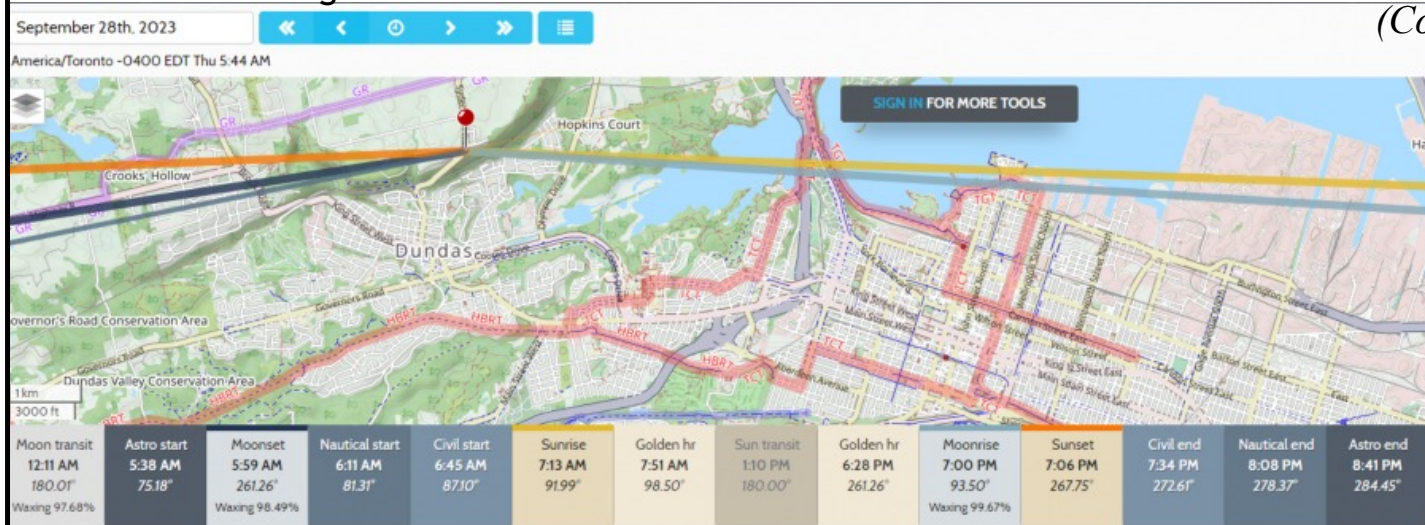
This begs the question, how did it get into that orbit in the first place? I think the correct answer is, all these bodies basically orbit the Sun.

This asteroid had a near miss of Earth which deflected its original orbit, and caused it to now have an orbit that goes through that near-miss point, (relative to the Sun) until such time as another near miss redefines the orbit again. One of those times, it will emerge from the close encounter in such a way that it crosses the Earth's orbit almost precisely on the way out, and on subsequent close encounters, it will be a better chance for a direct hit. By then, we can crash it into the Moon or mine it for space metals. I hope.

The Harvest Moon

The Moon's orbit in September allows the near-Full moon to rise about the same time for several days in a row, meaning that it tends to provide light in the evening helping farmers do the harvest. Lights on tractors also work, but the name has stuck.

Moonrise times of 7 pm, 7:23 PM, 7:46 PM. near the Full Moon in September are why it is a phenomenon. Normally the moonrise differs by as much as 50 minutes a day. Moonrise in September will be as shown here, at 7.23 PM with an azimuth of 7 PM on September 28, azimuth 93.5 degrees, 99.67 percent lit, and if you cannot see that, almost the same percentage lit on September 29th, at 7:23 PM, 99.57 percent, azimuth 83.67 degrees.



(Continued on [page 15](#))

Image generated using Photographer's Ephemeris

The Sky for September 2023 (continued)

The Zodiacal Light

September is the other time of the year (besides March) when the Zodiacal light can be prominently seen. In particular around mid-month when the Moon is not bright. However, it is a morning phenomena, so you should try to combine it with comet viewing, and Venus rising.

Keep those Photos coming!

I always include member photos in my meeting presentation. It's great to have an active club, so please continue to send me your Moon and Comet and other photos.

And here is a reminder for our member calendar too. Get those images to the crew before the deadline!

Armchair Challenge

I think I need to admit that making the monthly armchair challenge so specific, is just increasing the chances for it to be clouded out.

