

NOVA

NEWSLETTER OF THE VANCOUVER CENTRE RASC
VOLUME 2023 ISSUE 4 JULY/AUGUST 2023



Navel-Gazing

by J. Karl Miller

Astronomers—ancient, recent, and current—have looked, and are looking, for “life, as we know it” elsewhere in the universe. A lot of resources are applied to this purpose (see image). Whenever I hear or read this statement, something in my mind asks: what about life as we do *not* know it (yet)?

What follows is my thinking (I am no expert) about the subject. The starting event was what

we call the Big Bang. Scientists have established that all the atomic particles, atoms themselves, molecules, down to the smallest sub-particles, came into existence in a sequence

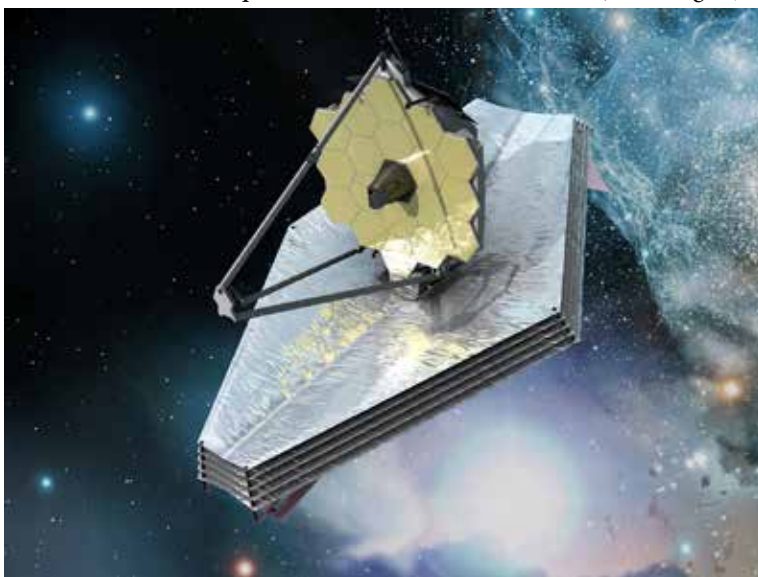
of events depending on pressure, temperature, time and available

and whatever else we find in space (including us), all made from some part of the same source of atomic materials.

There are occasions which I think of as a small repetition of the Big Bang. They happen inside very large and giant stars. These stars are at the end of their present existence; they no longer produce the counter-pressure that made it possible to counter

the gravitational forces which try to concentrate the star’s material at the centre of the star. Without that counter-pressure, the star can collapse at an

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The James Webb Space Telescope (ESA/C. Carreau)

space and other temporary conditions. Whatever sequence of particle combinations occurred in that time frame, the final results are entities we call stars, planets, galaxies,

JULY 13

RASC National past-president Charles Ennis will speak about public outreach. Room AQ3159. See Meetup for details.

