Event Horizon

Hamilton Amateur Astronomers

Volume 32, Number 6
April 2025

From The Editor

The Event Horizon is packed with fascinating content this month!

And the best was saved for last; a treasure-trove of awesome images of the March 14th Lunar Eclipse imaged by our members!

Enjoy!

Bob Christmas,
Editor

editor 'AT'
amateurastronomy.org

Chair's Report by Sue MacLachlan

Spring is here! Even if it doesn't really feel like it at the moment. Thanks to Kevin Salwach for filling in for me at the March monthly meeting. March was a busy month with a telescope clinic on Saturday March 8, a lunar eclipse, the Bay Area Science and Engineering Fair and a trip to Canadensys, to their Lunar Rover Testing Facility.

Approximately 155 members of the public attended the telescope clinic on March 8. The Kid's Zone was busy making constellation tubes and handing out planispheres while other volunteers were providing people with help with telescopes. About 16 club members were on hand to help with the clinic. Thanks to all those volunteers who helped make the clinic run smoothly.

The weather was great for the lunar eclipse and I hope that some of you were able to catch it. If not, there are a few club members that got awesome pictures of the event.

(Continued on page 2)

IN THIS ISSUE:

Chair's Report (continued)

Jo Ann Salci, our Education Director, organized the HAA participation in the Bay Area Science and Engineering Fair. A great day was had by all of the judges of which the highlight is always the chats with the kids about their projects. For more details see Jo Ann's article later in the E.H. on page 4.

At the deadline for the E.H. the trip to Canadensys was yet to come so I hope that everyone who went had a great time.

In other news, Council has had to cancel the Saturday April 5, 2025 evening outreach event at Bayfront Park. Stay tuned for a possible reschedule date. The Binbrook team has been working on their plans for opening our dark sky observing site over the spring, summer and fall. The Binbrook team is looking for a couple of new members to help out with opening the site. As part of the review of the HAA's online presence, the HAA Facebook page will have a public group that anyone can join.

Please keep in mind the following events:

- The Saturday April 5 evening outreach at Bayfront Park in Hamilton to do sidewalk astronomy has been cancelled.
- On ***Saturday May 3, International Astronomy Day***, the club will hold a sidewalk astronomy event during the day for solar viewing. The public will be welcome to look through the telescopes from 1:00 pm to 4:00 pm. The location will be at the Hamilton Beach Front west of Hutches on Van Wagners Beach Boulevard. Club members are encouraged to bring their solar telescopes and share views of the sun with the public. If you don't have a solar telescope you are more than welcome to come out or just drop by. Again, this is a weather permitting event.
- Saturday August 9 will be the Annual HAA Picnic and public Perseid night. Pavilion #3 at Binbrook Park is already booked!
- The HAA Dark Sky Star Party will be held on the weekend of September 19th through 21st.

On Friday April 11 our speaker will be *Dr. Samatha Lawler*, Associate Professor of Astronomy at Campion College at the University of Regina. She will talk to us about how artificial satellites are changing the night sky for both professional and amateur astronomers alike.

At our meeting in May we will be joined by *Thomas Deere*. Thomas has been instrumental in developing the Indigenous program at the McCallion Planetarium. He will talk to us about how that program came about as well as share indigenous stories about the night sky.

As always, I look forward to seeing everyone on Friday April 11th at St. Matthew's-on-the-Plains Anglican Church at 126 Plains Road E. Burlington and on Zoom for those who cannot attend in-person.

Clear skies,

Sue MacLachlan *chair 'AT' amateurastronomy.org*

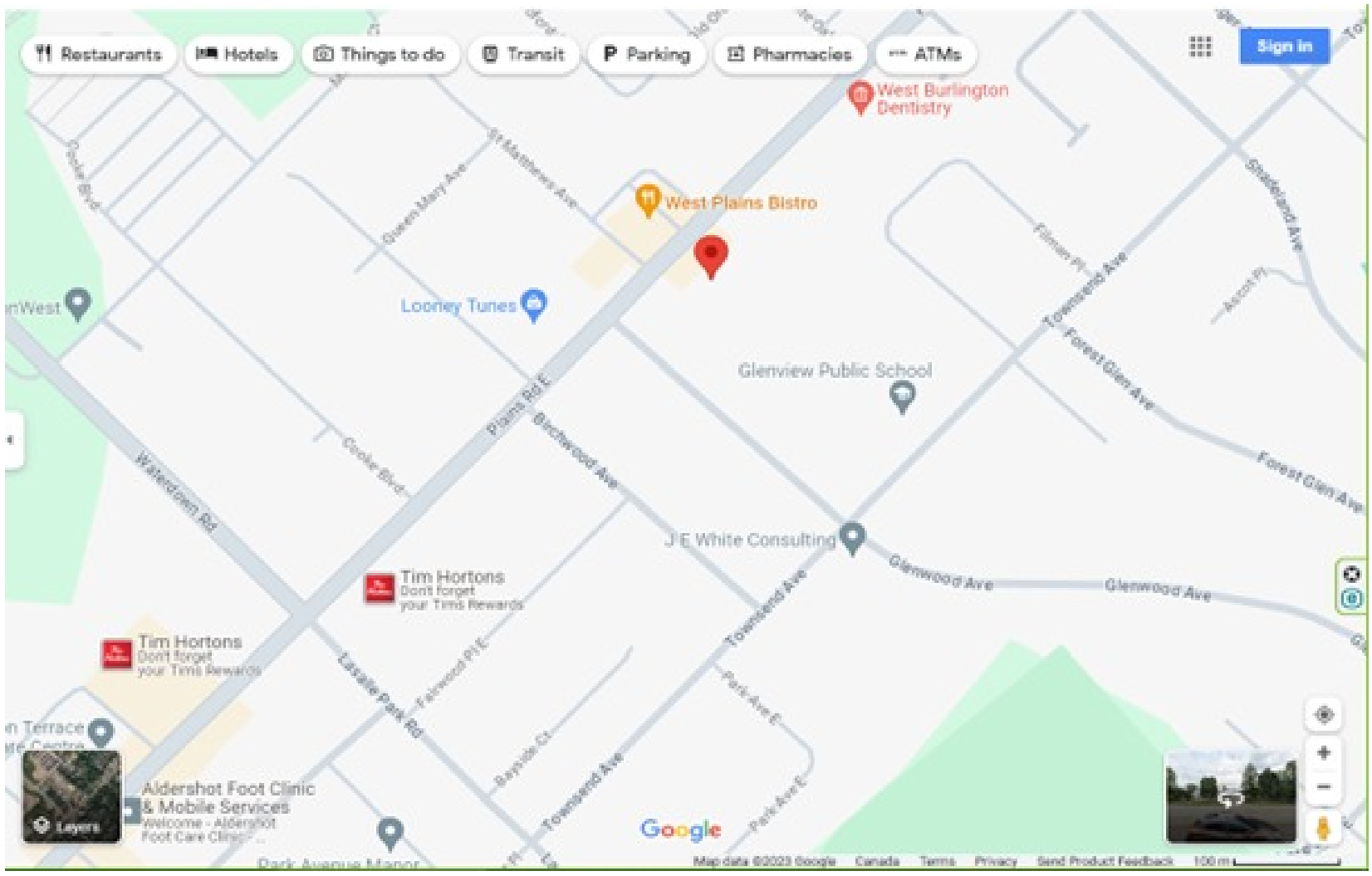
Masthead Photo: *The Total Lunar Eclipse of March 14, 2025*, by *John Gauvreau*.

