Regulus
2022 August

Newsletter of The Royal Astronomical Society of Canada - Kingston Centre
kingston.rasc.ca

Jupiter – Kevin Kell @ the Serenity Observatory at SCGO
Io just leaving the face of Jupiter on the morning of July 31st.

Did You Know? Skynews

As part of our Public Education & Outreach program, The Centre purchases a bulk supply of 50 SkyNews issues 6 times per year. These are labeled as being supplied by The Kingston Centre of the RASC, including our website address.
5 copies are delivered to the Lennox and Addington library system, 4 to the Kingston Frontenac system, 5 to the Yarker Library and the remaining copies are dropped off at the Amherstview Foodland for free pick-up. The Foodland supply, pre-Covid, would have been given out at public outreach sessions.

If you have a spot where you can regularly distribute some copies and you can pick them up from the Treasurer, there can be an increase in the bulk order number to make this happen.

This month the September/October issues arrived early enough for the StarFest brochures to be tucked inside.

MEETINGS

RASC-KC Wednesday Weekly Social videoconference. 7pm Eastern all weeks except the 2nd Wednesday of the month. For members and their guests. Email list subscribers receive the link weekly 1 or 2 days beforehand.
Next Socials:
Wed 2022 August 17, 24, 31

The next Regular Monthly Meeting is Wednesday 2022 September 14th 19:00 EDT.
Guest Speaker: Andrew Godefroy (RASC Kingston) on "Alouette Anniversary"
Format: Zoom videoconference

RASC-KC Members will be emailed a zoom meeting registration link, others may watch on our Youtube channel.

In the August Issue

Editor: Kevin Kell

The President's Nook - Kim Hay

Summer is in full tilt, as the Sun goes, and we are enjoying sunny days, with some clear short dark nights and the stormy nights with mosquitoes in full eating mode. We had our first "Bring your own Dinner" gathering at Lake Ontario Park on July 13th. It went very well, with about 14 people showing up and some new people who moved to the area. Our next event will be on Wednesday August 10th, again at Lake Ontario Park meeting up at 4:30-5:00 pm.

There has been some summer outreach events that our members participated in . Solar events at schools end of year in Sharbot Lake by John & Peggy Hurley, and Rick Wagner at Elgin Days. Thank you all for sharing the Sun and Astronomy with the public.

There are several Star parties coming up in August and September.

Starfest August 25-28th in Mount Forest.
You can register online at https://www.nyaa.ca/index.php?page=/sf22/sf.home22
Starfest 2022 is coming very soon! Single attendees pay $80 dollars and a family registration is $110 dollars. Additional youths 16-19 are $40.
StarFest Pre-Registration closes on August 14

Fall'N'Stars September 23-25th at Johnson's RV Park in Picton, Ontario.
Register and payment are easier this year with direct interact E-transfer.
Visit https://rascbelleville.ca/fallnstars/

Our September Regular Centre meeting will be held on September 14, 2022 at 7:00 pm. Currently we are having this on ZOOM, as we are still awaiting word on if we are to be going back to Queen's University. We will let everyone know if this changes on the website and by email.

Our speaker for September will be Andrew Godefroy who will be speaking to us on the 60th Anniversary of Alouette Satellite.

See you in August....or September for our meeting, take care stay safe and keep Looking Up!

Rick Wagner - A few images for Regulus August.