SFU

SFU

NO MEETING IN AUGUST

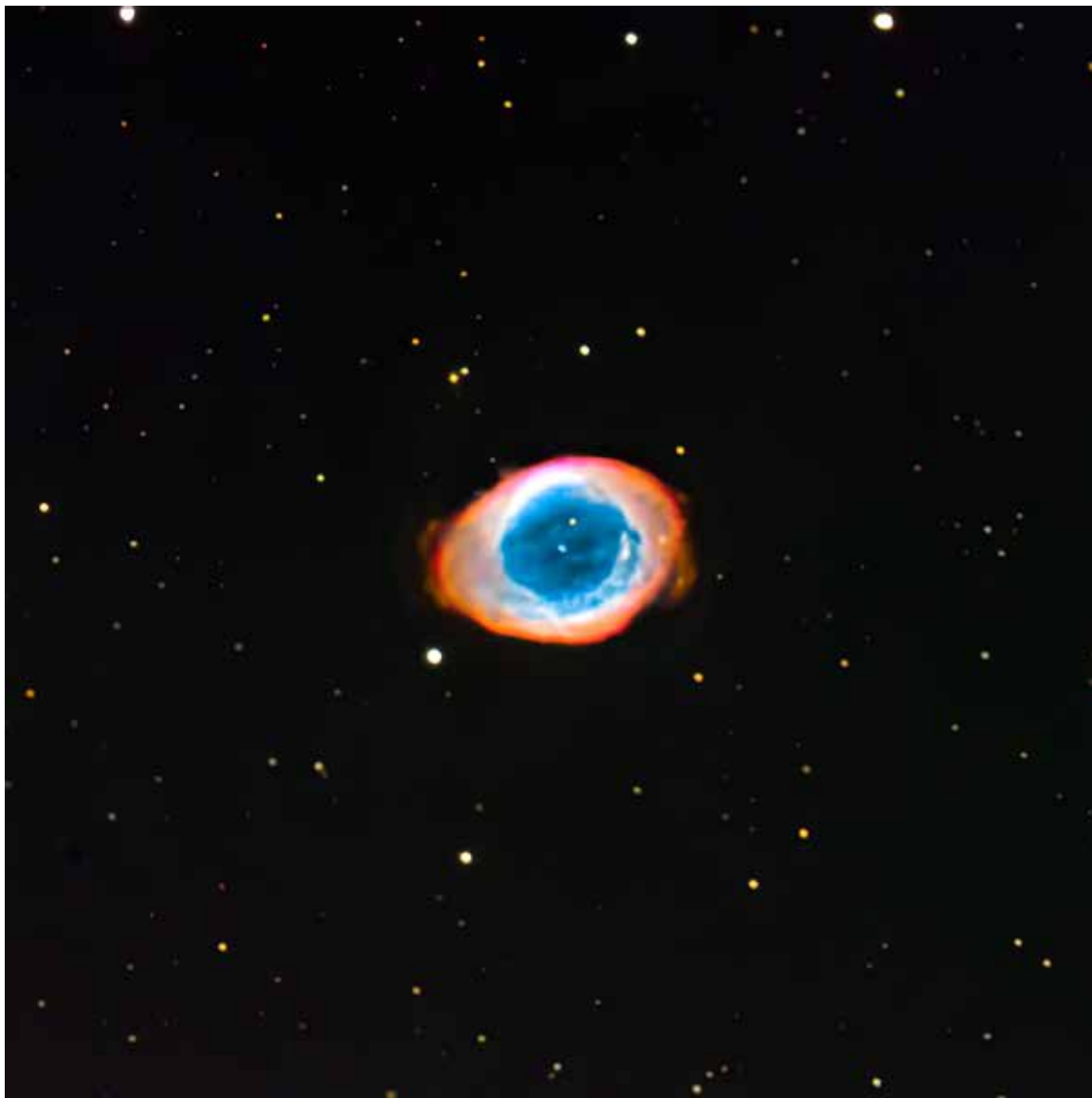
SEPTEMBER 14

Speaker TBA. Watch Meetup for updates and room location.

SFU

SFU

Members' Gallery



The Ring Nebula (M57) in the constellation Lyra by Rob Lyons

This is what is known as a planetary nebula and is the result of the star ejecting a large volume of highly-charged gasses into space in the final stages of becoming a white dwarf star. The Ring nebula is about 2570 light years away and appears to be roughly the size of Jupiter when viewed through a telescope.

This is a mere 90 minute live stack from the behemoth Planewave CDK700 telescope inside the Trottier Observatory at Simon Fraser University. This was one of the many exciting nights of photography undertaken by the Vancouver RASC Imaging Group. If you are an astrophotographer and looking to connect with others in the area and join our Tuesday night imaging sessions, please reach out to Rob at imaging@rasc-van.com

President's Message

by Alan Jones

Greetings Members and fellow Astronomy Enthusiasts!

Since the last President's Message, our RASC-Vancouver Centre hosted the 2023 Astronomy Day in-person, in conjunction with SFU Science Rendezvous on May 13. We had 30 members volunteering to introduce our society to hundreds of interested public visitors.

