Regulus

Newsletter of the RASC Kingston Centre

Vol. 52 No. 1

January, 2025

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Centre Events this month:

January 8:
Regular Monthly Meeting—Zoom only

January 14 (ish) - Astrophotographers Zoom meeting

January 15:
Weekly Social, Online.

January 22nd
Weekly Social, Online.

January 29th:
Weekly Social, Online.

President's Report

Malcolm Park

Greetings, We held our first Astrophotography workshop on December the 19th, with our special guest instructor Kerry-Ann Lecky Hepburn. It was very well attended, and a recording was provided on the email chat list. Just a reminder, that link expires on January 3rd.

The material covered by Kerry Ann focused on shooting the Milky Way and landscapes, and hopefully members found her tips helpful. Primarily, Kerry Ann focused on processing images from a DSLR. Our next session will likely be around January 14th and I will announce the topic at the beginning of the month.

Coming Soon to the Kingston Centre: A Seestar S50!

The Seestar S50 is a fully automated all in one astrophotography kit.

It is self aligning, and fully self contained. It is controlled wirelessly via a tablet.

This device will be purchased just as soon as they are in stock and will be available in the Loaner Program.

Our next meeting is ZOOM only on January 8th at 7pm.

We received an offer a few months ago for a presentation on planetary imaging from Winnipeg Centre member Mike Karakas. Here is his Presentation Summary / bio:

Traveling for Planetary Imaging

Presentation Summary:
Did you ever take an image of a planet and wonder why it didn't compare to those taken by other imagers around the world? Why was there such a difference!? Were the atmospheric conditions THAT much better elsewhere? Perhaps it is your equipment...or your skill level...or maybe something was amiss in your workflow?

After spending years imaging planets, Winnipeg RASC member, Mike Karakas, wasn't entirely pleased with his results and pondered many of those same questions. In his presentation, Mike will describe the reasons why he decided to pack up his gear and travel for the purpose of planetary imaging and the logistical challenges he encountered along the way, followed by the results and lessons learned.

Bio:
Winnipeg Centre member Mike Karakas has been observing and imaging planets for over 25 years. Committed to citizen-science initiatives, he regularly contributes his planetary images to pro-am organizations such as ALPO, ALPO-Japan, PVOL, and the BAA.

The Editor's Keyboard

Roger Hill

At one of the meetings recently, someone asked me where the picture to the left was taken.

In 2016, I was fortunate enough to go to Chile for a wedding in La Serena, but was able to spend a few days with Les Nagy in San Pedro de Atacama. At the time, Les was one of the guides at the Atacama Large Millimetre Array. He was able to arrange a trip up to the plains of Chajnantor and walk among the antennae at 16,500 feet (5044 metres) altitude. I had to carry a litre container of compressed oxygen with me, but it was one of the coolest places I've ever been. I'd only been in Chile for a couple of days, and unlike my first visit, I was being affected by the lack of oxygen. I sat for a several minutes in the bus that takes the workers to the antenna farm and listened to music.

What do you listen to when you're at such a place? Why, "Breathe" from Pink Floyd's Dark Side of the Moon, of course!

In 2008 on a trip with Steve Barnes and others, we visited the Atacama Cosmology Telescope at 17,030 ft (5,190 metres), and looked down on the future site of Alma. We drove further up the road, to just over 18000 feet (5500 metres), but we had some people in the car who were having difficulties with the altitude, and so did not travel higher. I wanted to walk to the top of the mountain (Cerro Toco) as I was not suffering from altitude sickness, another 300-400 feet, but could not, since if I ran into any difficulty, there was no-one who could help me.

At this time of year, it is customary to look back at the year that was.

2024 was a spectacular year for amateur astronomers. The incredible total eclipse of April 8 being the highlight, for all who saw it.

I have been fortunate to have now seen 5 total eclipses (1972, 1979, 1991, 2017 and 2024), and while the first one has special significance, and 1991 (at 6 minutes and 50 seconds) the longest, for me, 2024 might be the most satisfying.

Why? Well, my friend Les Nagy had travelled to see two total eclipses, and been clouded out both times.

He had also missed the Transit of Venus in 2004. For the second one of the pair in 2012, he was living in Chile, but the Sun set before first contact, and rose after the transit had ended, whereas I had seen both events. So, the April 8, eclipse was a case of who's string would be broken.

Happily, it was my good luck that triumphed. The sky was as crystal clear as it could possibly be at our observing site in Lac Megantic, Quebec. Malcolm Park and Mark Kaye were there as well. Actually, Mark and I were there because Malcolm was. After it was all over, Mark dropped by. Les was sat in a folding camp chair, unable to process what he'd just witnessed. Oh, and I saw shadow bands for the first time, too! Normally, with totality approaching, I'm too busy looking up to notice what's happening on the ground.