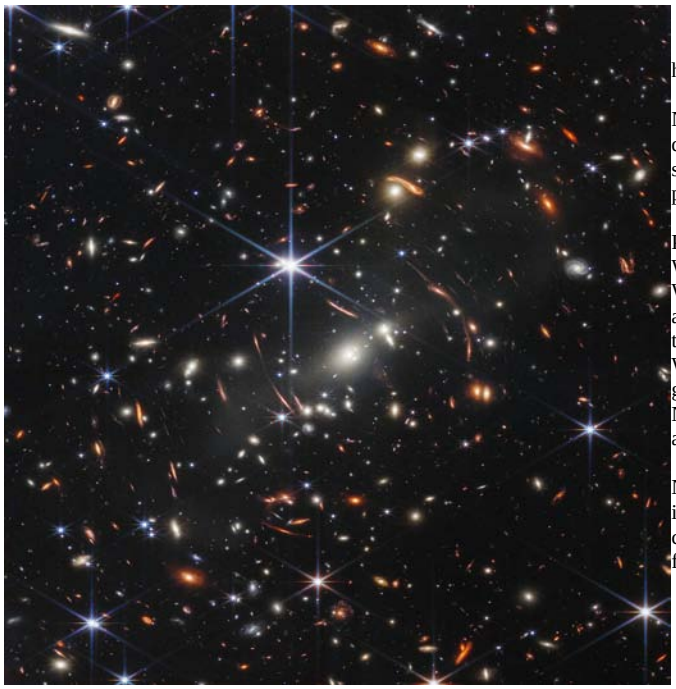
All are with a ZWO ASI2600MC Pro camera on the “Hankscope” 0.25m f/4 Schmidt-Newtonian on a Losmandy Titan, 60mm f/5 guidescope with ASI174MM guide camera.

M2 is a globular cluster in Aquarius - more than 100,000 stars crammed into a ball only 150 light years across. Mag 6.6, 16arcmin diameter. 24 x 300s exposures.

NGC6823 - a small open cluster in Vulpecula with an associated HII emission nebula NGC6823 . Mag 7, 30arcmin diameter. 63 x 300s exposures.

NGC7331 image: largest galaxy is NGC7331 with several background galaxies, in the lower right is Stefan's Quintet - 4 interacting galaxies plus one background galaxy. 30 x 300s exposures.

The Just Wonderful Space Telescope (JWST) first released images

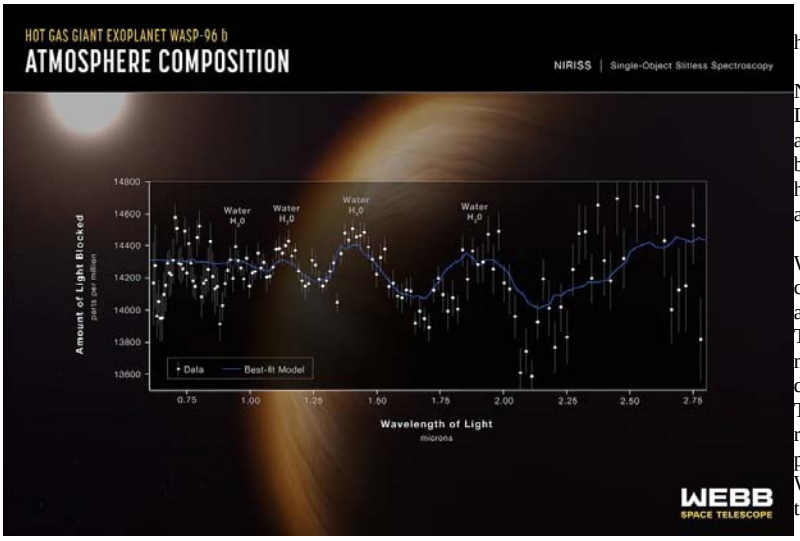


https://www.nasa.gov/webbfirstimages

NASA's Webb Delivers Deepest Infrared Image of Universe Yet
distant galaxies appear as bright glowing spots in this Webb telescope image, with some smeared by gravitational lensing; foreground stars appear bright with six-pointed diffraction spikes, owing to the shape of Webb's mirrors

President Joe Biden unveiled this image of galaxy cluster SMACS 0723, known as Webb's First Deep Field, during a White House event Monday, July 11
Webb's image covers a patch of sky approximately the size of a grain of sand held at arm's length by someone on the ground – and reveals thousands of galaxies in a tiny sliver of vast universe
Webb's sharp near-infrared view brought out faint structures in extremely distant galaxies, offering the most detailed view of the early universe to date
NASA and its partners will release the full series of Webb's first full-color images and data, known as spectra, Tuesday, July 12, during a live NASA TV broadcast