July 1, we participated in Maple Ridge's Canada Day celebration. Both events featured solar viewing of the closest star, our sun. Additionally, our members volunteered and brought their own equipment many Friday nights to SFU Starry-Nights at the Trottier Observatory. Record-size crowds continue to visit StarryNights. A big thank-you to

our membership that gives generously to share their knowledge and enthusiasm with each other and the public. Are you interested in volunteering? Please contact any council member; the best way is at one of our monthly meetings. You must be a current member to volunteer.

This is an exciting time of opportunity
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About RASC

The RASC Vancouver Centre meets at 7:30 PM on the second Thursday of every month at SFU's Burnaby campus (see map on page 4). Guests are always welcome. In addition, the Centre has an observing site where star parties are regularly scheduled.

Membership is currently \$104.00 per year (\$61.10 for persons under 21 years of age; family memberships also available) and can be obtained online, at a meeting, or by writing

to the Treasurer at the address below. Annual membership includes the invaluable Observer's Handbook, six issues of the RASC Journal, and, of course, access to all of the club events and projects.

For more information regarding the Centre and its activities, please contact our P.R. Director.

NOVA, the newsletter of the Vancouver Centre, RASC, is published on odd-numbered months. Opinions expressed herein are not nec-

essarily those of the Vancouver Centre.

Material on any aspect of astronomy should be e-mailed to the editor or mailed to the address below.

Remember, you are always welcome to attend meetings of Council, held on the first Thursday of every month at 7:30pm in the Trottier Studio in the Chemistry wing of the Shrum Science Centre at SFU. Please contact a council member for directions.

2023 Vancouver Centre Officers

President	Alan Jones president@rasc-vancouver.com
Vice-President	Robert Conrad vp@rasc-vancouver.com
Secretary	Suzanna Nagy secretary@rasc-vancouver.com
Treasurer	Phil Lobo treasurer@rasc-vancouver.com
National Rep.	Nolan Smith national@rasc-vancouver.com
Librarian	William Fearon library@rasc-vancouver.com
Public Relations	Andrew Ferreira publicrelations@rasc-vancouver.com

LPA	Leigh Cummings lpa@rasc-vancouver.com
Dir. of Telescopes	Rick Schneider telescopes@rasc-vancouver.com
Observing	Robert Conrad observing@rasc-vancouver.com
Membership	Marla Daskis membership@rasc-vancouver.com
Events Coordinator	Vacant events@rasc-vancouver.com
Education	Robert Conrad, Andrew Krysa education@rasc-vancouver.com
VRO	Carl Bandura observatory@rasc-vancouver.com

Merchandise	Kyle Dally merchandise@rasc-vancouver.com
Webmaster	Renuka Pampana webmaster@rasc-vancouver.com
NOVA Editor, Past President	Gordon Farrell novaeditor@rasc-vancouver.com
Speakers	Andrew Ferreira speakers@rasc-vancouver.com
Imaging	Rob Lyons imaging@rasc-vancouver.com
At Large	Shay Pomeroy, Michael Levy, Milan B
Honourary President	J. Karl Miller

Library

The centre has a large library of books, magazines and old NOVAs for your enjoyment. Please take advantage of this club service and visit often to check out the new purchases. Suggestions for future library acquisitions are appreciated.

On the Internet

rasc-vancouver.com
astronomy.meetup.com/131/
www.facebook.com/RASC.Van
www.instagram.com/rascvancouver/

 @RASCVancouver

Mailing Address

RASC Vancouver Centre
PO Box 89608
9000 University High Street
Burnaby, B.C.
V5A 4Y0

Map to Meeting Site



Our July meeting is in room AQ 3159 of the Academic Quadrangle, in the south concourse near the southeast corner, as indicated by the arrow on the map.

Pay parking is available at several locations located around campus (indicated as "P" on the map).

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tunity for Vancouver Centre members and guests. A growing group of members is gaining skill and experience through our access to the Trottier Observatory and our club observatory in Maple Ridge. See some of the images in this newsletter captured with the SFU 0.7 metre telescope during our shared access time recently. Our imaging director, Rob Lyons, continues to impress with his considerable photography talent that keeps improving.