The year's other events of significance for me were also Sun related...some great auroral displays! I remember, quite vividly, some great displays in the 80's and 90's, but when the Sun seemed to go quiet, I wondered if I'd ever again see such displays. Particularly so since my skies have improved by 4 levels on the Bortle Scale!

May 10, August 12, and October 11, and each of them taught me a different lesson.

May 10th taught me that just because the aurora dies down, it does not mean that the display is over. Aurorae seem to like a rest every now and then!

The other lesson was that I should be ready, with a camera powered from AC, so I could record the display even it goes all night!

August 12 taught me that even though the camera can record all night, the big thick heavy 8mm fisheye lens will eventually succumb to dew.

October 11th arrived and I was finally ready. I took a night-long movie of the aurora, and I also took some video at 30 frames per second with a ZWO ASI462 camera, and captured rapid movement that I had no idea even existed.

I'd show pictures here, but they don't do them justice.

There were other events, too. I managed to capture a couple more Kingston related asteroids, including (3673)Levy and (20021)KevinKell.

Clear skies, and see you next month.

Last month I drove all the way from my Vail, Arizona home to Palomar Mountain Observatory. As most of this column's readers know, I have visited this place many dozens of times from my first encounter in March of 1974, and regularly from the late summer of 1989 to the late spring of 1996. I have always loved this magical place. Each visit, as I would drive in, I would pass the expansive dome of the mighty 200-inch Hale Telescope. As I drove by I felt the telescope waving at me. It and I are the same age. The telescope was officially inaugurated on June 3, 1948, just thirteen days after my birth on May 22 that year. We are both 76. (I was probably too young to give a speech, with a poetic quotation, at that event.)

The purpose of this visit was to watch the September 16th partial eclipse of the Moon with my close friend Jean Mueller. I have known Jean for decades. Jean operated telescopes at Palomar, mostly the 48-inch Samuel Oschin Schmidt telescope which opened just before the giant 200-inch. While there, she exposed many photographic plates for the second POSS (Palomar Observatory Sky Survey) survey. Mueller would scan the plates for stars that appeared in and around galaxies and mark a galaxy. She would then compare that galaxy with a picture from earlier to see if the star had newly appeared. If it had, she would measure the position of the star, and then an astronomer would confirm her discovery on the 200-inch. This meticulous work enabled Mueller to discover 107 supernovae in addition to fifteen comets and thirteen now-numbered asteroids. Jean Mueller is a prime, absolutely first-rate astronomer and observer of the night sky, and she is admired and highly respected around the world.

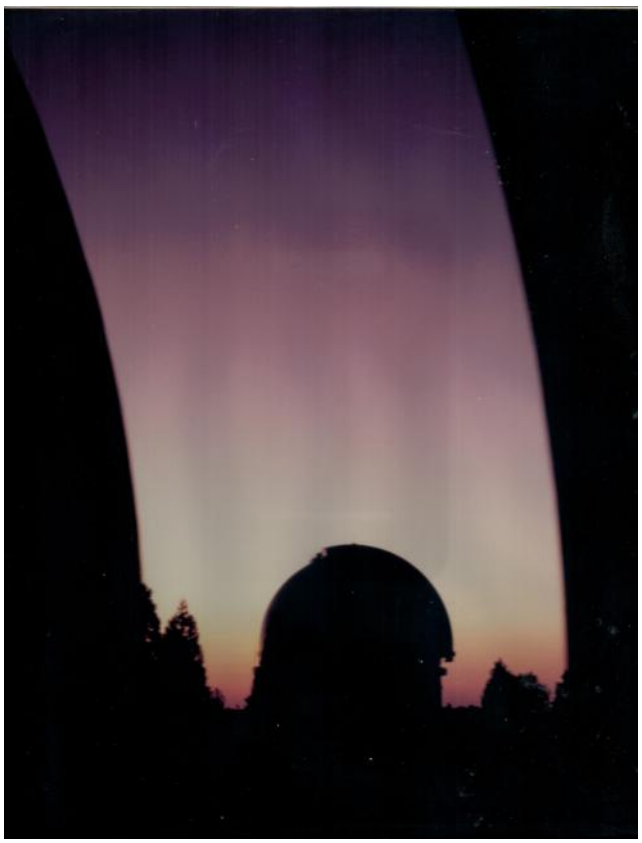
It has been thirty years since I last visited Palomar, and I was overdue for a return. As I cruised by the colossal dome housing the 200-inch Hale telescope, at one time the largest in the world; this was not my reason for visiting Palomar all those years ago. Instead, I drove on some meters on to see the 18-inch Schmidt camera telescope. This beautiful instrument was the first and is the oldest telescope on this mountain, and its record of discovery is dazzling. It helped Fritz Zwicky discovered 121 exploding stars, or supernovae, in distant galaxies. It has a historic record of discovery of asteroids and comets, by far the most important of which is Comet Shoemaker-Levy 9 on March 23, 1993. In July of 1994 the pieces of this shattered comet slammed into Jupiter.