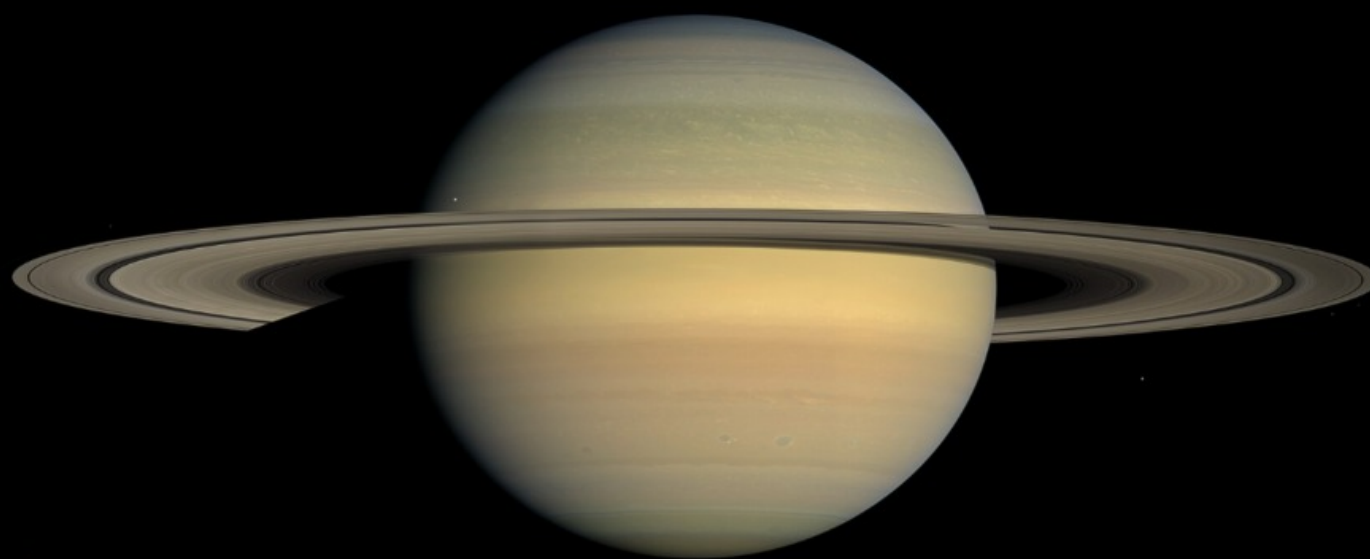
This month, *Saturn* is in Opposition. It is time to observe Saturn in its best light.

Note that at other times, you can actually see through the *Cassini Division*. See Saturn through the gap like this for serious bragging rights! At opposition, the Cassini Division will fill with light in front of Saturn.

I challenge you to use your own scope or someone else's, to see the Cassini Division (the dark band in the middle) in Saturn's rings, and count how many moons of Saturn you can find.

You have all September to achieve it.

Clear Skies!



This Natural color view of the planet Saturn was created from images collected shortly after Cassini began its extended Equinox Mission in July 2008. (Saturn actually reached equinox on August 11, 2009.)

Image Credit: NASA / JPL / Space Science Institute
<http://www.ciclops.org/view/5155/Saturn-Four-Years-On>



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Pathways Observing Program targets... September-October

Messier Observing Program: September-October... Including target hints!!

The Planets, Comets, Upcoming Meteor showers, Award Programs

What's Up in Awards?

The Hamilton Amateur Astronomers Observing Programs are designed to provide direction for amateur astronomer's observations and to reward their accomplishments. A certificate is awarded when the goals of the observing program are met. The HAA offer various certificates based upon achieving specific observing goals. There is no time limit for completing the required observing but good record keeping is required. Each observer must perform all the requirements of each Observing Program themselves. However, observers are able to receive help from (an)other observer(s) as they learn to find and identify different objects. Each observer will then need to locate and observe the object on their own to meet the goals of the program. Observing logs will be submitted to and examined by the HAA Observing Programs Project Coordinator to confirm all observations before a certificate is granted.

This column tells you which objects are visible this next month for the HAA Observing Programs and other sights of interest.