Simon Fraser University is upgrading the Trottier Observatory monochrome camera. In the interim, the colour camera is mounted on the main camera port. The colour camera was used in the past on the visual periscope in place of the eyepiece for on-line outreach live stacking. I was stunned by the impressive result Rob achieved processing the image from our last RASC-Vancouver session of only 90 minutes of data captured of the ring nebula. It looked good in live stacking on the night of capture

but see for yourself and marvel at the image in the newsletter. I am so pleased to see the upward spike in interest in both visual observing and astrophotography within our membership.

One of the more challenging volunteer efforts is scheduling our meeting speakers. Andrew is doing a stellar job at finding interesting speakers on astronomy, space exploration, physics research and discoveries. Do you have contacts, or ideas to share with us or know of a good speaker available for one of our upcoming monthly members and guests meetings? Send your speaker presentation suggestions to Andrew or me or any council member. Our RASC-Vancouver emails are listed in the newsletter and are also on our website.

On our regular meeting nights, the second Thursdays of the month, we open the Trottier Observatory for members to borrow telescopes and books from our club library. When the weather is clear, we will do observing with the 0.7 metre

telescope. As mentioned above, our partnering agreement with SFU includes access for our membership to the Trottier observatory.

Looking ahead, we will be at the Perseid meteor showers on August 12 with Metro Vancouver Parks and Environment. In the meantime, we will continue to bring our telescopes to SFU's clear Friday Starry Nights at the Trottier Observatory.

The public is welcome to join our club and support our club. Anyone, member or not, can make a donation to support us. Donations can be provided a tax receipt. The easiest way to join is through the National RASC website and be sure to associate your membership to Vancouver. Our RASC-Vancouver.com website includes a [link](#) which allows donations which will issue you a tax receipt. You can also make a donation through the RASC National site and designate the donation to Vancouver Centre.

Clear Skies and enjoy the warmer weather. ★

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immense speed and with extremely large activating of huge amounts of light and much other electromagnetic activity. These energetic conditions create and may also recombine and blow the material of which the star is made into space (some part of the same materials which followed the Big Bang because that's the material which made up the star in the first place). We can observe such events. We call them supernovae.

Our current level of technology allows us to watch the formation of

new stars from the material blown into space by the collapse of dying stars. This means that the forming of new stars, planets, moons, meteors, rocks, air (and every other physical piece which we observe associated with that event) uses the material from supernovae. It can be called the stuff of stars. We know of no other available material to form a new thing. Therefore, everything, including us, could only be made of some part of Starstuff.

So, finding life as we know it could be possible. It would have to be made from the same basic materials of which we are made—starstuff—and the same organizational principles. It would also actually replicate itself or help some other species do so, as we know it.

Is replication the proof of life? Currently, we are quite intensely concerned with the speedy growth of Artificial Intelligence (AI). We have built computers which do replicate themselves, based on sophisticated software written by humans.

Some of these computers (robots?), in my thoughts, could be working to improve and, independently, come up with a way to replicate themselves without having to rely on any human effort or connection. If we were to encounter such entities somewhere in space, would we recognize such as life, and, specifically, life as we know it? It can only be built from Starstuff (which is the same as what was originated by the Big Bang). Could this affect our species' existence? If AI outcompetes us over time, and our species slowly disappears, will AI consider us to be the gods that created them? Astronomy connects with many of our different sciences: examples are astrochemistry, astrobiology, astrophysics, electronics, and other scientific activities. How will these sciences affect us if they are controlled by AI?

In my younger years I voraciously read science fiction written by Arthur C. Clarke, Robert A. Heinlein, and Professor Isaac Asimov (all

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For Sale

A complete set of *SkyNews* since publication began. Free.

A homemade 5 1/2" Dobson telescope. The mirror is hand-ground. Besides the mirror and eyepiece the scope has a Telrad finder. It comes with a Barlow lens and filter. The stand and swivel base are oak. My suggested price is \$120.

Contact Duncan at 778-994-4998

Membership has its Privileges!