Colliding at a velocity of 37 miles per second, each fragment left a very bright flash and a large brownish cloud that persisted for months.

During my March visit I learned how the 18-inch was moved to the observatory museum where it has become a lovely exhibit. When I saw my old friend again; I almost cried. I then visited the outside of the dome that was our home for so long, and while there the treasured memories of working with Gene and Carolyn flooded back like an incoming ocean tide. This time I could not hold back the tears of joy.

With the possible exception of our discovery of Comet Shoemaker-Levy 9, this was by far the most emotive visit I've ever had to Palomar. For the first time in my long association, the overwhelming history of the place really struck me. I felt I was standing next to Russell Porter as he drew a sketch of the telescope, even before its mirror was installed, pointed towards the north. He even flashed me his legendary grin. Porter became famous long before he helped design the 200-inch. In the November 1925 issue of Scientific American, he published its lead article "The Heavens Declare the Glory of God." That piece of writing also marked the opening of Stellafane, the telescope makers conference still held every year atop Breezy Hill in Vermont. Last year Stellafane celebrated 100 years of its legendary pink clubhouse.

On that incredible evening of September 17, we watched a wonderful partial lunar eclipse. Only 7% of the Moon was covered in the Earth's central or umbral shadow, but the outer penumbra shadow dimmed much of the rest of the Moon. And just five weeks later, mighty Comet Tsuchinshan-ATLAS painted its rosy picture across the evening sky. May these haunting events add to our joy in the night sky that shall be remembered forever.



The Sky This Month

Rick Wagner

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 for us each month, sharing some of the best viewing opportunities as well as timings to catch your favourite night sky target at its best.

03 Jan – **Quadrantids peak, best before dawn this morning; perhaps the best meteor shower of the year!**
03 Jan – morning of the latest time of sunrise (07:40EST)
03 Jan – crescent Moon 4º upper left of Venus (mag -4.5) in the evening SW sky.
03 Jan – minor planet (14) Irene (mag 9.4) at opposition
04 Jan – minor planet (9464) 1998 HL117 (mag 17.6) occults star UCAC4 569-038878 (mag 11.8) (19:40EST)
04 Jan – Earth at perihelion (147 103 686km), ~08:00EST)
06 Jan – First Quarter Moon
08 Jan – minor planet (2522) Triglav (mag 15.9) occults star UCAC4 516-048108 (mag 11.6) (02:10EST)
10 Jan – Venus (mag -4.6) at greatest elongation east, low in the SW sky after sunset
12 Jan – Mars at closest approach to Earth (96 084 000km)
13 Jan – Full Moon (17:27EST)
13 Jan – **Moon occults Mars; disappearance about 21:20EST, reappearance about 22:30EST**
16 Jan – Mars (mag -1.37, 14.6” diam) at opposition
18 Jan – Saturn (mag 1.1) is just 2.2º below and left of nearly 200x brighter Venus (mag -4.6)
21 Jan – Last Quarter Moon
22 Jan – GAIA spacecraft begins shutdown – may be as bright as mag 15 through end of the month
29 Jan – New Moon (07:36EST)
31 Jan – crescent Moon 3.4º below Saturn (mag 1.1) in the SW sky after sunset. Venus (mag -4.8) about 10º above the pair

Mars and the Moon,
2025-01-13 21:22:00 from Kingston. If you are west of Kingston, look a few minutes earlier.

Target for Tonight

Susan Gagnon

While Cygnus is thought of as a summer constellation it is still quite high in the early winter evening.

Perhaps it will feel warmer surveying territory forming part of the Summer Triangle when you are changing eyepieces at -14C. Following along behind Cygnus as it moves to the north-west is Aquarius.

Aquarius is a faint-ish constellation covering a fair bit of sky. Watch for it to become a bit more exciting as Venus and Saturn enjoy each other's company here just after mid month. In this chart numbers in parentheses are the NGC versions of objects.