HAA Rising Star Observing Award

September

Constellations: Cepheus

Stars: Deneb

Double Stars: Albireo, 61 Cygni

Object Pairs: NGC 6939/NGC 6946

Messier objects: M15

October

Constellations: Pegasus

Stars: Alpheratz

Double Stars: delta Cephei

Object Pairs: NGC 7788/NGC 7790

Messier Objects: M52

Pathways Observing Program

Group B

Observable in July-August-September.

Summer Constellations: Find, observe, sketch: *Hercules, Cepheus, Scorpius.*

Stars: Find, observe, sketch: *Altair, Vega, Antares.*

Asterisms: Find, observe, sketch: *Dragon Head, Hercules Keystone. Summer Triangle.*

Planet: Any one planet that is remaining in the list.

Group A

Observable in October, November, December.

Winter Constellations: Find, observe, sketch: *Perseus*

Stars: Find, observe, sketch: *Algol*

Asterisms: Find, observe, sketch: *Great Square*

Planet: Any one planet that is remaining in the list.

(Continued on [page 17](#))

What's Up in Awards? September-October 2023 (continued)

HAA Messier Objects Observing Award

September Messier targets

- M13** The great globular cluster in Hercules is bright enough to be seen with naked eye. Binoculars easily show this cluster as a bright fuzzy ball. M13 is partially resolvable in small aperture telescopes and becomes a fantastic swarm of tightly packed individual stars through larger scopes.
- M92** Another globular cluster in Hercules, M92 is easy to find in binoculars appearing slightly dimmer and smaller than M13. As with M13 it is partially resolvable in small scopes and is a fine sight in large instruments.
- M14** A small, bright globular cluster in Ophiuchus. It is a difficult binocular object, look for a small fuzzy patch of light. Through a telescope M14 is an even patch of light, the stars not resolvable except through large scopes.
- M22** This is the other great globular in our tour this month. Located just above the Teapot asterism in Sagittarius, M22 can be seen with no optical aid. M22 is easy to find in binoculars, and easy to resolve in telescopes, with about the same impressiveness as M13.
- M28** Located near M22 in Sagittarius, this is a small bright globular. A tough binocular object, look for a small fuzzy patch. Easily seen in a telescope, but requires large apertures to resolve individual stars.
- M69, M70, M54** All of these are small bright globular clusters laying along the bottom of the teapot in Sagittarius. Very similar in appearance to M28, these are all tough binocular objects requiring dark skies and possibly averted vision to see. M54 is slightly brighter and appears more star-like through binoculars than the other globulars. These are all easily seen in telescopes, though not easily resolvable.

October Messier targets

- M24** This um..."object" is a section of the Milky Way in Sagittarius. It is easily seen with the naked eye as a fuzzy, oval patch about four times the size of the full moon. The best views are through binoculars or rich field telescopes. Includes several other objects including NGC 6603, Markarian 38, and Collinder 469.
- M25** Find this open cluster just east of M24 in Sagittarius. Visible to the naked eye, M25 lies in the same binocular field as M24. A view through a telescope shows the nebulousity is in fact many faint stars that are not resolved in small instruments.
- M18** This is a small open cluster just north of M24 in Sagittarius. Telescopes reveal this cluster for what it is - a small, sparse collection of bright stars.
- M17** Just north of M18 lies the Omega nebula. Possible to see with the naked eye, this nebula appears as a small faint patch of fuzz. A telescope will show the unique V shaped nebulousity that gives the cluster its name.
- M16** Through a telescope M16 looks like a sparse open cluster of stars surrounded by faint wisps of smoke. IC 4703 is the diffuse emission nebula or HII region associated with Messier 16. It is the nebulous region surrounding Messier 16. These two objects make up the Eagle Nebula.

(Continued on [page 18](#))

What's Up in Awards? September-October 2023 (continued)

- M26** Telescopes partially resolve this cluster and show several stars buried in a faint glow from the unresolved stars.
- M11** Just north of M26 in Scutum lies the Wild Duck Cluster. Possible to see with the naked eye, telescopes resolve many of the stars in this very rich cluster.
- M55** Possible naked eye object. Telescopes show a round patch of light - bright in the center and fading toward the edges. Large apertures are needed to resolve this globular.
- M75** A telescope will show a small fuzzy with a bright center.

The Planets... September 2023 via (BBC) Sky at Night Magazine

- 4 September: Moon near Jupiter.
- 11 September: Morning crescent Moon near Beehive Cluster, M44.
- 20 September: Neptune at opposition.
- 29 September: Harvest full Moon.