NASA's James Webb Space Telescope has delivered the deepest and sharpest infrared image of the distant universe so far. Webb's First Deep Field is galaxy cluster SMACS 0723, and it is teeming with thousands of galaxies – including the faintest objects ever observed in the infrared.



https://www.nasa.gov/webbfirstimages

NASA's Webb Reveals Steamy Atmosphere of Distant Planet in Detail
a spectroscopy chart for exoplanet WASP-96 b with a best-fit line in blue set against an illustrated background of an exoplanet; the chart has peaks associated with H2O in the composition of the exoplanets atmosphere

Webb's enormous mirror, precise instruments joined forces to capture most detailed measurements of starlight filtering through atmosphere of a planet outside our solar system to date
The spectrum of light – which contains information about the makeup of a planetary atmosphere 1,150 light-years away – reveals distinct signature of water
The strength of the signal that Webb detected hints at the significant role the telescope will play in the search for potentially habitable planets in coming years
Webb's powerful new view also shows evidence of haze and clouds that previous studies of this planet did not detect

https://www.nasa.gov/webbfirstimages

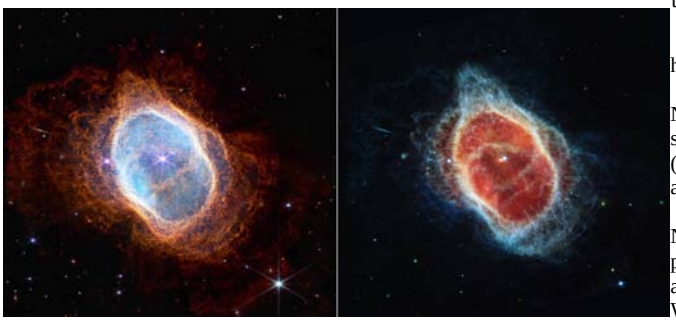
NASA's Webb Sheds Light on Galaxy Evolution, Black Holes
the galaxies in Stephan's Quintet appear as purple-pink swirls against the blackness of space in this JWST image; some foreground stars appear with diffraction spikes from the telescope's mirrors; numerous other galaxies and stars bespangle the image

In an enormous new image, NASA's James Webb Space Telescope reveals never-before-seen details of galaxy group "Stephan's Quintet"
The close proximity of Stephan's Quintet gives astronomers a ringside seat to galactic mergers, interactions
Webb's new image shows in rare detail how interacting galaxies trigger star formation in each other and how gas in galaxies is being disturbed
The image also shows outflows driven by a black hole in Stephan's Quintet in a level of detail never seen before
Tight galaxy groups like this may have been more common in the early universe when superheated, infalling material may have fueled very energetic black holes

https://www.nasa.gov/webbfirstimages

NASA's Webb Reveals Cosmic Cliffs, Glittering Landscape of Star Birth
an undulating, translucent star-forming region in the Carina Nebula is shown in this Webb image, hued in ambers and blues; foreground stars with diffraction spikes can be seen, as can a speckling of background points of light through the cloudy nebula

NASA's James Webb Space Telescope reveals emerging stellar nurseries and individual stars in the Carina Nebula that were previously obscured
Images of "Cosmic Cliffs" showcase Webb's cameras' capabilities to peer through cosmic dust, shedding new light on how stars form
Objects in the earliest, rapid phases of star formation are difficult to capture, but Webb's extreme sensitivity, spatial resolution, and imaging capability can chronicle these elusive events



https://www.nasa.gov/webbfirstimages

NASA's Webb Captures Dying Star's Final 'Performance' in Fine Detail
side-by-side views of Southern Ring planetary nebula as seen by Webb telescope (NIRCam, left; MIRI, right) against black backdrop of space; a bright star appears at center in both images, surrounded by an undulating ring of gas