Are you tired of looking at the same objects again and again (planets, moon, etc.)? Is your telescope collecting dust because it's hard to locate deep sky objects? Would you like to bring your observing to a stellar level? Robert Conrad, our observing director, leads the Vancouver RASC observing group and invites you to join by sending him an email at observing@rasc-vancouver.com. Some of the benefits of belonging to this group include:

- Hands on training on how to operate the SFU Trottier observatory
- Weekly observing sessions at the observatory or at dark sky locations
- One-on-one coaching on how to locate thousands of objects in the night sky
- Attend small interactive seminars delivered by Robert on a range of topics including failsafe star-hopping, charting challenging objects and understanding the motions of the cosmos
- Learn to make your telescope dance by locating objects such as asteroids, nova, and supernovae
- Spectroscopy and imaging training from Howard Trottier and an opportunity to collaborate on observatory research projects
- Updates on observable sky events happening during the week like asteroid/comet/deep sky conjunctions
- Access to observing guides and lists that Robert created that took hundreds of hours to create and will help with planning observing sessions
- Knowledge and expertise from other observing group members
- Learn how to quickly and efficiently find and star-hop to deep sky objects using a range of binoculars and telescopes

Upcoming Events

August

12 – Perseid Meteor Shower at Aldergrove Park
12 - 20 – Mt. Kobau Star Party

December

14 – AGM

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polymaths in my opinion). These writings often included the interaction of humans and human-like robots. These robots had levels of intelligence about equal to that of our current Artificial Intelligence. Professor Asimov required these robots to operate only under his Three Laws of Robotics (from Wikipedia):

The Three Laws, presented to be from the fictional “Handbook of Robotics, 56th Edition, 2058 A.D.”, are:

First Law

A robot may not injure a human being or, through inaction, allow a human being to come to harm.

Second Law

A robot must obey the orders given it by human beings except where such orders would conflict with the First Law.

Third Law

A robot must protect its own existence as long as such protection does not conflict with the First or Second Law.

Perhaps our current AI should incorporate these same laws without any possibility to remove or inactivate them by either Humans or robots.

I think about these things because, before I retired about 10 years ago, making my living included hav-

ing an electronics background. The recent improvements in that field, with closer relations to the computing world, make me consider these things.

One thing we will likely have in common with whatever entity evolves in the future: we are, and will be, made of some part of Starstuff. Since everything in the universe looks like Starstuff (again: including us, we are a piece of the universe), when we examine and explore the universe we can say that the universe is examining itself.

... Navel-gazing

Some questions remain in my mind: What is dark matter? What makes the universe expand? Maybe AI knows? ★



This year's winners of the youth telescope raffle at Astronomy Day at SFU in May were 11 year of Zachary Chan (left) and the Archibald family (right).

Congratulations, and thanks to the prize donors, Phil Lobo and Telescopes Canada!



2023 Martha Ellen Pearse Science Fair Winners by Suzanna Nagy

On an annual basis, RASC Vancouver sponsors \$500 to the BC Science Fair Foundation in the name of Martha Ellen Pearse, one of our endowment fund donors. The award is divided up between the various Science Fair districts and awarded to a science fair project that has a theme of astronomy or physics.

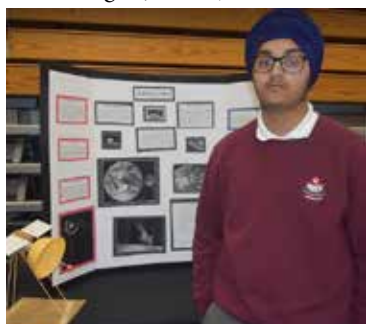
The 2023 Martha Ellen Pearse award winners are listed below. For some of the award recipients, all we were provided was a name, but some of the districts were able to provide photos and details of the recipients' winning projects.

Congratulations to all award recipients.

West Kootenay District – Tianna Brisbin and Briar MacDonald, “The Evolution of Earth”

Greater Vancouver District – Rodin Shokravi and Shilin Yuan, “Using Piezo Actuators & AI to Efficiently Replicate Surface Characteristics of Various Materials”

Fraser Valley District – Ramneek Singh (below), “Satellites”



Northern BC District – Rhett Bourgeau-Harnack (below), “Shapes in a Cage”



Photo: Todd Buck

Rhett Bourgeau-Harnack made his entry with a home-built wind tunnel, giving judges a chance to see different geometric shapes put to the aerodynamic test. The grade 6 Ecole Central student says his hypothesis is that the parallelepiped, a three-dimensional parallelogram, will be the most aerodynamic compared to cubes, cylinders, and triangular prisms.