Single shot, imaged through a 130mm refractor.

See more images of the lunar eclipse in our members' gallery on pages 16 to 19.

Meeting Location

Our upcoming meeting is scheduled for *April 11th, 2025*, at St. Matthew's-on-the-Plains Anglican Church. St. Matthew's is located at 126 Plains Road East, Burlington, Ontario. Doors open at 7:00 and the meeting begins at 7:30.



St Matthew's-on-the-Plains Anglican Church (indicated with red locator)
Image generated using Google Maps

Calling All Telescope Enthusiasts! Share Your Gear and Experience in Our New Segment: "Talking Telescopes"

We're launching an exciting new segment for our club's YouTube channel called "Talking Telescopes"! This is your chance to showcase your equipment, share how you use it, and pass along tips and lessons learned. Whether you're working with a trusty beginner scope or a high-end astrophotography setup, we'd love to hear your story.

These short interviews will be filmed around 7:00 pm at St. Matthew's-on-the-Plains Church just before our monthly meetings (during setup time) and are a great opportunity to inspire fellow members and new astronomy enthusiasts alike. It's a fun and informal way to highlight the diversity of approaches and experiences within our community.

Interested in being featured? Please reach out to ***Chris Szaban*** at

talkingtelescopes@amateurastronomy.org

to schedule a time. Let's show the world what makes the Hamilton Amateur Astronomers so incredible!

Bay Area Science and Engineering Fair (BASEF) Winners!

The HAA has been a proud supporter of BASEF since 1994!

The HAA sponsors an award at BASEF every year, called the James A. Winger Award. James Winger was a founding member of the HAA and is the only person to have been named its Honorary Chair. Jim was a skilled astronomer, expert telescope maker and taught many people how to make their own telescope optics. Jim was always a great supporter of BASEF, personally donating prizes to foster the enthusiasm of young scientists.

Consideration for this Award is given to a student who does a project related to Astronomy, Physics, Light Pollution Abatement, or Space Travel. The Award consists of:

a. The James A. Winger Junior Award: $100 for 2 students in Grades 7-9
b. The James A. Winger Senior Award: $100 for 2 students in Grades 10-12

This year our BASEF judges were HAA members Dee Rowan, Jo Ann Salci and Chris Strejch. As there weren't many astronomy projects in the grade 10-12 category, we awarded 3 Junior Awards and 1 Senior Award.

This year's BASEF award winners:

Junior Awards:

Interstellar Travel: Celina and Annabelle explored the possibilities of a 3-phase propulsion system to allow space travel to the stars. Their inspiration arose after watching the movie Interstellar. Congratulations!

Reach Beyond Stars: Joshua tested various rocket components to determine the best rocket design. Despite many tests, failures and hard work, Joshua persisted and hopes to pursue this as a career. Congratulations!

The JWST and How it can Improve Deep Sea Exploration: Ella and Evelyn were inspired by the amazing abilities of the JWST to creatively use its technology closer to home to explore the deep seas of Earth. Congratulations!

Senior Award:

Dodging Doomsday - Simulating AI-Powered Asteroid Deflection: Liam used physics and Reinforcement Learning to explore AI-driven solutions for defending Earth. We are truly in good hands! Congratulations!

Congratulations to everyone who worked very hard on their projects!

HAA Helps Hamilton

Hamilton Food Share
Hunger. It's just unacceptable.

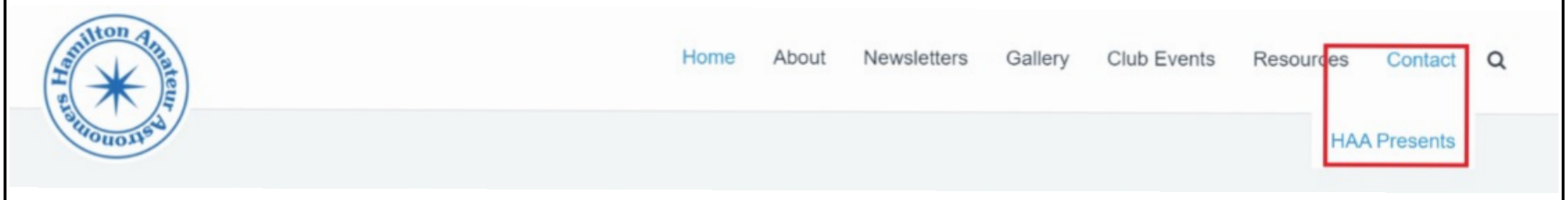
The H.A.A. is once again accepting and collecting donations from our members and guests for local food banks at our general meetings. The H.A.A. has always valued its relationships with food banks in the community, particularly Hamilton Food Share.

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

“HAA Presents”

Members of the public of any age in the GTHA can now request an in-person 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.

HAA Outreach Presentations with Vulnerable Sectors

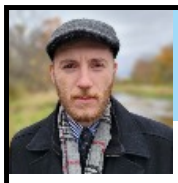
The HAA executive has created a policy for any HAA member who wishes to do outreach presentations to vulnerable sectors, which includes children under 18 years of age and vulnerable adults. This does not include our general club outreach activities.

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.



The Sky This Month for April 2025 by Kevin Salwach

They say April showers bring May flowers, and looking at the long-term forecast, unfortunately that seems to be the case this year – as of the end of March I am seeing 16 days in April with calls for rain. Hopefully the weatherman is wrong, and we get at least a few good starry nights to get out and enjoy the spring weather, spring sky and longer nights.

