

Regulus

Newsletter of the RASC Kingston Centre

Vol. 50, No. 5

May 2023



M101 - The Pinwheel Galaxy

On the Horizon

Centre Meetings
Queen's University Ellis
Hall Room 226

10 May 2023 - hybrid
14 June 2023 - hybrid

Centre meetings occur on
the second Wednesday of
every month at 7pm EDT
(2300 UTC).

Science Rendezvous
Kingston - 13 May 2023
10am - 3pm

Queen's Observatory
Open House - Ellis Hall

20 May 2023
17 June 2023

For more information visit us online
<https://kingston.rasc.ca>

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April has certainly been a mixed bag of weather, so let's hope that May is more Sunshine, clear skies and flowers.

May 5-7, 2023, is the Virtual RASC General Assembly. The website is open <https://rascga2023.ca/>. Cost is \$35.00 for members.

We have a Members meeting coming up on May 10. It's a hybrid meeting (in person/ ZOOM). We meet in room 226 Ellis Hall, Queen's University. If you would like to do a presentation, please let us know by May 8.

Next up is Science Rendezvous on Saturday May 13, 2023. We will be starting to set up at 9:00 am, and the event is over by 3:00 pm. Several members have come forward to help out. We will be set up with Solar Telescopes and be promoting the Total Solar Eclipse 2024. Please come down to Tragically Hip Way at the Leon's Centre to see us, and the event.

On May 19-20 if anyone would like to attend Johnson's RV Park in Prince Edward County (Same location as Fall 'N Stars) and set up a Telescope to help out with the SSJI (South Shore Joint Initiative) for support in the Dark Sky Proposal, please contact Steven (steveburr100 at gmail

dot com). Also please let us know of your involvement, it is a great opportunity for those interested and we would love to share results of efforts here.

Summer is coming up and with that we have Star Parties. The RASC Star party page has been updated by the webmaster <https://rasc.ca/star-parties>. Coming up in August 17-20 is Starfest brought to you by the North York Astronomical Association. Check out the link at: <https://www.nyaa.ca/index.php?page=sf22/sf.home22> for all the Speakers and events! With less than one year to go for the Total Solar Eclipse (TSE 2024), there will be lots of information to share at this Star Party.

Fall'N'Stars is set for September 15-17, 2023, at Johnson's RV Park in Prince Edward County. Check out <https://rascbelleville.ca/fallinstars/> for details. This year it is Belleville's lead on the joint Star Party with the RASC Kingston Centre.

November 8, 2023, seems like a long way off, but it is our Annual General Meeting (AGM) and Elections Night. Please consider helping out your Centre. We will have three positions coming up for Election this year - President, Vice President, and Treasurer. If you are interested in these positions or helping out in any way, please contact kingston@rasc.ca

That's all we have for updates and information this month. It looks like it might be a busy time, but we will all enjoy ourselves either in Outreach or Observing from our own backyard. Remember to look up and share the Sky!

Editor's Eyepiece

Andrew B. Godefroy

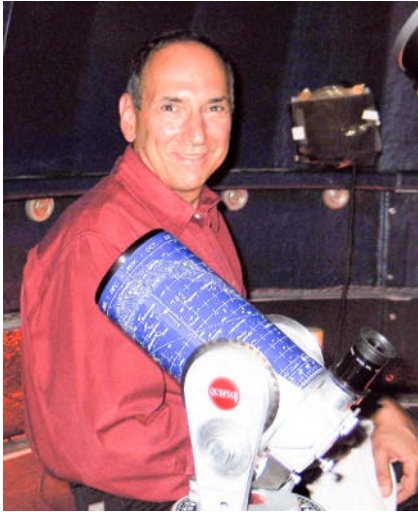


Striking a balance between that which we have to do and that which we want to do can be a challenge, especially when it comes to engaging in astronomy. For those who have demanding careers or work very long hours, it can be difficult to find the time to connect with the night sky regularly, but the more I dive into this hobby the more I have discovered how beneficial

keeping that connection strong can be. Personally, astronomy has led me in new directions for learning, it has forced me to slow down, and every time I look up I am reminded to keep things in perspective. This month's

issue highlights a number of upcoming events that will offer new directions in learning, hopefully will also offer opportunities to slow down and connect with sky and the hobby, and as we prepare for an amazing total solar eclipse next April - certainly a perspective worth viewing! Be sure to note the RASC-KC kiosk location on the Science Rendezvous Kingston map on p.5, and please if you can find the time to stop by and see everyone. In the meantime, keep looking up!