(below) South Fraser District



– Henry Xu, “Sun Following Solar Panel”

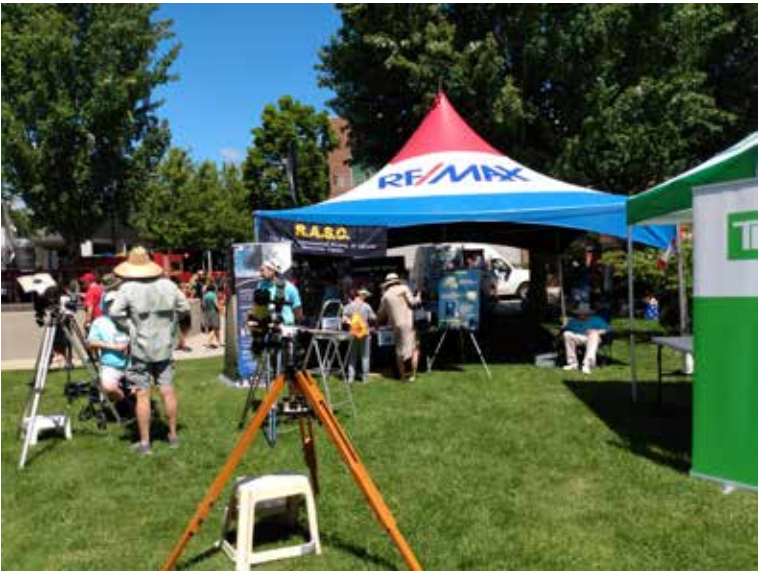
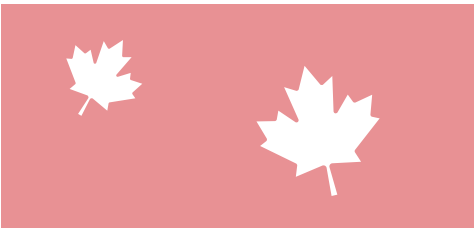
Solar Panels that stay still are very inefficient, and ones that follow the sun are often expensive. I have made a Arduino solar tracking system with 2-axis movement using two mg996r motors. Main results: It works. I have made a solar tracking system that is both cost effective and easy to build. It only costs \$40 and I have posted all schematics/files online so anyone can make one themselves. Importance: This way, not only can solar energy be more efficient, anyone can make one to harness the clean energy of the sun.



Vancouver Island District – Nathan Hellner-Mestelman (above), “I Need More Space-time”

Of note is that Nathan is also a RASC Victoria Youth Member and at the 2023 RASC General Assembly he was one of the lecturers with a presentation on the possibility of life beyond our planet. *