Mercury: Greatest western elongation on 22 September with the bright planet rising 100 minutes before sunrise.

Venus: Impressively bright morning planet, visible against dark skies at the end of the month, rising four hours before sunrise.

Mars: Not visible this month.

Jupiter: Bright morning planet reaching its highest position under darkness from mid-month. The Moon is close on 4/5 September.

Saturn: Evening planet, currently well presented. Reaches 24° altitude under dark sky conditions.

Uranus: Morning planet near Jupiter. Peak altitude, due south, in a dark sky mid-month onwards.

Neptune: Binocular planet, reaching opposition on 20 September.

The Planets... October 2023 via (BBC) Sky at Night Magazine

- 1 October: Morning Moon close to Jupiter.
- 13 October: Comet 103P Hartley near NGC 2392.
- 21/22 October: Orionid meteor shower peak (favourable).

Mercury: Best during first week of October, bright in the morning. Lost after.

Venus: Brilliant morning planet at greatest western elongation on 24 October, 46.4° from the Sun.

Mars: Not visible this month.

Jupiter: Jupiter is very bright (mag. -2.8) and really well placed this month in southern Aries.

Saturn: Well placed evening planet in Aquarius. A gibbous Moon is nearby on the evenings of 23 and 24 October.

Uranus: Well-placed near Botein (Delta (δ) Arietis). Jupiter nearby; both joined by a gibbous Moon on 1/2 October.

Neptune: Well-placed evening planet. Reaches highest point, due south in darkness all month. Requires binoculars to see.

Comets September-October 2023 via Seiichi Yoshida – Click here:

<http://www.aerith.net/comet/future-n.html>

(Continued on [page 19](#))

What's Up in Awards? September-October 2023 (continued)

Meteor Showers via American Meteor Society

Orionids

Period of activity: September 26th, 2023 to November 22nd, 2023

Peak Night: Oct 20-21, 2023

The Orionids are a medium strength shower that sometimes reaches high strength activity. In a normal year the Orionids produce 10-20 shower members at maximum. In exceptional years, such as 2006-2009, the peak rates were on par with the Perseids (50-75 per hour). Recent displays have produced low to average displays of this shower.

Shower details - Radiant: 06:21 +15.6° - **ZHR:** 20 - **Velocity:** 41 miles/sec (swift - 66km/sec)

Parent Object: 1P/Halley

Next Peak - The Orionids will next peak on the Oct 20-21, 2023 (Fri-Sat) night. On this night, the moon will be 37% full.

Southern Taurids

Period of activity: September 28th, 2023 to December 2nd, 2023

Peak Night: Nov 4-5, 2023

The Southern Taurids are a long-lasting shower that several peaks during its activity period. The shower is active for more than two months but rarely produces more than five shower members per hour, even at maximum activity. The Taurids (both branches) are rich in fireballs and are often responsible for increased number of fireball reports from September through November.

Shower details - Radiant: 03:35 +14.4° - **ZHR:** 5 - **Velocity:** 17.2 miles/sec (slow - 27.7km/sec)

Parent Object: 2P/Encke

Next Peak - The Southern Taurids will next peak on the Nov 4-5, 2023 (Mon-Tue) night. On this night, the moon will be 54% full.

Northern Taurids

Period of activity: October 13th, 2023 to December 2nd, 2023

Peak Night: Nov 11-12, 2023

This shower is much like the Southern Taurids, just active a bit later in the year. When the two showers are active simultaneously in late October and early November, there is sometimes a notable increase in the fireball activity. There seems to be a seven year periodicity with these fireballs. 2008 and 2015 both produced remarkable fireball activity.

Shower details - Radiant: 03:55 +22.8° - **ZHR:** 5 - **Velocity:** 18 miles/sec (slow - 30km/sec)

Parent Object: 2P/Encke

Next Peak - The Northern Taurids will next peak on the Nov 11-12, 2023 (Sat-Sun) night. On this night, the moon will be 2% full. The Northern Taurids will next peak on the Nov 11-12, 2023 (Sat-Sun) night. On this night, the moon will be 2% full.