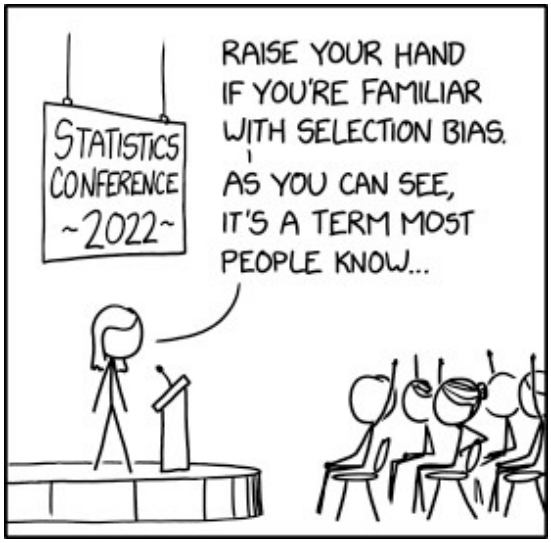
NASA's James Webb Space Telescope has revealed details of the Southern Ring planetary nebula that were previously hidden from astronomers. Planetary nebulae are the shells of gas and dust ejected from dying stars.
Webb's powerful infrared view brings this nebula's second star into full view, along with exceptional structures created as the stars shape the gas and dust around them.
New details like these, from the late stages of a star's life, will help us better understand how stars evolve and transform their environments.
These images also reveal a cache of distant galaxies in the background. Most of the multi-colored points of light seen here are galaxies – not stars.

Did You Know? Snolab

The Sudbury Neutrino Observatory Lab (SNOLab) participated in the 2022 RASC General Assembly and the 2022 Science Rendezvous event, with some virtual tours of the facility. If you missed them you can see them here:

If anybody wants to explore more of the lab at their own speed, you can check out our online VR tour here:
https://www.snolab.ca/facility/virtual-tour/
https://www.whose.land/en/

REPAIR: https://www.snolab.ca/experiment/repair/
FLAME: https://www.snolab.ca/experiment/flame/
Info about the dark matter research happening at SNOLAB: https://www.snolab.ca/research/dark-matter/
If you want to talk with us: communications@snolab.ca, and our social media handle is @SNOLABscience on all platforms



The Fine Print

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 5,000 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 inperson before the pandemic and hopefully again soon in late 2022, 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 Saturday of each month, at Ellis Hall, Queen's University (closed during the pandemic).

* 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.

Board of Directors & Officers 2022
President: Kim Hay
Treasurer: Susan Gagnon
Secretary: Elena Zanetti
Vice President: Laurie Graham
Editor: Kevin Kell
Librarian: Kim Hay
NCRep: John Hurley
Honourary President: David Levy
Webmaster: Walter MacDonald

We are provincially incorporated as a not-for-profit corporation (September 2005) and are a registered Charity with Revenue Canada (September 2006).

CRA Registration #827905720RR0001

Benefits of Membership to The RASC-Kingston Centre

RASC Central based benefits:
* annual print edition of the Observers Handbook
* bi-monthly digital edition of the RASC Journal
* monthly digital edition Bulletin of the RASC
* 6 issues of Skynews Magazine (paper)

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

JOIN US: https://kingston.rasc.ca/join

Upcoming Meetings in 2022

August – summer hiatus – no Regular Monthly meetings. However! There will be inperson social meetups on the regular 2nd Wednesday of the month, bring your own dinner, telescope, chair, etc. (see the President's Nook column above)

September-December – possibly inperson, possibly remote zoom videoconference.. still up in the COVID air!

Current Centre Members as of 2022 June 01:
Total: 67
Youth: 2
Adult: 59
Life Members: 9