On the Cover: Kingston Centre member Shelley Jackson noted on the centre Facebook page that she learned a lot from capturing and processing this magnificent image of M101 - The Pinwheel Galaxy. Eqpt: 81mm WO GT apo triplet; field flattener/.8 reducer; 50mm guide scope, zwo 120 mono guide camera; SkyWatcher EQ6-R pro mount; ZWO ASI183MM CMOS cam cooled to -10C.



March 23, 1993: Comet Shoemaker- Levy 9 Thirty Years On

A lot can happen in thirty years, especially when it involves comets and asteroids that creep across the sky, and even more particularly with comets that go bump in the night. Such is the case with Comet Shoemaker-Levy 9, which is by far the most important and seminal of the 23 comets I have discovered.

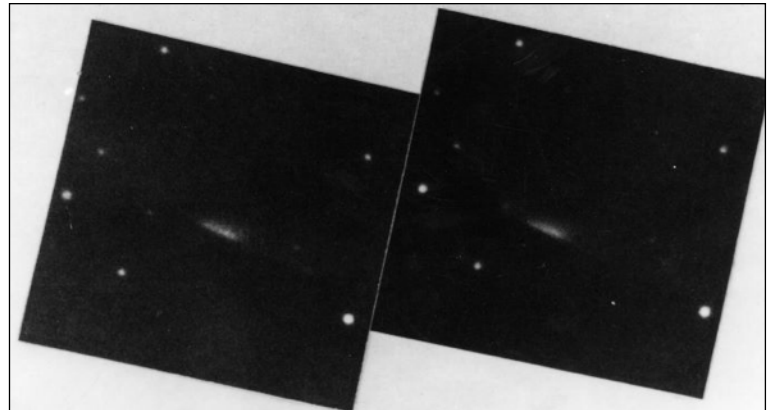
The Jupiter-Comet story began for me on September 1, 1960, when I looked through a telescope for the first time. Jupiter was my target and I still recall that view. Years later, Gene Shoemaker proposed that Comet Shoemaker-Levy 9 might have been orbiting Jupiter as early as 1929, and that it made a close approach to Jupiter during the year I first sighted the planet. Obviously, I did not see the comet that night; neither did anybody else.

On the first night of our March 1993, observing session at the 18-inch Schmidt telescope at Palomar Observatory, Gene Shoemaker developed the first four exposures and found them all blank. It appeared that someone had opened the film box since our February session and exposed the films to light. Examining the pile of films, I suggested that the ones near the bottom might be partially usable. Gene developed one of them and agreed. We continued most of the rest of that night with the partially damaged films until about 3:00am, when we switched to a new set of prepared films.

On that same night, I guided an 8-minute exposure. It was difficult to stay centered on the guide star since the glow from nearby Jupiter was interfering. We then did three other fields of sky. Clouds arrived before we had a chance to begin the second set of exposures (so that each field would have two exposures). We stopped observing and left the building to examine the sky. I noticed a slight break in the clouds to the southwest. Gene teased me as being the "eternal optimist". We had a strange discussion

about money. Gene said that it costs eight dollars each time we load a film into that telescope. When I suggested that \$8 was not too much, Gene quipped, "That's eight American dollars! Not that Canadian play money you try to get away with!" But after Carolyn agreed that there was a break coming, Gene said, "Let's do it!" We somehow managed to take four exposures before more clouds came and ended the night.

On the afternoon of March 25, the sky was completely cloudy with snow flurries. Gene was reading Time Magazine. I was working on a book about my favorite subject, comets. Carolyn was scanning the two Jupiter films. Suddenly she stopped, looked towards me, and exclaimed, "I think I have found a squashed comet." As Gene got up to look, Carolyn approached me. "You are joking, of course?" I inquired. Carolyn shook her head. Gene then looked toward us with the most unusual expression I had ever seen on his face. Then I looked. There was a long bar of cometary smudge, with at least five darker centers, each with a tail going towards the top of the films. There was also a trail of cometary light stretching off either side of the central structure.



The discovery images of Comet Shoemaker-Levy 9, taken by David H. Levy using the Palomar Observatory 18-inch Schmidt telescope camera - two 8 minute exposures separated by approx. 1 hr 45 mins.