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What's Up in Awards? September-October 2023 (continued)

Observing Award Recipients

We would like to give recognition and congratulations to any member who completes an award program regardless of the sponsoring organization. Congratulations to the following:

HAA Pathfinder

A01 Anastasia Morissette

HAA Rising Star Awards

001 Jean Jefferson

002 Kevin Salwach

003 Jo Ann Salci

HAA Messier Award

No recipients

HAA Lunar Award

No recipients

Astronomical League

Bernie Venasse (2023)

Sunspotters Observing Program

Hydrogen Alpha Solar Observing Program

Lunar Evolution

Asteroid Observing Program-Gold

Master Observer-Silver

RASC

Jo Ann Salci

Exploring Exoplanets (on-line course)

Swapna Shrivastava

Explore the Moon

Explore the Universe

Bernie Venasse

Explore the Universe

Explore the Moon (*new this month*)

The Master Observer - Silver Award will be given to an AL member who has completed the Observer Award, the Master Observer Award, the Advanced Observer Award, and the five additional required observing programs.

The Observer must:

- Earn the Observer Award
- Earn the Master Observer Award
- Earn the Advanced Observer Award
- Join the Master Observers Network (MO-Net)

The observer must complete these four additional Observing Programs:

- The Lunar II Observing Program.
- The Outreach Observing Award - Any level.
- The Sketching Observing Award.
- The Sunspotters Observing Program.

The observer must also complete other Observing Programs to reach a total of 20.

Please feel free to contact me with any questions or comments at chair@amateurastronomy.org

– Bernie



This article is distributed by NASA Night Sky Network (NSN).

Visit nightsky.jpl.nasa.gov to find local clubs, events, and more!

Looking Beyond the Stars

Brian Kruse

Looking up in awe at the night sky, the stars and planets pop out as bright points against a dark background. All of the stars that we see are nearby, within our own Milky Way Galaxy. And while the amount of stars visible from a dark sky location seems immense, the actual number is measurable only in the thousands. But what lies between the stars and why can't we see it? Both the Hubble telescope and the James Webb Space Telescope (Webb) have revealed that what appears as a dark background, even in our backyard telescopes, is populated with as many galaxies as there are stars in the Milky Way.

So, why is the night sky dark and not blazing with the light of all those distant galaxies? Much like looking into a dense forest where every line of sight has a tree, every direction we look in the sky has billions of stars with no vacant spots. Many philosophers and astronomers have considered this paradox. However, it has taken the name of Heinrich Wilhelm Olbers, an early 19th century German astronomer. Basically, Olbers Paradox asks why the night sky is dark if the Universe is infinitely old and static – there should be stars everywhere. The observable phenomenon of a dark sky leads us directly into the debate about the very nature of the Universe – is it eternal and static, or is it dynamic and evolving?

It was not until the 1960s with the discovery of the Cosmic Microwave Background that the debate was finally settled, though various lines of evidence for an evolving universe had built up over the previous half century. The equations of Einstein's General Theory of Relativity suggested a dynamic universe, not eternal and unchanging as previously thought. Edwin Hubble used the cosmic distance ladder discovered by Henrietta Swan Leavitt to show that distant galaxies are moving away from us – and the greater the distance, the faster they're moving away. Along with other evidence, this led to the recognition of an evolving Universe.

The paradox has since been resolved, now that we understand that the Universe has a finite age and size, with the speed of light having a definite value. Here's what's happening – due to the expansion of the Universe, the light from the oldest, most distant galaxies is shifted towards the longer wavelengths of the electromagnetic spectrum. So the farther an object is from us, the redder it appears. The Webb telescope is designed to detect light from distant objects in infrared light, beyond the visible spectrum. Other telescopes detect light at still longer wavelengths, where it is stretched into the radio and microwave portions of the spectrum. The farther back we look, the more things are shifted out of the visible, past the infrared, and all

(Continued on [page 22](#))

NASA Night Sky Notes (continued)