As usual, lets start off by taking a look at the naked eye sky in the middle of the month. Looking towards the west, the winter constellations are finally dipping below the horizon for the summer – *Orion* and *Taurus* set by 11PM, while *Gemini* and *Auriga* follow closely behind. Directly above us, *Leo*, *Ursa Major* and the lesser known constellations of *Leo Minor*, *Lynx* and *Canes Venatici* circle around the zenith, with their myriad of galaxies perfectly placed for best viewing. Meanwhile in the east, our other spring constellations are all well above the horizon, and the first hints of summer come peeking up around midnight. *Bootes*, *Virgo* and *Corona Borealis* are all fully risen by 10PM, and *Hercules* trails just behind them an hour or so later. Additionally, over to the south, the whole of *Hydra* is above the horizon, snaking all the way from Spica to Procyon.

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The sky looking west on Tuesday, April 15th at 10PM

Image generated using Stellarium

The Sky This Month for April 2025 (continued)

The sky looking toward zenith on Tuesday, April 15th at 10PM

The sky looking east on Tuesday, April 15th at 10PM

Images generated using Stellarium

(Continued on page 8)

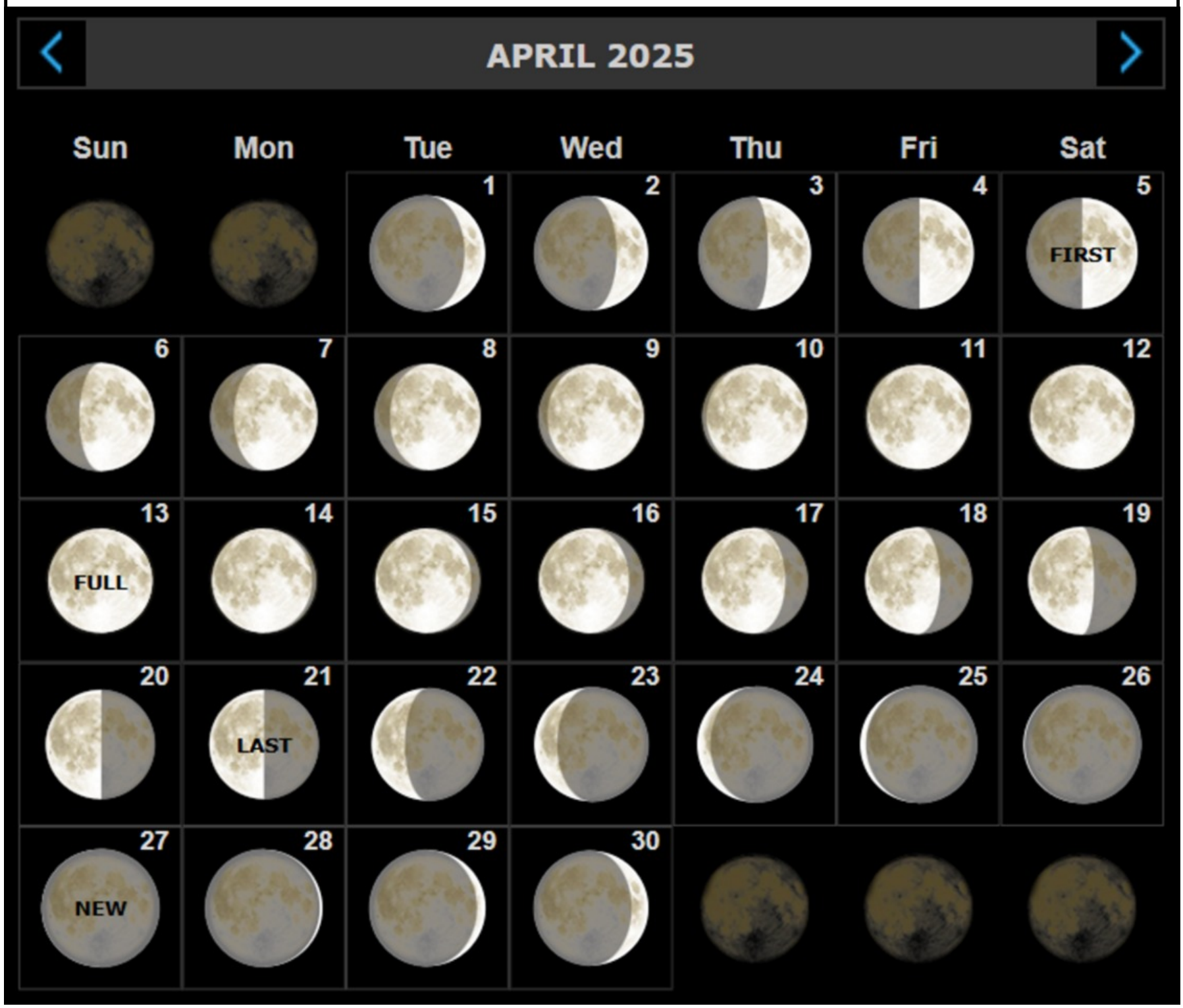
The Sky This Month for April 2025 (continued)

The Moon

We start the month with New Moon having passed on March 29th. First Quarter is April 5th, Full Moon is Sunday the 13th, Last Quarter is the 21st and then back around to New again on Sunday the 27th. The weekend of the 26th is your only weekend this month with a moonless sky all night, so mark it in your calendars. The Moon makes several close passes and conjunctions this month:

- Within 2 degrees of M45 on the evening of the 1st (see diagram at top of next page)
- Within 4 degrees of Jupiter on the evening of the 2nd
- Within 3 degrees of Mars on the 5th
- Within half a degree of Spica on the 12th
- The ISS passes 4 degrees under the Moon at 5:02AM on the morning of the 19th

(Continued on page 9)



The Sky This Month for April 2025 (continued)

The Moon and M45 at 9PM on April 1st
Image generated using Stellarium

The Planets

The planets in April have a fairly decent showing, if fleeting. There are some good challenges this month for our planetary observers. ***Mercury*** begins the month as a morning object – in the first week or so of April it is still too close to the Sun to reliably see. However, beginning around the 10th, it rises just at 6:00 – with the Sun rising closely after at 6:43. For the rest of the month, even as it turns back towards the Sun, it remains a very early morning object – however being only 2-5 degrees above the horizon within an hour of sunrise, to see it this month you'll need a flat horizon and some steady skies. ***Venus*** as well joins Mercury in the morning sky this month, rising just before 6AM on the 1st, and climbing higher as the month progresses. It is visible all month long in the early twilight sky. Skipping ahead to ***Saturn***, the ringed planet also joins the inner planets in the same area of sky in the early morning hours. From the 11th until the end of the month, it forms a trio with Mercury and Venus in the eastern sky. Though dimmer at magnitude 1.17, a flat eastern horizon (such as looking out over Lake Ontario) affords you a fleeting view of Saturn for just under an hour before sunrise. Yet again, however, it remains very low, only reaching an altitude of 9 degrees before May. These three planets steal the show this month, making for great photo objects in the middle of April. The morning of the 17th looks to be the best to capture them in alignment, while on the 25th the Moon joins the trio, with all four only a few degrees apart before sunrise. Additionally, keep an eye out on this region of sky on the morning of the 14th – if you have a true horizon