We needed to get a confirming image. I telephoned my friend Jim Scotti, who was observing on the 36-inch diameter Spacewatch camera atop Kitt Peak in Arizona. He simply did not believe me when I explained what we had. He said he would try to find the time to take a confirming picture. Two hours later I telephoned him again. Jim simply grunted. "The sound you just heard," he explained, "was me trying to lift my jaw off the floor. "Do we have a comet?" "Wow, do you guys ever have a comet."

That is the story of how we discovered Comet Shoemaker-Levy 9 in the pinnacle moment of our professional lives. Sixteen months later we watched, along with the rest of the world, as the pieces slammed into Jupiter at the incredible velocity of 60 kilometers (37 miles) per second – a plane travelling that fast would cross the United States in just over a minute. We spent some time with both then-vice president Al Gore and President Clinton. Impact week was unforgettable. And it all began with a single look at Jupiter through my first telescope, a cloudy night, and some damaged film, on the never-to-be-forgotten night of the 23rd of March 1993.

Image (right): A detailed composite assembled from several images taken by the NASA/ESA Hubble Space Telescope capturing Comet Shoemaker-Levy 9's approach to impact with Jupiter. The planet's powerful gravity had torn the comet apart during a previous approach in July 1992, resulting in approximately 23 separate pieces impacting into Jupiter's cloudtops from July 16 to 22, 1994.



Want to know more about Comet Shoemaker-Levy 9? Check out the NASA/JPL website at: <https://www2.jpl.nasa.gov/sl9/>

Fall 'N' Stars

Home | Register | Events | Camping | Etiquette | Maps | In Review |

Click Here
to Register

Events
Schedule

Fall'N'Stars 2023
For Those Attending Fall'N'Stars 2023
Please Review Our [Safety Plan](#)

Friday September 15 to Sunday September 17, 2023
Johnson's RV Park
3235 County Road 13, RR#3 Picton (South Bay), On K0K 2T0
(43 degrees 56' 20" N and 77 degrees 00' 56" W)

Welcome to Fall'N'Stars 2023, a gathering of amateur astronomers in Eastern Ontario held annually.

The Organizing Committee extends an invitation to amateur astronomers to join us for a rustic weekend of star gazing along with many social events including but not limited to: short astronomy related presentations, a catered dinner on Saturday night, nature walking trails, and most importantly, the chance to share with other like minded individuals the love of all things Astronomy.

Fall'N'Stars is a Rain or Shine event. In the case of inclement weather we have alternative events planned for an inside venue.

Friday September 15 to Sunday September 17, 2023
Johnson's RV Park - 3235 County Road 13, RR#3 Picton (South Bay), On K0K 2T0
~ Original Website design by Dempsey Studios © 2023 Fall'N'Stars

<https://naturallyla.ca/explore/dark-sky-viewing-area-lennox-addington/>

Centre News and Updates



Stop the press! Got news to share? Send your centre news, updates, pics, sketches, notes, comments, ideas, and links to the *Regulus* editor at andrew.godefroy@mac.com. We look forward to hearing from you!