As you have no doubt noticed the same objects often have several names according to the catalogues where they are listed.

From now on I will attempt to include the NGC number when I see one is available.

If you are wondering where the key to the Winter show stopper constellations are check Regulus January 2024 for Taurus/Orion/Auriga and Regulus November 2023 explains what this column is all about.

Constellation	EtU Bright stars	EtU Deep Sky	EtU Doubles	Messier	Finest NGC	Deep Sky Gems	Double stars
Cygnus	Deneb		Omicron (triple)	29	6819	220 (6910)	61 Cyg
	Albireo		16 Cyg	39	6826		U Cyg
			Alberio		6960a		HR7529
					6888		HR7294
					6992/5b		
					7000		
					7027		
Aquarius				72	7009	57(7723)	
				73	7293	277(7184)	
				2		280(7721)	
						281(7727)	
Camelopardalis		Kemble's Cascade			2403	324 (Tom 5, one of a catalog of 5 OC discovered by Tombaugh	1 Cam
					2655		Beta Cam

Binocular collimation

Roger Hill

So, you got a pair of those Celestron binoculars from Canadian Tire, and they looked pretty good in the store. But over the weeks, months, or years, since you bought them, the images have moved so far apart, even squinting a little doesn't help anymore. Oh, you might still use them occasionally, when you want to know if the sky is good enough to haul all of your stuff into the backyard. But generally, they induce a headache within seconds of trying to use them.

A pair of binoculars is actually a pair of refractor telescopes joined together. The alignment between these two telescopes is called "collimation". Proper collimation is critical to binocular's performance, and the user's viewing enjoyment. The

brain can do a remarkable job of compensating for poor collimation, but has more trouble doing so on the night sky due to the much lower amount of visual information.

For this reason, good collimation is especially critical for astronomical binoculars. Some high quality binoculars, like Oberwerk's are thoroughly examined, tested, and collimated before shipping to their customers. However, collimation is occasionally lost due to rough handling during shipping, or from accidents (like dropping them), Oberwerk provided instructions for collimation and they apply to those Celestron binoculars, too.

So, as a public service, I've taken their instructions and presented them here.

Surprisingly, collimation adjustment is easiest to perform in daylight. Collimation can be quickly be checked by viewing an obect with distinct horizontal and vertical lines, such as a house, building, or fence, at least 100 yards away. It is best to do this outdoors, as viewing through a window can cause distortion from diffraction.

Begin by focusing on the object. Alternate viewing with the left and right eyes by gently closing one eye at a time. Alternate eyes about once per second. Relax your eyes as you do this so they are not compensating for misalignment. If the object moves somewhat as you alternate eyes, then it's time to collimate.

A slight amount of horizontal movement (to the left with the left eye, and to the right with the right eye), is normal. Excessive horizontal movement, or any amount of vertical movement (see pic at right), should be corrected.

To check vertical collimation, look at a distinct horizontal line, such as a roof line, gutter, or fence rail. Slowly move your eyes back from the binocular until they are about 4 inches away, while maintaining the view of the horizontal line in eyepieces. Let your eyes relax and focus more on the image at the eyepieces rather than through the binocular.

To check vertical collimation, look at a distinct horizontal line, such as a roof line, gutter, or fence rail. Slowly move your eyes back from the binocular until they are about 4 inches away, while maintaining the view of the horizontal line in eyepieces. Let your eyes relax and focus more on the image at the eyepieces rather than through the binocular. Even a slight vertical miscollimation will now be readily shown as a difference in position of the horizonal line (see below).

Now that we can determine collimation problems, how do we correct it? The secret is the porro prism adjustment setscrews hidden under the rubber armor close to the edge of the prism covers, as shown in the picture below.

You'll need a rather narrow jewelers screwdriver to adjust the setscrews. For rubber-armored models, use the screwdriver to carefully lift the rubber covering to reveal the setscrews. If you don't stretch the rubber any more than necessary to reveal the setscrews, the rubber will snap back to original position when you are done. .

Binocular collimation

Roger Hill

The setscrews may be rather difficult to move, and some downward pressure may be necessary to prevent stripping of the setscrew slot.

The setscrews move the image in the same direction as the screw. So when screwing the right setscrew inward (clockwise as viewed from above), the right image will move downward and also to the left. Unscrewing the right setscrew (counter-clockwise) moves the image upward and also to the right.

The left setscrew works in the same manner for the left image. Turning the setscrew clockwise moves the image in the left side down and to the right, while counter-clockwise moves it up and to the left.