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The Sky This Month for April 2025 (continued)

looking to the east and southeast, from 5:59 to 6:02 AM, the ISS joins the planetary trio as it barely skirts above the horizon moving from west to east. And finally, for an EXTRA added challenge, the whole month right in between Mercury Venus and Saturn is faint little ***Neptune***, rising roughly with Saturn, though at magnitude 7.8 it will certainly take some skill and luck to see it with your scope in the morning twilight. ***Mars*** is still in Gemini this month, setting around 3AM on April 1st and then around 1:30AM by the 30th, still plenty of opportunity to see the Red Planet. ***Jupiter*** as well is still in Taurus, visible until about midnight all month long. Finally, ***Uranus*** is just visible in the western sky in Taurus in the first half of April, although it sets early by 10PM.

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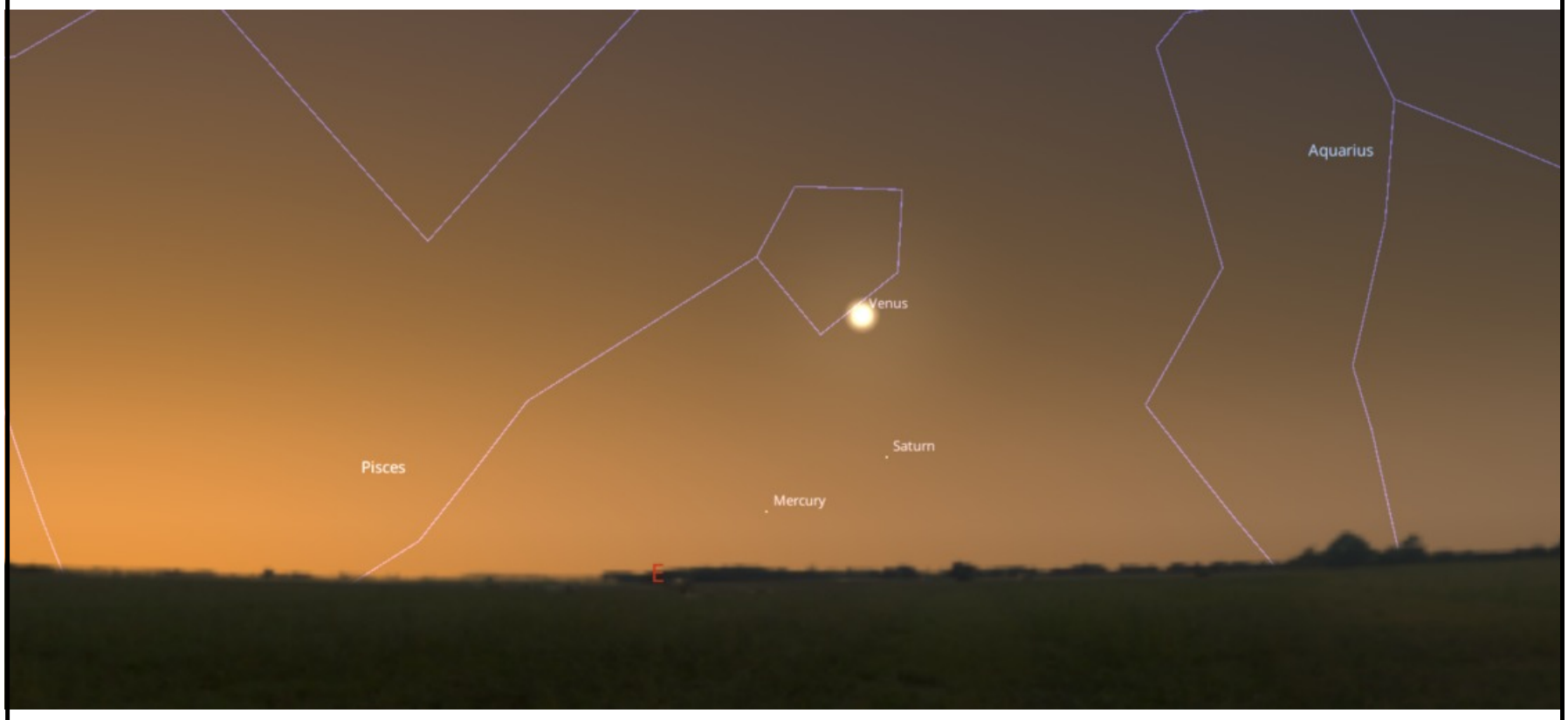
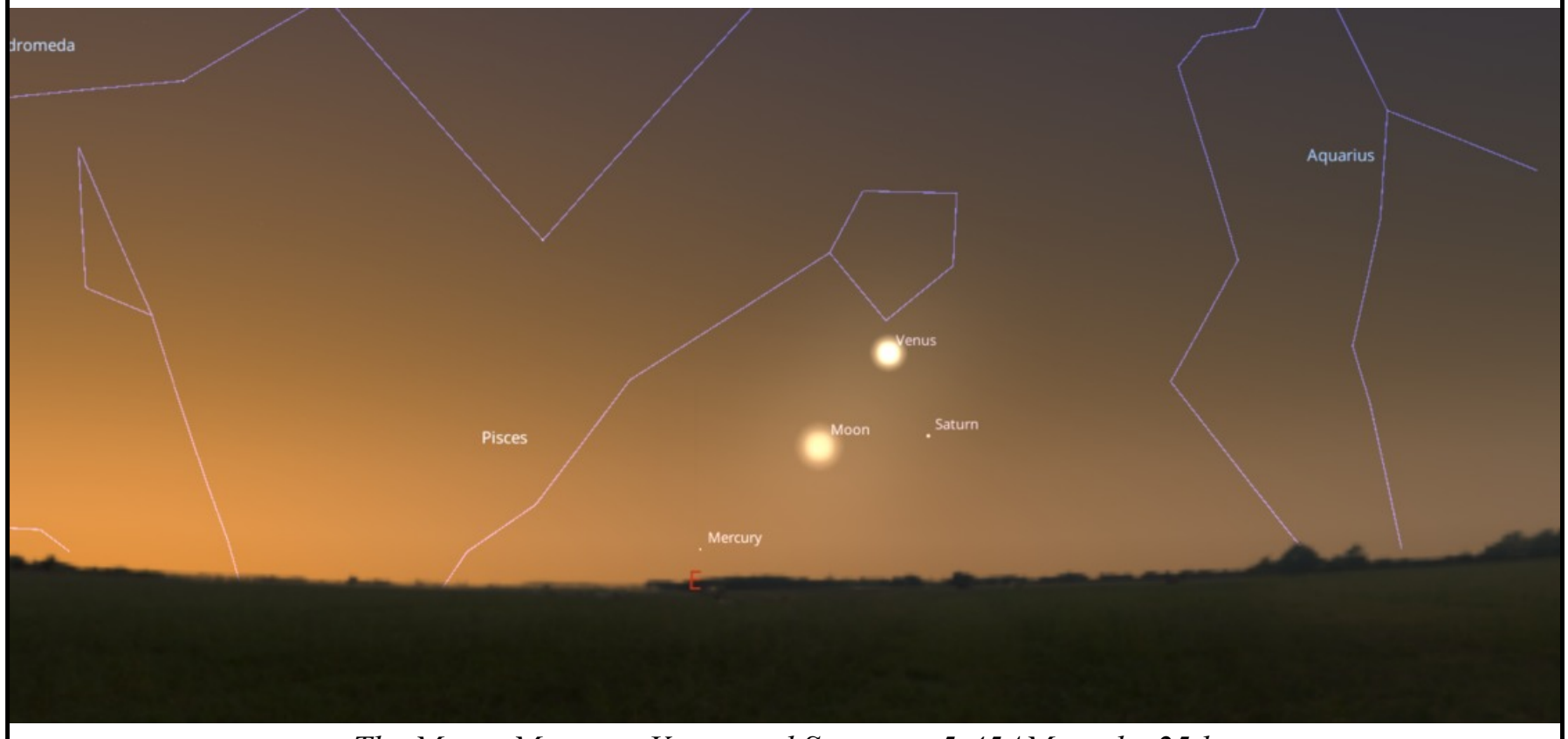