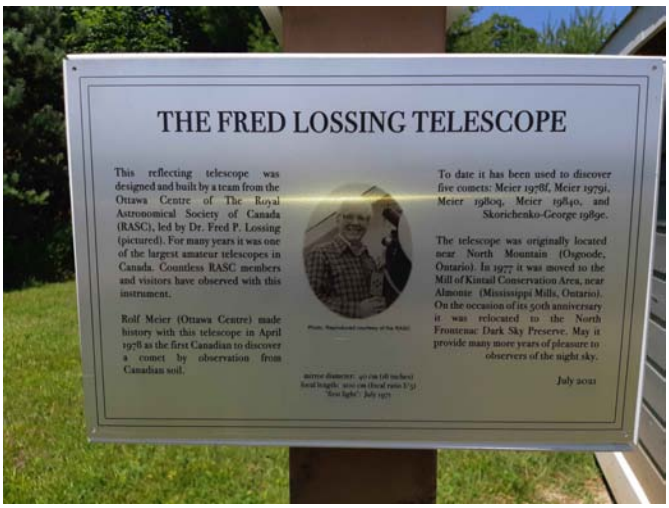
The Sky This Month 2022 August - Rick Wagner

01 Aug - Mars (mag 0.2) 1.4º south of Uranus (mag 5.8)
05 Aug - First Quarter Moon
11 Aug - Full Moon (21:36EDT)
12 Aug - Perseid meteor shower - badly affected by nearly full Moon, best before dawn 12th and 13th
14 Aug - Saturn (mag 0.3) at opposition in Capricornus; watch for the brightening of the Crepe (C) ring for about a week around opposition (Seeliger Effect)
15 Aug - double shadow transit on Jupiter (23:59EDT on the 15th to 01:38EDT on the morning of the 16th)
18 Aug - Uranus 0.6º south of the Moon
19 Aug - Last Quarter Moon
22 Aug - (4) Vesta (mag 5.8) at opposition in Aquarius - best opportunity to see a minor planet with the naked eye if you're under dark skies with good eyes
26 Aug - very old, very thin crescent Moon just 22hrs before new, in the eastern sky shortly before sunrise
27 Aug - New Moon (04:17EDT)
27 Aug - Mercury (mag 0.2) at greatest elongation east in the western sky after sunset - though not a favourable elongation for northern hemisphere observers
30 Aug - Mars attractively placed between Aldebaran and the Pleiades for several days around the 30th.

Notes from Members

North Frontenac Dark Sky Preserve – Mark Deslaurier

Images from a road trip in the first week of July.



Science Rendezvous 2022 – Bruce Elliott

I just received this thank you note and photos from Science Rendezvous Kingston organizers. The photos are really nice.

---------- Forwarded message ---------
Good morning, Station Coordinators,

Thank you for all you did to make Science Rendezvous Kingston 2022 a resounding success. It was a true trifecta—webinars/virtual tours, digital resources and live, in-person components each had impressive attendance/interest and glowing feedback.

The hours invested by so over 200 Queen's faculty members, researchers, staff, students, citizen scientists and community volunteers are innumerable, but the smiles on the faces of participants (clearly visible even through the masks and across cyberspace) suggests a great return on your time, influence and mentorship. On behalf of every participant, from around the corner, country and world, please accept a well-deserved round of applause and pat on the back.

You will find a full summary of Science Rendezvous Kingston 2022 in the Annual Report that is attached to this email—enjoy! Please share widely with those who facilitated at your booths or assisted in the development/delivery of webinars/tours/videos/print resources. A limited number of hardcopies have been printed. Please let us know if you would like to have one for your records or reporting purposes.

Below is the link to the photographs from the in person event:

https://www.dropbox.com/sh/j5syldrtqvu7nt3/AABIjiTO5PuD4CSiKAbA6uVva?dl=0

Unfortunately, Science Rendezvous Kingston 2022 is not eligible for any formal awards this year. The rules have changed; therefore, no site is eligible to win for two years following an award year. Given that we won in 2019 and 2021, we assume that the national office thought that we should give some other organization a chance. In our hearts, however, we know, beyond the shadow of a doubt that Science Rendezvous Kingston 2022 was the penultimate event in Canada because of you!

We would like to thank you personally for your passion for and loyalty to this annual event—Science Rendezvous Kingston is one of the longest-running sites in the nation and has been a much-anticipated community celebration since 2011.

In closing, we would like to share some exciting news. On July 15, 2022, Lynda will assume the role of Executive Director of Education and Development for Science Rendezvous National. She is looking forward to this new challenge and opportunity. On May 23, 2022 (the day after Science Rendezvous ended), Kim Garrett began her new role with SAIL CANADA as the High Performance Manager. Since then, she has been busy running a tight ship for transnational sailing competitions in Nova Scotia, The Hague while preparing for the Canada Summer Games.