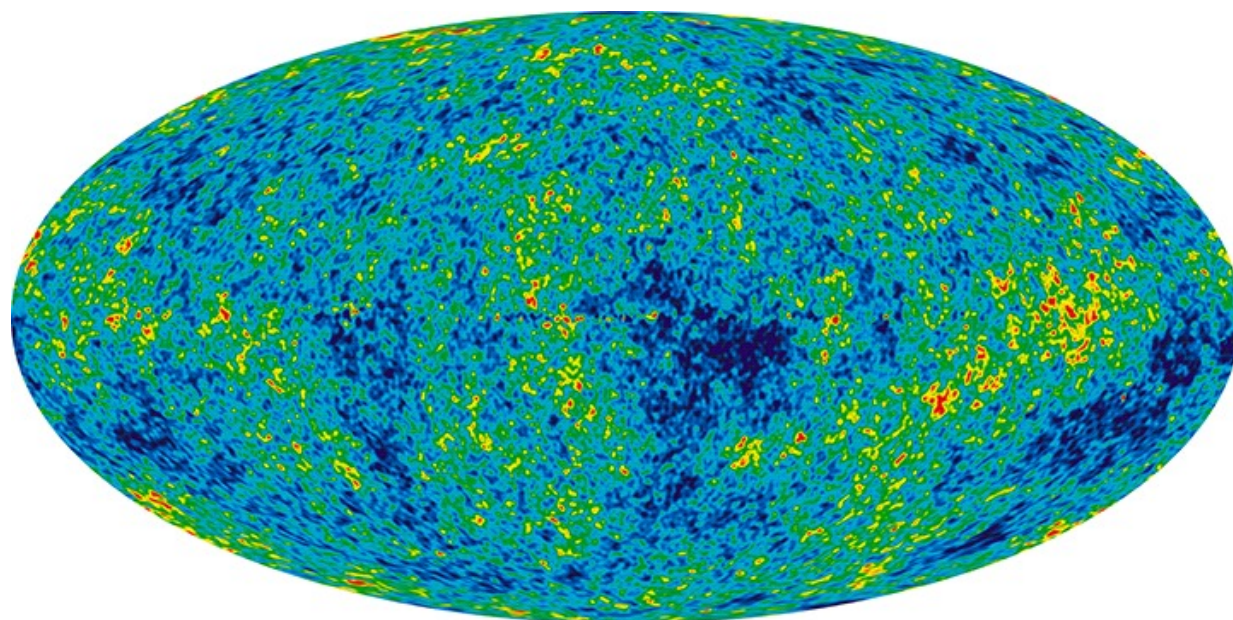
the way into the microwave wavelengths. If our eyes could see microwaves, we would behold a sky blazing with the light of the hot, young Universe – the Cosmic Microwave Background.

The next time you look up at the stars at night, turn your attention to the darkness between the stars, and ponder how you are seeing the result of a dynamic, evolving Universe.



NASA's James Webb Space Telescope has produced the deepest and sharpest infrared image of the distant universe to date. Known as Webb's First Deep Field, this image of galaxy cluster SMACS 0723 is overflowing with detail. This slice of the vast universe is approximately the size of a grain of sand held at arm's length by someone on the ground.

*Image Credit: NASA, ESA, CSA, STScI
<https://bit.ly/webbdeep>*



The oldest light in the universe, called the cosmic microwave background, as observed by the Planck space telescope is shown in the oval sky map. An artist's concept of Planck is next to the map. The cosmic microwave background was imprinted on the sky when the universe was just 380,000 years old. It shows tiny temperature fluctuations that correspond to regions of slightly different densities, representing the seeds of all future structure: the stars and galaxies of today.

Image credit: ESA and the Planck Collaboration - D. Ducros <https://go.nasa.gov/3qC4G5q>



**Scenes from club Perseus
night at Binbrook,
August 12-13, 2023**

left:

The Summer Milky Way

below:

**H.A.A. members watching
for Perseid meteors**

**Jeff Parsons
(both)**





left:

The Galaxies M81 and M82, by Dan Copeland

below:

Before (April 12/13, 2023) & after (May 26/27, 2023) images of Supernova SN 2023ixf in M101,

by Alex Kepic



HAA Outreach Presentations with Vulnerable Sectors

The HAA executive has created a policy for any HAA member who wishes to do outreach presentations to vulnerable sectors, which includes children under 18 years of age and vulnerable adults. This does not include our general club outreach activities.

Presentations include in-person or virtual sessions where parents/guardians may not be present. **As it is not always possible to anticipate caregiver attendance at outreach activities for children under the age of 18, or vulnerable adults, it is therefore a requirement for HAA member-volunteers who work with these vulnerable populations to complete a Police Vulnerable Sector Check.**

These can be obtained only in your region of residency. Costs vary from one area to another. They will be kept on file by the HAA Education Director. No details regarding the findings of the check will be made in any way public or viewed beyond the HAA Education Director.