Venus, Mercury and Saturn at 6:00AM on the 17th



The Moon, Mercury, Venus and Saturn at 5:45AM on the 25th
Images generated using Stellarium

The Sky This Month for April 2025 (continued)

The Lyrid Meteor Shower

April also gives us the Lyrid meteor shower, one of the better meteor showers of the year. It peaks on the night of the 22nd, with upwards of 20 meteors per hour visible under clear dark skies in the early morning.

Deep Sky Objects

Last but not least, April is the month of galaxies. The *Virgo Supercluster* is at its perfect position for viewing halfway up the southern sky in the middle of the month, and to save you a lot of reading, here is just a few of the galaxies visible in a 6' scope, all at the same time (let's say around midnight) on the last weekend of April:

- M49
- M58
- M59
- M60
- M61
- M84
- M86
- M87
- M89
- M90
- M85
- M88
- M91
- M98
- M99
- M100
- M61
- M62
- M64
- M65
- M66
- M51
- M63
- M81
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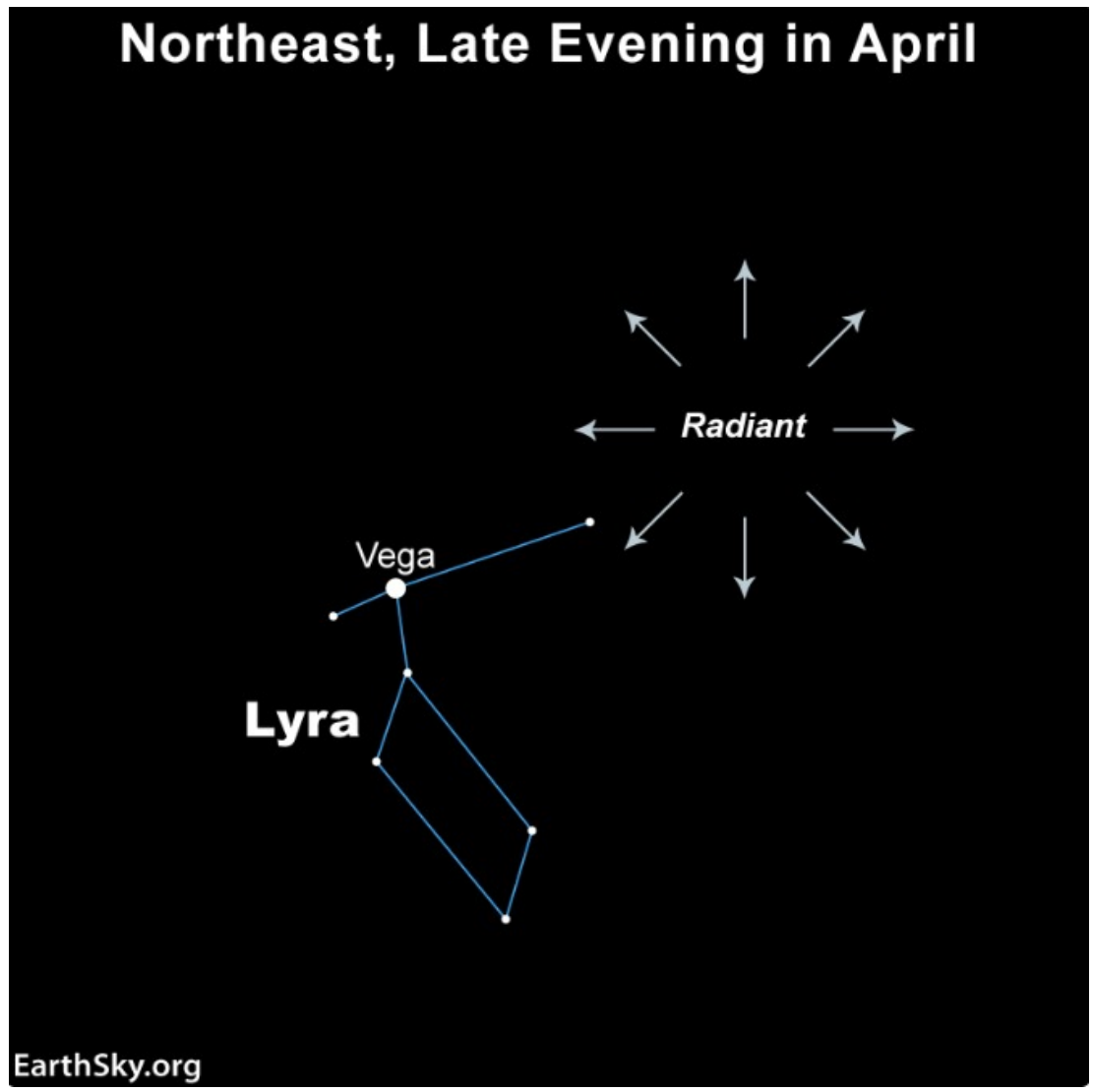
- M102
- M104
- M105
- M106
- M108
- M109



Radiant of the Lyrid Meteor Shower.
Lyrid meteors radiate from near the bright star Vega in the constellation Lyra the Harp.