Science Rendezvous Kingston

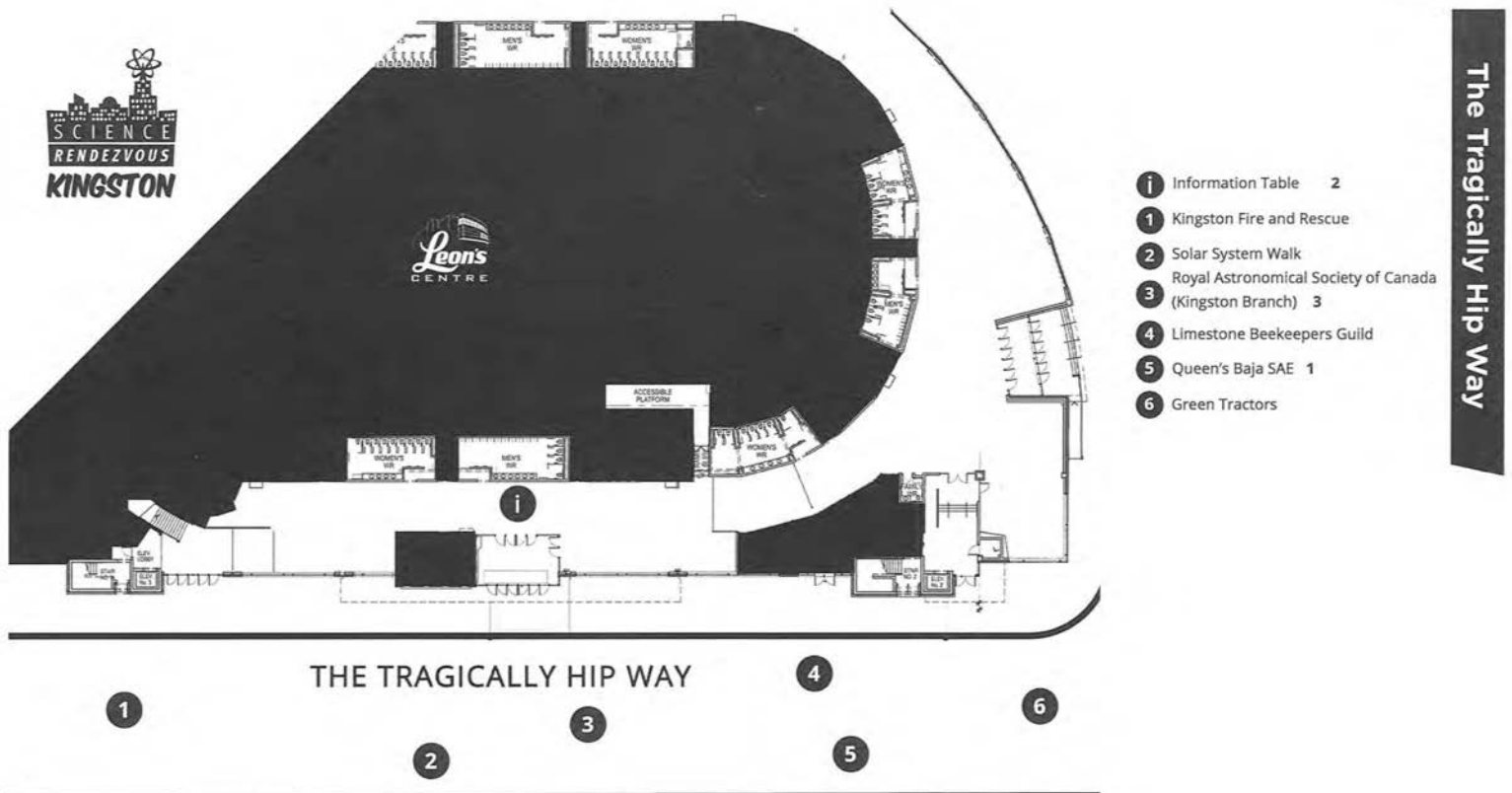
For the 13th year, Science Rendezvous Kingston will take over the Leon's Centre and The Tragically Hip Way. Join us Saturday, May 13, 2023, from 10 am - 3 pm as we turn them into the largest pop-up science Discovery Centre in Canada!

This year's theme is CREATE. This theme will showcase how discoveries are made and new knowledge is constructed by scientists in labs, forests, space, underground, in hospitals, and remote stations. The return to an entirely in-person event will be responsive to public health measures should new protocols arise. The day will feature many of the special touches that have led to national awards in the past, such as a take-home program book filled with STEM activities to do at home, swag bags and unique displays.

For more information and resources visit the RASC-KC website link at: <https://kingston.rasc.ca/node/5833>

Book Review Submissions

During recent meetings a number of books have been highlighted that would be of interest to our members. *Regulus* welcomes book reviews of any length on a wide range of topics associated with astronomy, so if you've read a great book recently and would like to recommend it to the membership, please send me an email with your ideas, reviews, and recommendations. The editor will take care of the rest!



Meeting Minutes - April 12, 2023

Hybrid Meeting delivered in person at Queen's University, Ellis Hall 226, and via Zoom and Youtube online.

Meeting Minutes captured by Elena Zanetti

Starting at 7:00 p.m., Kim Hay, President, welcomed all guests and members to the Kingston Centre's hybrid regular monthly meeting with 14 members present in person at Ellis Hall, room 226, and 20 guests (23 registered) attending via Zoom online. Beginning with the land acknowledgment, Kim noted Queen's University is situated on the traditional territory of the Haudenosaunee and Anishinaabek, and we respect the land we meet on.