Typical minor miscollimation can usually be corrected by tightening just one setscrew. The key is to determine which side needs to move, and how much it needs to move.

Make adjustments in very small increments, moving the setscrew as little as possible

Check frequently to determine how you are progressing.

To correct for horizontal miscollimation, where excessive left to right difference exists between the left and right views, requires moving both setscrews.

Move them both inward to push the images downward and toward each other. Make sure that you end up with perfect vertical alignment. A slight amount of left right movement between the two images is acceptable- in other words, the left image should be slightly to the left, and the right image, slightly to the right. Under no circumstances should the images cross over to the opposite direction- this will quickly cause a headache if viewing for any length of time.

Using the above techniques should allow you to obtain perfect collimation. The ultimate test is to view the night sky. Bright objects such as Jupiter should be well merged, with no double images. Perfect collimation will allow you to view for extended periods with no eyestrain or headaches.

RASC-KC Annual Reports

Kevin Kell

Ever wondered about what The RASC-Kingston Centre is up to? Or, what it has done over the last few years?

We are publishing Annual Reports in PDF format that comprise of all of the RASC required reports (Secretary and Treasurer) as well as reports from all of the RASC-KC Officers that have submitted them.

You can find them at: https://kingston.rasc.ca/periodicals

Choose a periodical: Annual Report, then Apply

At this moment we have from 2019 through to 2024. As an example, this is from the 2024 report:
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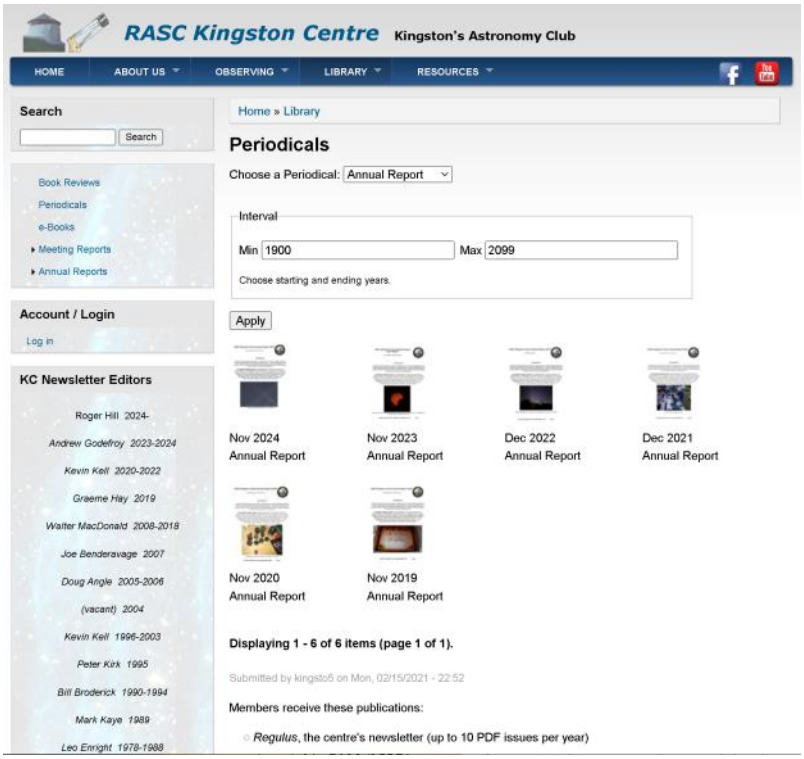
Report from the President
Report from the Vice President
Report from the Secretary
Report from the Treasurer
Report from the Auditor
Report from the National Representative
Report from the Librarian
Report from the Editor
Reports from Officers and Committees: Equipment
Previous AGM Minutes 2023
Reference Information

You do not have to be logged in to the website to access these. Enjoy!



Laser Collimator collimation

Mike Hanes

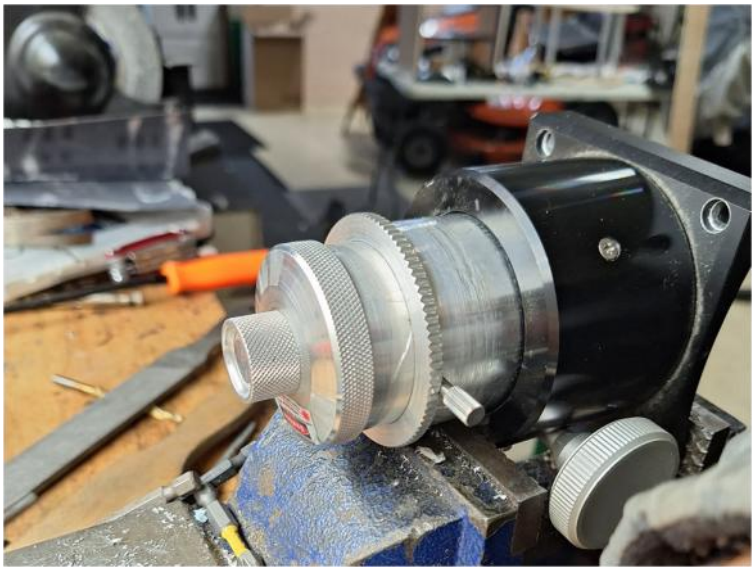
I recently had an issue collimating my 200mm RC telescope. I would accurately adjust the alignment of the mirrors using my Howie Glater Laser collimator only to find the star test would be bad!