From EarthSky.org

Those are just the Messier objects – bump it up to an 8-10" scope, and add in NGC objects, and the list goes on and on – I think you get the point!

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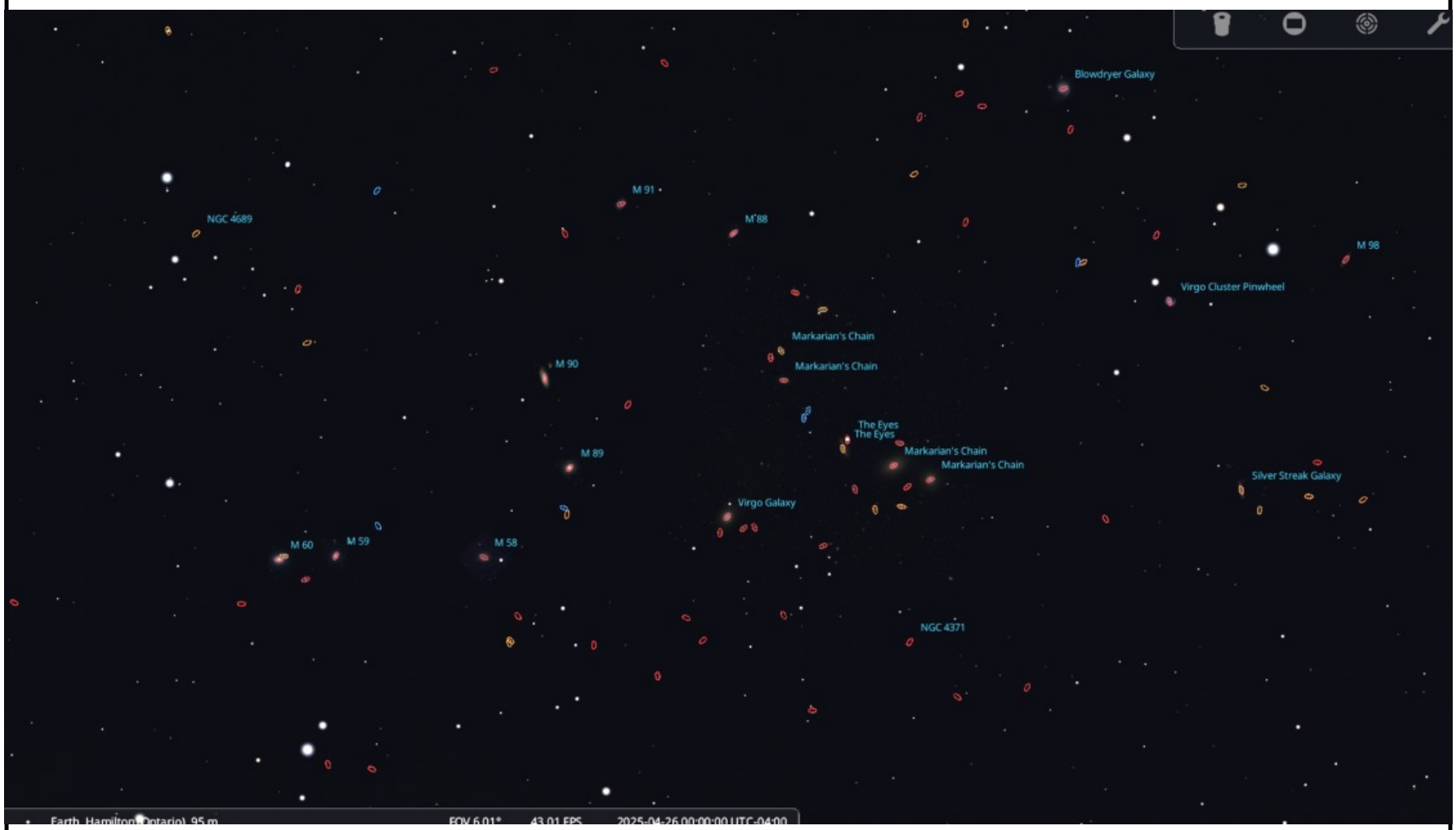
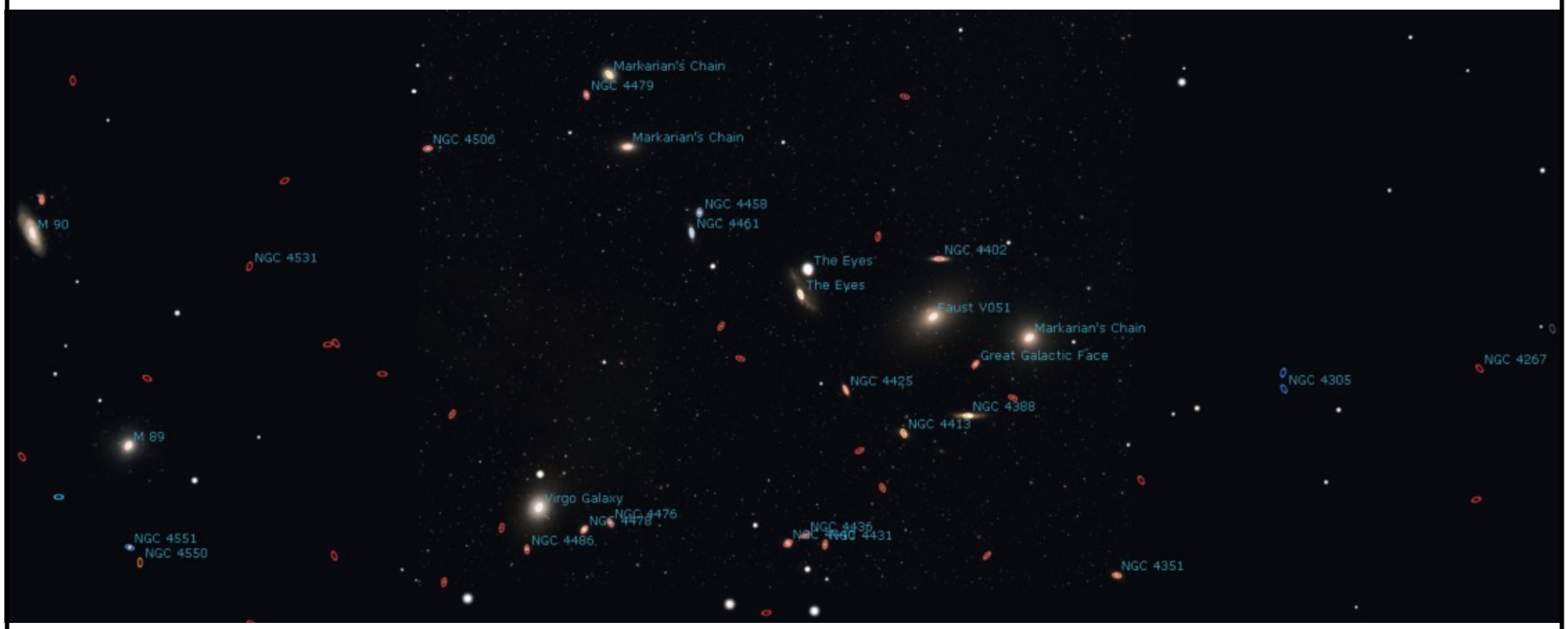
The Sky This Month for April 2025 (continued)