Centre announcements: The Centre welcomed new members Sophia Neppel, Stephen White, and Jaime Morales. In addition to the monthly meetings, Centre members host an online social gathering on the other three Wednesdays of the month. A new members Zoom night was planned for April 19 at 6:30 pm, before the next regular social Zoom in order to familiarize recent joiners with the centre's people and activities. If interested in logging on and joining the astronomy discussion during the Wednesday socials, please simply email or join the centre list.

Queen's University open house is planned for April 15 at 7:00 pm, with alumni, Derek Mueller, at Stirling Hall. The Centre is always looking for volunteers to help out on these evenings, with the Kingston Centre Dobsonian telescope on site to use. The KFL&A Science Fair was held March 30/31. The Centre thanked judges Bruce Elliott and Graham Hay. With her telescope project, the winner of the Leo Enright Prize in Astronomy this year was Raina Cosman, a student in the Middle School at Leahurst College. As well, this year's Kingston Science Rendezvous is scheduled for May 13 at the Leon's Centre, with set up at 9:00 am for RASC-KC volunteers and a 9:40 am start. Activities go until 3:00 pm. Town Crier Chris Wyman will open the ceremonies.

Next, centre members David Levy read poetry. This month he drew from Jimmy Carter, U.S. President 1977-81 (during the Voyager years), from his poem,

"Considering the Void".

Dr. Kristine Larsen of Connecticut State University, presented by zoom, a lecture titled "Women in Astronomy: Past, Present, and Future." She provided an excellent and detailed overview of (mainly) American women in the field of astronomy from Maria Mitchell on Nantucket Island in the mid-1800's to the present. This talk may be seen on the Centre's YouTube channel at 5:55 minutes in.

Next we received an RASC National Council Update from John Hurley. He reminded everyone that the link on RASC webpage for General Assembly registration was live and that members could check there for more information. The RASC AGM is again scheduled as a virtual event, this year being held May 5-7. Cost of tickets for members is \$35, non-members \$40. The Society's annual meeting will be held separately from this conference at end of June 2023. Members are encouraged to contact John directly with any questions.

Rick Wagner followed John's report with his 'What's Up in the Sky' for the month of April. Specifically, he noted the following highlights:

Local Events

13 Apr – David Curtin (UofT) – Physics Beyond the Std Model

15 Apr – Queen's Observatory Open House – Derek Muller (Veritasium)

13 May – Science Rendezvous

AAVSO Webinars

29 Apr – How-to webinar: How to model isochrones using images of star clusters

06 May – How-to webinar: Variable Star Outreach

L&A DSVAs

14/15 Apr – Laser-guided Sky Tour

Meeting Minutes - April 12, 2023

22 Apr – Astrophotographers Assemble

Sky Events – April

13 Apr – Last Quarter Moon

14 Apr – zodiacal light next 10 days

15 Apr – Gegenschein at midnight

20 Apr – New Moon 00:22EDT

20 Apr – 20 hour old Moon

23 Apr – Lyrid meteor shower peaks

27 Apr – First Quarter Moon

29 Apr – International Astronomy Day

30 Apr – minor planet (7) Iris at opposition (mag 9.5)

Sky Events – Early May

05 May – Full Moon 13:34EDT

06 May – eta Aquariids meteor shower

Member's Observing Reports

Steve had 4 nights of imaging galaxies and is constantly adding to his list. Mark D. imaged the whirlpool galaxy over a few nights, colour improving as moon waned. Also M65 imaged and happy with results and will be hosting a Sharp Cap tutorial.

Rick had 4-5 nights of observing, working on telescope equipment and computer interfaces, and observing with remote telescope. Jeanette enjoyed visual observing. Laurie attended a lecture on the Fast Radio Sky at Queen's. Elena enjoyed the aurora and photos posted online. Mark K. has enjoyed solar observing and galaxy hunting of the spring sky.

Roger worked on installing a focus controller back from repair in Greece and with other equipment work hopes to look for faint asteroids. Andrew enjoyed visual observing while on vacation and will continue work on his lunar

program with new telescope filter purchases for his suburban skies. Kevin imaged with his smart phone and impressed with results. The all-sky cameras captured the aurora. Susan back observing and has polar aligned her scope.