Both of us have grown and learned so much in our roles with Science Rendezvous Kingston. We have had fun and believe that Science Rendezvous Kingston has made a positive difference in our city and to our institution. We know that it takes a good part of a village to raise the sails, and we have appreciated your support in coming aboard, hoisting the mainsail, and steering us ably through new, and sometimes choppy waters.

Lynda & Kim

Lynda Colgan and Kim Garrett Coordinators for Science Rendezvous Kingston Coordinators for Science Rendezvous Kingston|Queen's University|* Lynda.Colgan@queensu.ca|* community.outreach@queensu.ca

Starlight Cascade Observatory Roof Renovations - Kevin Kell

In July of 2022 the SCGO Observatory roof had it hopefully final ever renovation. The issue since the roof rebuild in 2019 was that it was a heavy roof and was difficult to move. Additional 2" nylon wheels were added, a soft metal track was added and still it was tough to move.

Our last idea was to removed its 14 wheels (7 on each side of the 8' long

roof) and replaced with six inverted V wheels and an inverted 1.5” rail. The short and long of it was that IT WORKED!
The rolling of the roof is now much easier and is guaranteed to run straight and not off the side of the rails :)

The original wheels, quarter rounds to keep it on the rails.

The soft metal base was thought to help but in the end did not. So it was removed.

We had two inverted V wheels leftover from the Serenity Observatory so we ordered a set of 4 from amazon.ca, thinking that we would need 6.
Skelang 2" Groove Wheel Heavy Duty Rigid Caster with Bracket for Inverted Track, Rolling Gate, Sliding Gate, Industrial Machines, Wire Rope Rail, Loading Capacity 660 lbs, Pack of 4
$55.52 ($13.88 / Item)
Surprise! They did *NOT exactly match the existing two.

First step, the roof was jacked up with a car jack and blocked on one side, the wheels were removed, the quarter round was removed and the metal base was removed.

The roof section was 8’ long and its run was also 8’ totalling 16’. We got only a 14’ rail, one reason because we could not transport anything longer in our tiny car. Another that this stuff was sold by the pound. It ended up about $200 for the two 14’ angle iron 1.5” x 1.5” x 1/8”.
The biggest difficulty was in finding a supplier in the area. Anyone interested in the specifics can contact me directly.
The rails were loosely held in place by toenailed screws. One side first then the other could be moved around to fit.
Then two inverted V wheels were added, one on each end, actually 1’ in from each end, leaving a 6’ span in the middle. The roof was settled back

down and the 3rd wheel to be located in the middle section, was shimmed to fit and presto, 3 wheels on one side!
The 2nd side was move difficult, not to jack up and remove stuff, but to get the alignment right on the rail and also the wheels. It did require some changes, movement and finally we were happy with the 2nd rail and the 2nd set of two wheels. Once that was done, the 3rd wheel was added with shims.
End stops of 2x4 were added so the roof would not roll off either end.

Initially the rails were just toenailed in with screws on each side, at each end and in the middle of the 14' runs, but just recently we added additional holddown security by drilling into them and adding more screws.

Summary: Previously the force needed to start moving the old roof was 16-18kg of force. Now it is approx 9kg!
There was much rejoicing in the village of SCGO!

Astronomy on Media Platforms - Kim Hay

There are many online Media platforms such as Facebook, Instagram, Youtube , Tiktok and there are countless others . But there is a great Live Astronomy Program that is held on Sunday nights online via Facebook and Youtube called "The Sunday Night Astronomy Show" put on by **Astronomy by the Bay**.