So - no challenge object this month, but rather, if you have a nice clear night, a decent sized scope, and an hour or two to spare – pick up your star atlas and try and find as many galaxies as you can in a single night. You should be able to easily hit 30 – 50 is a good challenge, and with some determination, you may even be able to see over 75 galaxies under magnitude 12 with an 8' scope and some dark skies. Let me know in May how you do!

Good luck, and happy observing!



The Virgo Cluster *Image generated using Stellarium*



Close-up of Markarian's Chain in the Virgo Cluster *Image generated using Stellarium*

NASA Night Sky Notes

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

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

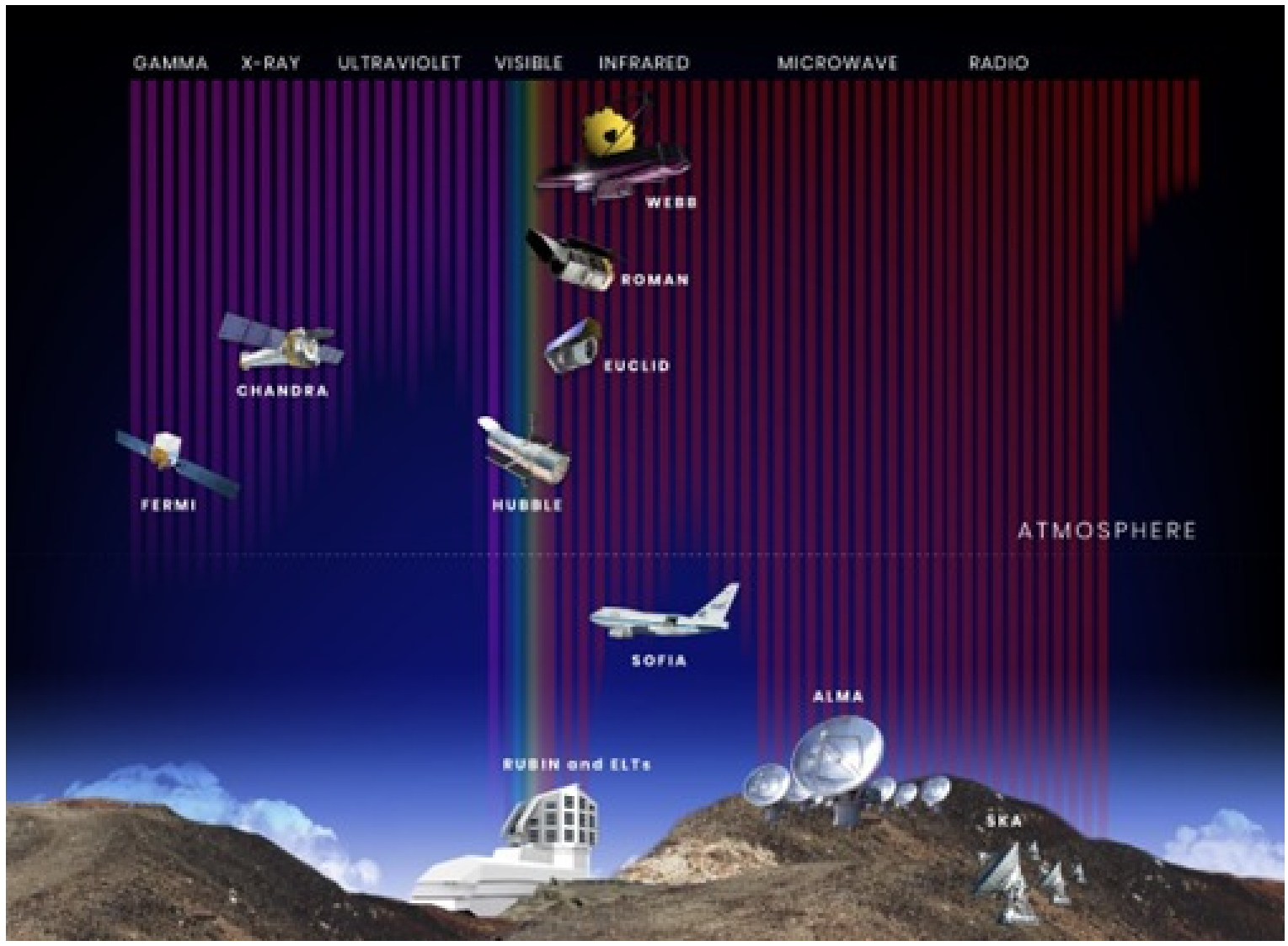
April's Night Sky Notes: Catch the Waves!

By Kat Troche

The Electromagnetic Spectrum

If you've ever heard the term "radio waves," used a microwave or a television remote, or had an X-ray, you have experienced a broad range of the electromagnetic spectrum! But what is the electromagnetic spectrum?