John and Peggy were able to see the aurora and thanks the email chat list for alerting him. Camera was able to capture reds and greens. From airport, saw Mercury and has been solar observing. Keith has been solar observing when not windy. Converting observatory roof to motorized. Leslie shared images of the region of M52. Peggy visually observed Venus and Mercury; also gave a public talk April 5 on the Earth and what we have learned since the lunar landings using satellites, etc., to a local audience.

A last reminder again was made regarding joining our Wednesday Members Social Zoom Time, to let the Centre know at kingston@rasc.ca. The Centre's next hybrid meeting is scheduled for Wednesday May 10, 2023, live at Queen's University Ellis Hall Room 226 and online via Zoom.

The meeting ended at 8:31 p.m. with Kim thanking all for their attendance and support.





Any night of the week can offer up a broad range of viewing wonders. RASC KC Past President Rick Wagner keeps an eye on the sky, sharing some of the best views each month.



Depending on clear skies, a daytime occultation of Jupiter by the Moon will occur on May 17. Image credit: BBC SkyatNight Magazine.

May Skies

05 May – Full Moon 13:34EDT

06 May – eta Aquariid meteor shower peaks before dawn – badly affected by a Full Moon

12 May – Last Quarter Moon

14 May – twilight occultation of 5th magnitude ψ^3 Aqr by the waning crescent Moon 04:50EDT; Moon will be about 12deg above the SE horizon.

17 May – watch the crescent Moon and Jupiter rise less than 1deg apart, in bright twilight in the eastern sky before sunrise – first easy chance to see Jupiter in its new apparition but you'll probably need binoculars.

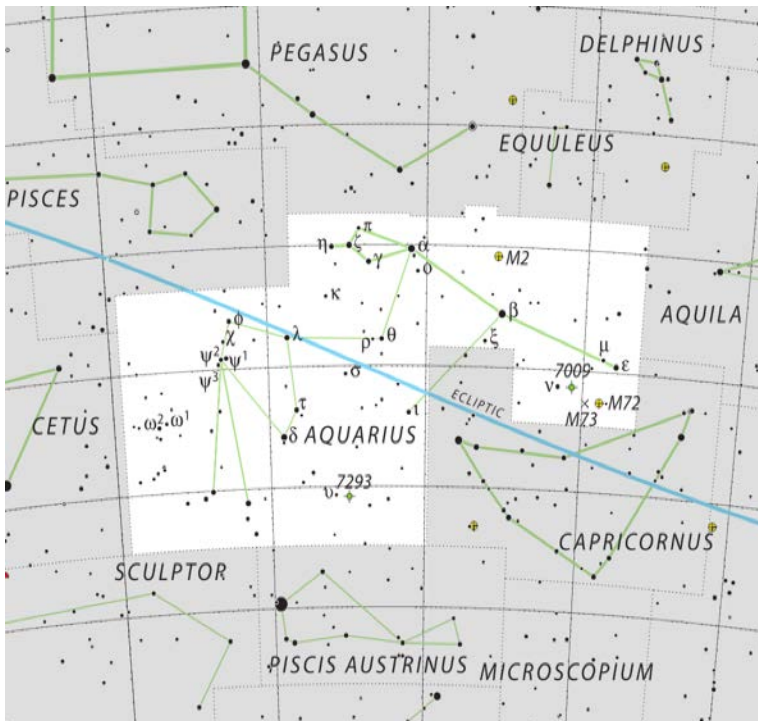
17 May – daytime occultation of Jupiter by the Moon 07:45EDT. It will require very clear skies. With care and a larger telescope, you may even be able to see the occultations of the Galilean moons from 07:30 to 07:50EDT.

Jupiter is only 28deg from the Sun so be very careful hunting for it with your telescope. Reappearance will be at 08:55EDT. There will be one moon shadow on the disk both at disappearance and reappearance, possibly visible if conditions are excellent.

19 May – New Moon 11:53EDT

22 May – see the earthlit crescent Moon just under 6deg from Venus after sunset.

27 May – First Quarter Moon



Queen's University
A free Science Festival for the whole family!
May 13, 2023 | 10am - 3pm | Leon's Centre & Tragically Hip Way

One-Year Countdown to the Great Eastern North American Eclipse

On April 8, 2024, the moon will pass in front of the Sun and cast its ethereal shadow onto millions of Canadians. We have one year to prepare for this once-in-a-lifetime total solar eclipse! Now is the time to consider where you will be on April 8, 2024, if you will travel to view the eclipse, and how you will observe the eclipse safely.