Astronomy by the Bay is made up of Chris Curwin (Creator), (Co-hosts) Mike Powell and Paul Owen all of the RASC Saint John ,New Brunswick Centre.
This is a fantastic hour plus of Astronomy stories, fun facts, observing opportunities , Astrophoto tips of the week, lots of laughs and chatting on in the forms of Facebook or Youtube. The show from July 24th had different astronomy programs to use. Below is a list of programs talked about:

Sky Portal - Celestron App available on Google Play

Lisa's Look Up @rubymoonbeans, Instagram, Twitter and Facebook

Skyview Lite - available on the Apple App store, and Google Play

Google Sky www.google.com/sky

Polar Finder app Google Play paid program

Photopills - smart phone app for planning your images Google Play and Apple store

RASC St.John's Astronomy page sjastronomy.ca

Cloudy Nights- great chat forum on all subjects Astro related.

Spaceweather.com

Sky & Telescope magazine
https://skyandtelescope.org

NOAA.gov

HeavensAbove.com Satellite predictions

I am sure there were more talked about and I missed them. Check out Youtube for the latest show.
Sometimes, Astronomy by the Bay, will do live video streams of observing Sunrises, planets, lunar captures in the skies. This is generally streamed live on their Facebook page. I encourage you to take a watch and you too will enjoy this lively presentation of Astronomy.

Stéphane Courteau honoured for excellence in graduate student supervision

From:
https://www.queensu.ca/gazette/stories/faculty-members-honoured-excellence-graduate-student-supervision-0

Excellence in academic supervision is a hallmark of the Queen's graduate student experience. Productive supervisory relationships promote a thriving university research culture where students are supported to make meaningful contributions to their field of specialization and address pressing challenges facing our communities and society.

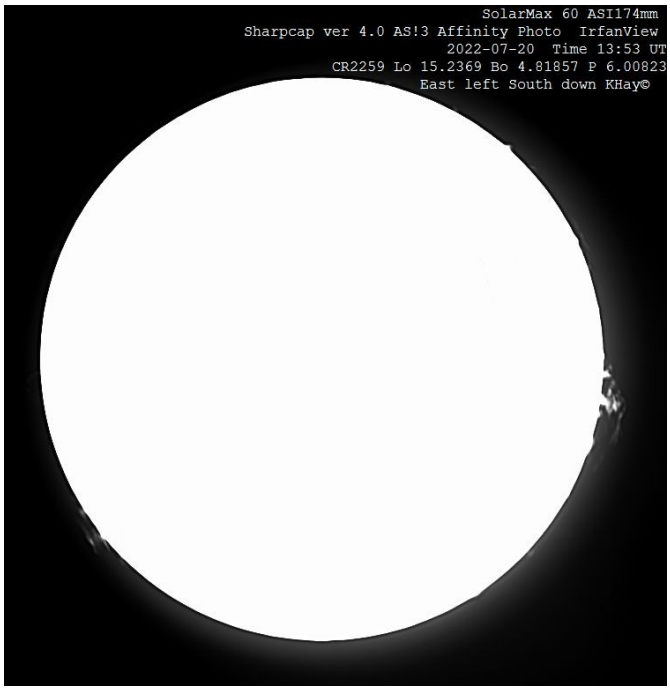
The School of Graduate Studies and Postdoctoral Affairs annually recognizes two leading graduate supervisors with the Award for Excellence in Graduate Student Supervision. The 2021 recipients are Samantha King (Kinesiology and Health Studies) and Stéphane Courteau (Physics, Engineering Physics & Astronomy).

"We are humbled by the caliber of nominations we receive each year recognizing faculty members who exemplify the highest standards of graduate supervision at Queen's," says Fahim Quadir, Vice-Provost and Dean of the School of Graduate Studies and Postdoctoral Affairs. "The School of Graduate Studies and Postdoctoral Affairs congratulates all nominees for their exceptional commitment to leadership and mentorship, and for their continued contributions to enriching the academic experience of our graduate student community"