(Continued on page 14)



This illustration shows the wavelength sensitivity of a number of current and future space- and ground-based observatories, along with their position relative to the ground and to Earth's atmosphere. The wavelength bands are arranged from shortest (gamma rays) to longest (radio waves). The vertical color bars show the relative penetration of each band of light through Earth's atmosphere.
Credit: NASA, STScI and Robert Gendler

According to Merriam-Webster, this spectrum is “the entire range of wavelengths or frequencies of electromagnetic radiation extending from gamma rays to the longest radio waves and including visible light.” But what does that mean? Scientists think of the entire electromagnetic spectrum as many types of light, only some that we can see with our eyes. We can detect others with our bodies, like infrared light, which we feel as heat, and ultraviolet light, which can give us sunburns. Astronomers have created many detectors that can "see" in the full spectrum of wavelengths.

Telescope Types

While multiple types of telescopes operate across the electromagnetic spectrum, here are some of the largest, based on the wavelength they primarily work in:

- **Radio:** probably the most famous radio telescope observatory would be the Very Large Array (VLA) in Socorro County, New Mexico. This set of 25-meter radio telescopes was featured in the 1997 movie Contact. Astronomers use these telescopes to observe protoplanetary disks and black holes. Another famous set of radio telescopes would be the Atacama Large Millimeter Array (ALMA) located in the Atacama Desert in Chile. ALMA was one of eight radio observatories that helped produce the first image of supermassive black holes at the center of M87 and Sagittarius A* at the center of our galaxy. Radio telescopes have also been used to study the microwave portion of the electromagnetic spectrum.

(Continued on page 15)

NASA’s Hubble Telescope captured the Pillars of Creation in 1995 and revisited them in 2014 with a sharper view. Webb’s infrared image reveals more stars by penetrating dust. Hubble highlights thick dust layers, while Webb shows hydrogen atoms and emerging stars. You can find this and other parts of the Eagle Nebula in the Serpens constellation.
Credit: NASA, ESA, CSA, STScI, Hubble Heritage Project (STScI, AURA)

- **Infrared:** The James Webb Space Telescope (JWST) operates in the infrared, allowing astronomers to see some of the earliest galaxies formed nearly 300 million years after the Big Bang. Infrared light allows astronomers to study galaxies and nebulae, which dense dust clouds would otherwise obscure. An excellent example is the Pillars of Creation located in the Eagle Nebula. With the side-by-side image comparison below, you can see the differences between what JWST and the Hubble Space Telescope (HST) were able to capture with their respective instruments.
- **Visible:** While it does have some near-infrared and ultraviolet capabilities, the Hubble Space Telescope (HST) has primarily operated in the visible light spectrum for the last 35 years. With over 1.6 million observations made, HST has played an integral role in how we view the universe. Review Hubble's Highlights here.
- **X-ray:** Chandra X-ray Observatory was designed to detect emissions from the hottest parts of our universe, like exploding stars. X-rays help us better understand the composition of deep space objects, highlighting areas unseen by visible light and infrared telescopes. This image of the Crab Nebula combines data from five different telescopes: The VLA (radio) in red; Spitzer Space Telescope (infrared) in yellow; Hubble Space Telescope (visible) in green; XMM-Newton (ultraviolet) in blue; and Chandra X-ray Observatory (X-ray) in purple. You can view the breakdown of this multiwavelength image here.

Try This At Home

Even though we can't see these other wavelengths with our eyes, learn how to create multiwavelength images with the Cosmic Coloring Compositor activity and explore how astronomers use representational color to show light that our eyes cannot see with our Clues to the Cosmos activity.

The Crab Nebula, located in the Taurus constellation, is the result of a bright supernova explosion in the year 1054, 6,500 light-years from Earth.

Credit:

X-ray: NASA/CXC/SAO;
Optical: NASA/STScI;
Infrared: NASA/JPL/Caltech;
Radio: NSF/NRAO/VLA;
Ultraviolet: ESA/XMM-Newton

Total Lunar Eclipse March 14, 2025 Members' Image Gallery

Montage of eclipse progression, by **Bob Christmas**
5 images taken through a Tamron 300mm lens with a Canon 40D DSLR camera.

Andrew Brenyo

Chris Szaban

Stack of 10 images using a Celestron NexStar 6SE and ASI294MC Pro camera.

Total Lunar Eclipse March 14, 2025 Members' Image Gallery

Montage of eclipse progression, by **Ken Leedham**

12 images taken with a Celestron Origin (6" RASA) in 'snapshot' mode, with minimum gain, and exposures from 1 millisecond to 1 second.

Montage of eclipse progression, by **Janice Breitkopf**

Taken with a Seestar S50 imager.

Total Lunar Eclipse March 14, 2025 Members' Image Gallery

Chris White
Collection of 7 images.

Bob Christmas
Montage of 3 images taken with a Seestar S50 imager.

Jim Wamsley

Total Lunar Eclipse March 14, 2025 Members' Image Gallery

The Lunar Eclipse in sharp detail, by **Tim Moody**

Taken through a Celestron HD 9.25 with .7 focal reducer.

William J. McCallion Planetarium

McMASTER UNIVERSITY, HAMILTON, ONTARIO

- **Public transit available directly to McMaster campus**
- **Tickets $10 per person; private group shows $169.50**
- **Upcoming shows:**
  - **Apr 2: A Creepy Cosmos**
  - **Apr 5: Introductory Astronomy for Kids — Constellations**
  - **Apr 9: Strange New Worlds: Planets Beyond Our Solar System**
  - **Apr 16: Onekwá:tara – the Seven Dancers of the Pleiades**
  - **Apr 23: Ancient Astronomy: Earth's First Scientists**
  - **Apr 30: Lost at Sea**
- **For show times and further details, visit www.physics.mcmaster.ca/planetarium**

UPCOMING EVENTS

April 11, 2025 - 7:30 pm — H.A.A. Meeting at St. Matthew's Anglican Church. Our guest speaker will be *Dr Samantha Lawler* of the University of Regina, who will talk about how artificial satellites are changing the night sky. **There is the option of attending online via Zoom.** Past meetings can be viewed on our YouTube channel.

May 3, 2025 - 1 pm to 4 pm — Sidewalk astronomy at Van Wagners Beach (west of Hutches).

May 9, 2025 - 7:30 pm — H.A.A. Meeting at St. Matthew's Anglican Church. Our guest speaker will be *Thomas Deere*.

2024-2025 Council

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Membership Director	Paula Owen
Observing Director	Kevin Salwach
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 Inquiries:
observing@amateurastronomy.org

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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