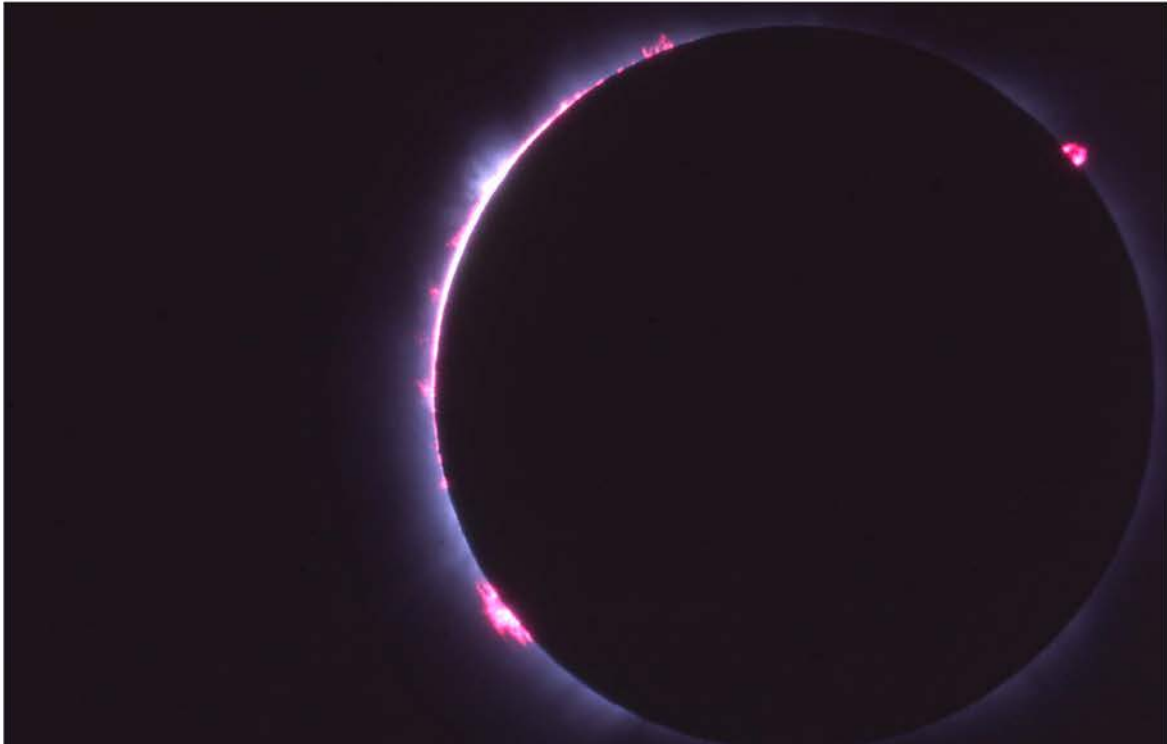


Image credit: Randy Attwood

In one year, a total solar eclipse will occur over southern Ontario, with a deep partial eclipse visible throughout all of Ontario. This rare astronomical phenomenon occurs when the Moon passes between the Earth and the Sun, and obscures the Sun completely for a short period of time.

This eclipse will be a once-in-a-lifetime opportunity for many Canadians. The last time a total solar eclipse happened over Ontario was in 1979, and another one won't happen again over this province until 2099!

The path of totality, where the moon will completely block out the sun, will occur in southern Ontario. Kingsville will be one of the most western and earliest points to see the total eclipse, starting around 3:13pm on April 8, 2024 and lasting until about 3:16pm. The path of totality will move north and east through the afternoon as the moon moves, and will be visible in Hamilton, Niagara Falls, and Kingston.



As one of the most eastern points, Cornwall will see totality between 3:25pm and 3:27pm. It will then pass over southern Quebec, New Brunswick, PEI, the northern tip of Nova Scotia, and much of Newfoundland. Ontarians in Toronto and Ottawa will witness a partial eclipse at 99.9% and 98.8% coverage respectively. The coverage of the eclipse visible further north in Ontario will be less, and we recommend Ontarians who can travel to view the eclipse at locations of totality to try and do so. Coverage in Sudbury will be 88.5%, 70.5% in Thunder Bay, 62.3% in Fort Hope, and 55% in Peawanuck.