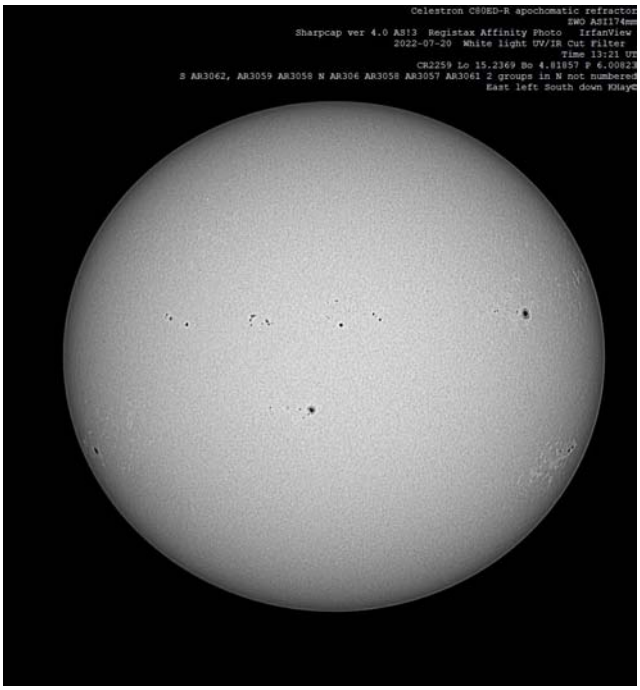
With large numerical simulations and the biggest telescopes in the world, Stéphane Courteau, a professor in the Department of Physics, Engineering Physics & Astronomy, and his students study the structure of galaxies, the distribution of visible and dark matter in the universe, and develop original tests to elucidate fundamental theoretical and/or empirical puzzles in extragalactic astronomy. He has supervised nine PhD and 25 Master's students – many of whom have secured permanent positions at major institutions across North America. His very first PhD student won the Plaskett Medal for the most outstanding doctoral thesis in astronomy or astrophysics in 2005. As the Queen's Observatory director since 2009, Dr. Courteau has also mentored numerous observatory coordinators, many of whom have gone on to rewarding careers in science outreach in Canada.

Solar Imaging – Kim Hay

These images are from July 20th, during CR2259.



The one on the top is Halpha., the one on the bottom white light.
Both are Black and White, still working on the colourizing.



Where's the DUST! - Kevin Kell

So I was out this morning before ohmygod 04:00 imaging Saturn, Jupiter and Mars. It was not bad at all.

I managed to get in a 3 star alignment for the first time in a couple of months. too bad... pointing is still off by 5 arc minutes? but tracking sure works better! It wanted to use Vega, Deneb and Capella.

So. I have this image of Saturn processed all the way through autostakkert! v3, registax wavelets and imagemagick annotation.. only to take a close look to see this *#^@# dust spot!

So.. now is the time to try out Magic Ricks dust spot calculation to find out where the dust is.

The system is a native 1800mmFL and a x2 barlow = 3600mm

The D primary is 200mm

So... I took the image in Irfanview, drew a box (normally to crop) around the spot and it told me it was about 38 pixels square. Now autostakkert! v3 performed a x1.5 drizzle operation (making the image as a hole bigger by x1.5 by interpolating pixels.

So .... that makes it 38 pixels /1.5= 25 pixels (big dustspot).

distance(mm)=dustspot(pixels)*pixelsize(um)*0.001mm/um FL(mm)/Dprimary(mm)

distance(mm)=25pixels*2.90um/pixel*0.001mm/um*3600mm/200mm = 1.3mm off the sensor.

sounds pretty darn close to the sensor itself, or maybe the underside of the sensor window, or lastly, on the outside of the sensor window.

Save the Dates!!!

Starfest 2022
August 25-28, 2022
Starfest is Canada's largest annual amateur astronomy conference and star party attracting hundreds of astronomy enthusiasts from Ontario, neighbouring provinces and the USA. Held at the River Place Campground RR 3, Ayton, Ontario (Near Mt Forest)
https://www.nyaa.ca/index.php?page=/sf22/sf.home22

Fall'N'Stars 2022
Friday-Sunday 2022 Sept 23-25
https://rascbelleville.ca/fallnstars/
This is SouthEastern Ontarios' Star Party organized by the RASC Belleville and Kingston Centres, annually since 2000 (we missed 2020)!