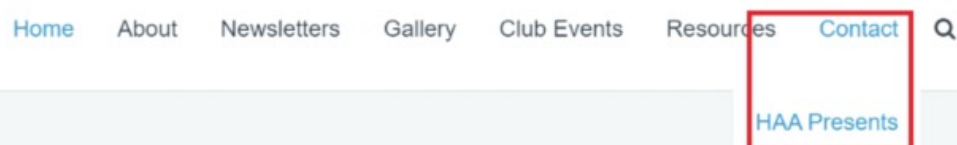
The HAA will reimburse any member who wishes to do outreach presentations to vulnerable individuals, provided a receipt is submitted.

Please contact Jo Ann Salci if you have any questions about this policy and/or if you wish to put your name forward to help with outreach activities to young people! This policy is effective immediately.

“HAA Presents”

Members of the public of any age in the GTHA can now request an in-person (once it is safe to do so) or virtual presentation from the HAA directly on our website.

Simply navigate to www.amateurastronomy.org and select “Contact” from the top menu bar and then click on “HAA Presents” (see image below). You will be presented with a request form and once all required fields are entered, click on the “Submit” button and you will see a confirmation message that your request has been successfully submitted.



Once received, our Public Education Director, Jo Ann Salci, will respond to your request within 5 business days to discuss next steps. If you have any questions, feel free to send an email to: haapresents@amateurastronomy.org.

For more information go to
www.amateurastronomy.org



HAA Dark Sky Star Party

September 22-25, 2023
Andromeda Meadow
Warton, Ontario

Cost: \$25 per person, \$50 Family
\$37.50 1 Parent/Guardian & 1 child under 18

Weekend Events

- Visual observing and astrophotography opportunities
- E.S Fox Observatory Tour Saturday afternoon
- Chinese Food Buffet Dinner onsite Saturday (optional extra cost)
- There are no lectures

Ground camping and trailer sites onsite
Motels, Cottages rentals etc. nearby

ONSITE AMMENITIES

- Portable Washrooms
- Gas generator for charging astronomy equipment only
- Gathering tent

CONTACT INFORMATION

Sue at
starparty@amateurastronomy.org
Matt at
mattmannastro@outlook.com

This is a remote site
with no:
water,
electricity,
flush toilets,
showers,
electical or water
hookup for trailers.



REGISTRATION OPENS APRIL 1, 2023



William J. McCallion Planetarium

McMASTER UNIVERSITY, HAMILTON, ONTARIO

- Public shows Wednesdays and some Saturdays
- Public transit available directly to McMaster campus
- Tickets \$7 per person; private group bookings \$150
- Different shows every week
- Upcoming shows include:
 - **Sep 6 & 23: Introductory Astronomy for Kids — Galaxies**
 - **Sep 13: Introductory Astronomy for Kids — Solar System**
 - **Sep 20: Myth-Busting Astronomy in Pop Culture**
 - **Sep 27 & 30: The Celestial Bear: The Six Nations' Night Sky**
- For show times and further details, visit www.physics.mcmaster.ca/planetarium

UPCOMING EVENTS

September 8, 2023 - 7:30 pm – H.A.A. Meeting at McMaster Innovation Park. Speakers will be *Isabella Lopes-Daniele*, the 2023 Jim Winger Award winner at BASEF, and HAA Chair *Bernie Venasse*. This will be a “hybrid” meeting, with the attendance option of in-person or online via [Facebook](#) and [Zoom](#).

October 13, 2023 - 7:30 pm – H.A.A. Meeting at McMaster Innovation Park. This is our *Annual General Meeting*.

2022-2023 Council

| | |
|----------------------------|--------------------------------------|
| Chair | Bernie Venasse |
| Second Chair | Sue MacLachlan |
| Treasurer | Ann Tekatch |
| Digital Platforms Director | Christopher Strejch |
| Membership Director | Paula Owen |
| Observing Director | Steve Germann |
| Education Director | Jo Ann Salci |
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Check out the H.A.A. Website
www.amateurastronomy.org

Follow us!



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observing@amateurastronomy.org

Education:

education@amateurastronomy.org

Newsletter:

editor@amateurastronomy.org

Digital Platforms Director:

webmaster@amateurastronomy.org

All active HAA members have the privilege of access to an exclusive HAA members only dark sky location.

Be on the lookout for e-mails with dark sky observing details. Space is limited.

The Harvey Garden HAA Portable Library



Contact Information

E-mail: library@amateurastronomy.org