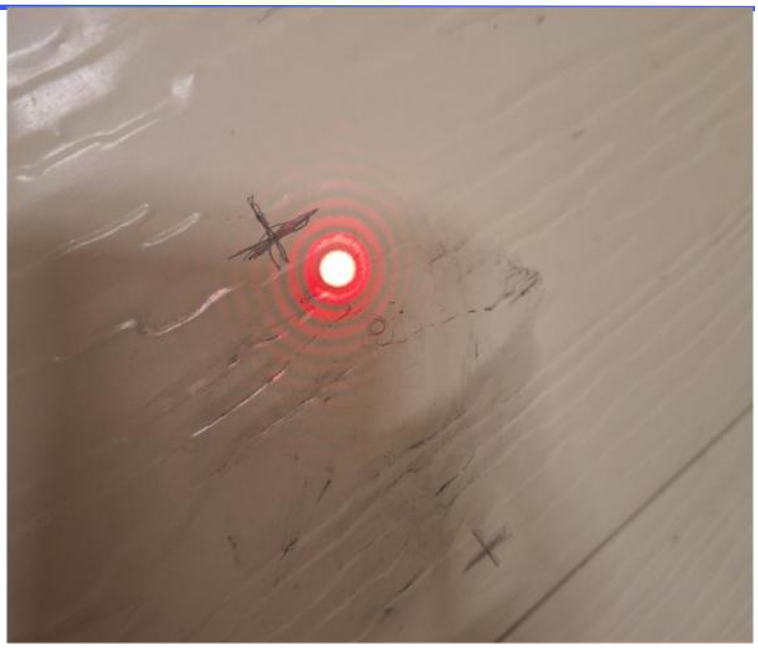
I then reinserted the laser collimator into the focuser only to find the red dot misaligned again. I initially thought the optics were going out of alignment; however, I soon realised that each time I inserted the laser collimator into the focuser it was rotated into a different position.

I confirmed this by loosening the set screw on the focuser and slowly turning the collimator in the focuser. The red dot was moving in a 10mm circle and not keeping the same position. I decided to test another laser collimator that I had, (A Kendrick 25mm). It also was off by 12mm and not running true. Could it be that all these years my optics were misaligned? With a Newtonian one can get away with a slight misalignment but with an RC telescope one cannot!

I decided to use a spare focuser that I had and holding it into a vice pointing at my garage door that is 7 meters away. This would increase the amount of error at that distance and make it easy to adjust the collimator's adjustment screws.

Focuser with Collimator in Vice





Laser projecting on the garage door. The markings in pencil are the limits of the rotation showing how far off the alignment was.

Adjusting these screws was a trial-and-error process and took about an hour to get the alignment perfect. In discussion with a friend, he found the same problem with a lot of the commercial laser collimators. They are not quite aligned up properly, so I strongly recommend checking yours if possible.

Meteor Shower Calendar

Cathy Hall

Meteor Shower Calendar for 2025 from https://www.imo.net
See the International Meteor Organization website for maps and more technical details.
Selected Abbreviations:
r: The population index, a term computed from each shower's meteor magnitude distribution.
r = 2.0 − 2.5 implies a larger fraction of brighter meteors than average, while r above 3.0 is richer in fainter meteors than average.

V: Pre-atmospheric or apparent meteoric velocity, given in km/s. Velocities range from about
11 km/s (very slow) to 72 km/s (very fast). 40 km/s is roughly medium speed.

ZHR: Zenithal Hourly Rate, a calculated maximum number of meteors an ideal observer would
see in perfectly clear skies (reference limiting magnitude +6.5) with the shower radiant over-head. This figure is given in terms of meteors per hour.