This event will have an immense impact on you, your community, and all of Eastern and Atlantic Canada. It is important to look ahead and prepare for how and where you will view the eclipse. It is completely safe to observe the eclipse while wearing verified eclipse glasses or using projection methods. If you are in the path of totality - where the Moon will completely block out the Sun - you can take your eclipse glasses off to view the eclipse maximum, or when you can no longer see the Sun through your eclipse glasses.



Image credit: Randy Attwood

Over the next year, the Ontario Eclipse Task Force will be working to provide all Ontarians with detailed information about the eclipse, how to view it safely, and events before and on the day of the eclipse. Our task force is composed of members from the University of Toronto, McMaster University, Queen's University, York University, Brock University, Ontario Tech University, the University of Waterloo, the University of Western Ontario, SNOLAB, the Perimeter Institute, Space Place Canada, the Royal Astronomical Society of Canada (RASC), the Ontario Science Centre, the McDonald Institute, Science North, and Discover the Universe.

What should you do now?

- ★ Think about where you will be on April 8, 2024. Use this [Google Map](#) or [TimeAndDate](#) to find the exact time of the eclipse in your area. Will you be at work or school? At home? What do you need to organize so you can get outside to view the eclipse? Will you travel to the path of totality? Where in the path?
- ★ If you plan to travel to the path of totality, it is recommended that you arrive at your preferred viewing location 24-48 hours in advance, and stay after the eclipse is completed, to mitigate traffic jams.
- ★ How will you view the eclipse safely? Consider ordering glasses for yourself, your family, and/or your workplace. Order glasses now through a [verified distributor](#) to avoid shortages later.
- ★ If you're a teacher or educator, sign up for the [Discover the Universe Eclipse Newsletter and mailing list](#). Educational Resources and training opportunities will be shared and offered throughout 2023.
- ★ If you want to help organize an event in your local area or to keep up to date on events for your local area, contact your [local RASC chapter](#) or education institution for support or to join their efforts.

For more information or questions, please email eclipse@rasc.ca.



About Us

The Royal Astronomical Society of Canada

RASC is a national, non-profit, charitable organization devoted to the advancement of astronomy and related sciences. Founded in 1868, The Royal Astronomical Society of Canada is Canada's leading astronomy organization, bringing together over 5000 enthusiastic amateurs, educators, and professionals. In addition to many national services, our 30 Centres offer local programs across Canada.

The Royal Astronomical Society of Canada Kingston Centre (aka Kingston's Astronomy Club)

We are Kingston's Astronomy Club, a local centre of The Royal Astronomical Society of Canada, founded on June 2nd, 1961. We hold monthly meetings, on the 2nd Wednesday of each month (September-June), via zoom videoconferencing and in person, from 7:00-9:00pm Eastern Time.

* We do public outreach programs in the form of helping the Cubs and Guides, teachers, Science Fairs and many public Education and Public Outreach events.

* We help out our members with questions in astronomy and equipment use, and hold private observing sessions, and also with Queen's University Observatory Open House, on the second or third Saturday of each month, at Ellis Hall, Queen's University.

* We support the local Frontenac, Lennox & Addington County Science Fair (FLASF) with a prize in astronomy.

* We are here to answer your questions on astronomy.

JOIN US!

<https://kingston.rasc.ca/join>

Board of Directors & Officers 2022-2023

Honourary President: David H. Levy
Past President: Rick Wagner

President: Kim Hay
Vice President: Malcolm Park
Secretary: Elena Zanetti
Treasurer: Susan Gagnon
Editor: Andrew B. Godefroy
Webmaster: Walter MacDonald
Librarian: Kim Hay
NCRep: John Hurley
Loan Equipment: Kevin Kell

The Royal Astronomical Society of Canada Kingston Centre provincially incorporated as a Not-For-Profit Corporation in September 2005 and has been a registered Charity with the Canada Revenue Agency since September 2006.

CRA Registration #827905720RR0001

Benefits of Membership to the RASC Kingston Centre

RASC Central based benefits:

- * Annual edition of the Observers Handbook
- * Bi-monthly RASC Journal (digital)
- * Monthly Bulletin of the RASC (digital)

Centre provided benefits:

- * Monthly Centre Newsletter – Regulus
- * Weekly social videoconference chat (members and guests only)
- * Monthly videoconference meetings (open to the public)
- * Equipment loan program