Shower	Activity	Max	Radiant	V	r	ZHR
Quadrantids	Dec 28–Jan 12	Jan 03	230◦ +49◦	41	2.1	80
γ-Ursae Minorids	Jan 10–Jan 22	Jan 18	228◦ +67◦	31	3.0	3
α-Centaurids	Jan 31–Feb 20	Feb 08	211◦ −58◦	58	2.0	6
April Lyrids	Apr 14–Apr 30	Apr 22	271◦ +34◦	49	2.1	18
π-Puppids	Apr 15–Apr 28	Apr 23	110◦ −45◦	18	2.0	Var
η-Aquariids	Apr 19–May 28	May 06	338◦ −01◦	66	2.4	50
η-Lyrids	May 03–May 14	May 10	291◦ +43◦	43	3.0	3
Daytime Arietids	May 14–Jun 24	Jun 07	43◦ +24◦	38	2.8	30
June Bootids	Jun 22–Jul 02	Jun 27	224◦ +48◦	18	2.2	Var
July Pegasids	Jul 04–Jul 14	Jul 10	347◦ +11◦	63	3.0	3
July γ-Draconids	Jul 25–Jul 31	Jul 28	280◦ +51◦	27	3.0	5
S. δ-Aquariids	Jul 12–Aug 23	Jul 31	340◦ −16◦	41	2.5	25
α-Capricornids	Jul 03–Aug 15	Jul 31	307◦ −10◦	23	2.5	5
η-Eridanids	Jul 31–Aug 19	Aug 07	41◦ −11◦	64	3.0	3
Perseids	Jul 17–Aug 24	Aug 12	48◦ +58◦	59	2.2	100
κ-Cygnids	Aug 03–Aug 28	Aug 16	286◦ +59◦	23	3.0	3
Aurigids	Aug 28–Sep 05	Sep 01	91◦ +39◦	66	2.5	6
Sep. ε-Perseids	Sep 05–Sep 21	Sep 09	48◦ +40◦	64	3.0	8
Daytime Sextantids	Sep 09–Oct 09	Sep 27	156◦ −02◦	32	2.5	5
Oct. Camelopardids	Oct 05–Oct 06	Oct 05	164◦ +79◦	47	2.5	5
Draconids	Oct 06–Oct 10	Oct 08	262◦ +54◦	20	2.6	5
δ-Aurigids	Oct 10–Oct 18	Oct 11	84◦ +44◦	64	3.0	2
ε-Geminids	Oct 14–Oct 27	Oct 18	102◦ +27◦	70	3.0	3
Orionids	Oct 02–Nov 07	Oct 21	95◦ +16◦	66	2.5	20
Leonis Minorids	Oct 19–Oct 27	Oct 24	162◦ +37◦	62	3.0	2
S. Taurids	Sep 20–Nov 20	Nov 05	52◦ +15◦	27	2.3	7
N. Taurids	Oct 20–Dec 10	Nov 12	58◦ +22◦	29	2.3	5
Leonids	Nov 06–Nov 30	Nov 17	152◦ +22◦	71	2.5	10
α-Monocerotids	Nov 15–Nov 25	Nov 21	117◦ +01◦	65	2.4	Var
Nov. Orionids	Nov 13–Dec 06	Nov 28	91◦ +16◦	44	3.0	3
Phoenicids	Dec 01–Dec 05	Dec 01	08◦ −27◦	15	2.8	Var
Puppid-Velids	Dec 01–Dec 15	(Dec 07)	123◦ −45◦	44	2.9	10
Monocerotids	Dec 05–Dec 20	Dec 09	100◦ +08◦	41	3.0	3
σ-Hydrids	Dec 03–Dec 20	Dec 09	125◦ +02◦	58	3.0	7
Geminids	Dec 04–Dec 20	Dec 14	112◦ +33◦	35	2.6	150
Comae Berenicids	Dec 05–Feb 04	Dec 16	158◦ +30◦	64	3.0	3
Ursids	Dec 17–Dec 26	Dec 22	217◦ +76◦	33	2.8	10

For copies of star maps showing the conversion of the Radiant positions from degree coordinates used in the IMO table to the normal RA and Dec that we are most familiar with, send an email to clhall@rogers.com and I can forward the 4 maps to you.

Minutes

Elena Zanetti

December Regular Monthly Meeting

Ellis Hall, Room 226, Queen's University,
Kingston, Ontario
And livestreamed on Zoom

The meeting began at 7:00 pm. Malcolm Park welcomed Kingston Centre members and guests with 21 in attendance. First Nations Land Acknowledgment statement was read. Within this meeting, a break from 7:05 to 7:12 pm allowed for a Special meeting to be held for by-election and a vote on Letters Patent.

Announcements: every Wednesday (except 2nd Wed meeting night) we have the members Social Zoom Time – to join, let us know at kingston@rasc.ca. January and February 2025 regular meetings will be zoom only with our next meeting on January 8 at 7 pm. On December 19, the first Astrophotography tutorial session will be help via zoom. The Regulus, our centre's newsletter, is available on our centre website Kingston.rasc.ca. Our centre is in the early stage of budgeting for 2025 and will include the purchase of at least one Seestar 50 for the purpose of outreach and to be included in equipment loan program for members.

Guest Speaker: Alan Chan, "The Dark Side of the Universe: Unveiling Cosmic Mysteries with AGNs and Gravitational Waves". Alan is an astronomer and BSc student in Astronomy and Astrophysics at the Australian National University, affiliated with Mt Stromlo Observatory and the ANU Centre for Gravitational Astrophysics. Alan's research focuses on precision measurement techniques for gravitational wave astronomy. His talk commences at 13:01 on the YouTube recording on our centre site.

Rick Wagner: Astronomy this Month – December 2024
BAA Events
10 Jan – RA Zoom – Developing and deploying an instrument for measuring ionisation in the atmosphere
Sky Events – December

Bruce Elliott: Science Rendezvous update. Initial submissions have been made. Contact Bruce if you would like to volunteer at the event.

On social media we are:
Website at Kingston.rasc.ca.
Facebook @ RASC Kingston Centre Group.
Join our Centre at www.secure.rasc.ca/membership
YouTube @ RASC Kingston Centre, tonight's and past meetings located here.
Next month, Graeme Hay will demonstrate the Seestar 50.

Malcolm thanked all for attending and the meeting ended at 8:39 p.m.

December Special Meeting

Meeting began at 7:05 p.m. with 19 attending.
Reason for meeting:
1. To approve edits to our Letters Patent for submission to ONCA.
2. Director by-election to fill vacant position.

Malcolm Park, our President welcomed all.

Letters Patent.
Susan Gagnon presented changes to the text the government requires for final submission.
Motion 20241211-01 | To accept the changes to the provisions of our Letters of Incorporation for submission to ONCA.
Moved: Susan Gagnon | Seconded: Laurie Graham. Motion passed by special resolution with a unanimous vote (including 2 by email).

Kingston Centre Election for Director at Large. The following election for the available position of Director-at-Large complies with our new bylaws, which were passed by a special meeting of our membership, on July 31, 2024. Nominees must be a member in good standing and be at least 18 years old. Nominations from the floor were requested for the position of Director without Portfolio. Kevin Kell has been nominated by Kim Hay and seconded by Roger Hill. Kevin is willing to stand. No other nominations came forward.
Acclaimed for a 2-year term.

Our 2024 – 2025 RASC Kingston Centre Board:
Malcolm Park, President 2023-25
Kim Hay, Vice President, Librarian 2023-25
Susan Gagnon, Treasurer 2023-25
Elena Zanetti, Secretary 2024-26
John Hurley, National Council Rep 2024-26
Roger Hill, Newsletter Editor 2024-26
Kevin Kell, Director at Large 2024-26

Malcolm thanked all and meeting adjourned at 7:12 pm.

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 third Saturday of each month, at Ellis Hall, Queen's University.
- https://www.queensu.ca/observatory/
- 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

Front cover image by Roger Hill. Taken from Mount Tremblant National Park and Dark Sky Preserve overnight on September 4th, 2024. It was created using 1100 30-second long exposures at ISO800. All raw files were resized, and gently processed in Irfanview, and saved as JPEGs. These JPEGs were then stacked in PIPP to create a movie, which was then fed into StarStax to create the trails.

Board of Directors & Officers for 2024-2025

Directors:

President: Malcolm Park
Vice President: Kim Hay
Secretary: Elena Zanetti
Treasurer: Susan Gagnon
Editor: Roger Hill
Nation Council Representative: John Hurley

Officers:

Honourary President: David H. Levy
Past President: Rick Wagner
Webmaster: Walter MacDonald
Librarian: Kim Hay
Loan Equipment: Kevin Kell

The **Royal Astronomical Society of Canada Kingston Centre** was 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:

RASC benefits:

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

Kingston Centre benefits:

- Monthly Centre Newsletter – Regulus
- Weekly social videoconference chat for members and invited guests.
- On the 2nd Wednesday evening of the month, there are meetings are open to the public: In-person in March to June and September to December at Queens, July and August outdoors at Lake Ontario Park; and two in January and February that are video-conference only.
- Equipment loan program