Canada Day in Maple Ridge



Photos by Leigh Cummings and Carl Bandura

Monthly Dark Hours for Vancouver

by Robert Conrad

Date - July 2023 (UT -7)	Sunset	Twilight ends	Twilight begins	Sunrise	Moonrise	Moonset	Hrs Dark	Moon %	Prime time
Saturday, July 1, 2023	9:21 PM	12:00 AM	12:00 AM	5:12 AM	8:22 PM	3:42 AM	0:00:00	97.8	None
Sunday, July 2, 2023	9:21 PM	12:00 AM	12:00 AM	5:12 AM	9:34 PM	4:46 AM	0:00:00	97.8	None
Monday, July 3, 2023	9:21 PM	12:00 AM	12:00 AM	5:13 AM	10:29 PM	6:07 AM	0:00:00	99.8	None
Tuesday, July 4, 2023	9:20 PM	12:00 AM	12:00 AM	5:14 AM	11:08 PM	7:37 AM	0:00:00	98.6	None
Wednesday, July 5, 2023	9:20 PM	1:09 AM	1:26 AM	5:15 AM	11:37 PM	9:07 AM	0:00:00	94.3	None
Thursday, July 6, 2023	9:19 PM	12:58 AM	1:37 AM	5:16 AM	11:58 PM	10:34 AM	0:00:00	87.2	None
Friday, July 7, 2023	9:19 PM	12:52 AM	1:44 AM	5:16 AM	12:15 AM	11:57 AM	0:00:00	77.9	None
Saturday, July 8, 2023	9:18 PM	12:46 AM	1:50 AM	5:17 AM	12:31 AM	1:17 PM	0:00:00	67.2	None
Sunday, July 9, 2023	9:18 PM	12:41 AM	1:55 AM	5:18 AM	12:46 AM	1:17 PM	0:05:00	55.8	12:41 AM - 12:46 AM
Monday, July 10, 2023	9:17 PM	12:36 AM	2:00 AM	5:19 AM	1:03 AM	2:35 PM	0:27:00	44.4	12:36 AM - 1:03 AM
Tuesday, July 11, 2023	9:16 PM	12:32 AM	2:04 AM	5:20 AM	1:22 AM	3:53 PM	0:50:00	33.6	12:32 AM - 1:22 AM
Wednesday, July 12, 2023	9:16 PM	12:28 AM	2:09 AM	5:21 AM	1:45 AM	5:10 PM	1:17:00	23.8	12:28 AM - 1:45 AM
Thursday, July 13, 2023	9:15 PM	12:24 AM	2:13 AM	5:22 AM	2:16 AM	6:24 PM	1:49:00	15.5	12:24 AM - 2:13 AM
Friday, July 14, 2023	9:14 PM	12:20 AM	2:17 AM	5:23 AM	2:56 AM	7:33 PM	1:57:00	8.8	12:20 AM - 2:17 AM
Saturday, July 15, 2023	9:13 PM	12:17 AM	2:21 AM	5:24 AM	3:47 AM	8:31 PM	2:04:00	3.9	12:17 AM - 2:21 AM
Sunday, July 16, 2023	9:12 PM	12:13 AM	2:25 AM	5:25 AM	4:48 AM	9:18 PM	2:12:00	1.0	12:13 AM - 2:25 AM
Monday, July 17, 2023	9:11 PM	12:09 AM	2:28 AM	5:27 AM	5:55 AM	9:53 PM	2:19:00	0.2	12:09 AM - 2:28 AM
Tuesday, July 18, 2023	9:10 PM	12:06 AM	2:32 AM	5:28 AM	7:05 AM	10:20 PM	2:26:00	1.3	12:06 AM - 2:32 AM
Wednesday, July 19, 2023	9:09 PM	12:03 AM	2:36 AM	5:29 AM	8:15 AM	10:40 PM	2:33:00	4.3	12:03 AM - 2:36 AM
Thursday, July 20, 2023	9:08 PM	11:59 PM	2:39 AM	5:30 AM	9:23 AM	10:57 PM	2:40:00	9.0	11:59 PM - 2:39 AM
Friday, July 21, 2023	9:07 PM	11:56 PM	2:42 AM	5:31 AM	10:31 AM	11:10 PM	2:46:00	15.3	11:56 PM - 2:42 AM
Saturday, July 22, 2023	9:06 PM	11:53 PM	2:46 AM	5:33 AM	11:38 AM	11:23 PM	2:53:00	22.9	11:53 PM - 2:46 AM
Sunday, July 23, 2023	9:05 PM	11:49 PM	2:49 AM	5:34 AM	12:48 PM	11:36 PM	3:00:00	31.7	11:49 PM - 2:49 AM
Monday, July 24, 2023	9:03 PM	11:46 PM	2:52 AM	5:35 AM	12:48 PM	11:49 PM	3:03:00	41.4	11:49 PM - 2:52 AM
Tuesday, July 25, 2023	9:02 PM	11:43 PM	2:56 AM	5:36 AM	2:00 PM	12:05 AM	2:51:00	51.8	12:05 AM - 2:56 AM
Wednesday, July 26, 2023	9:01 PM	11:40 PM	2:59 AM	5:38 AM	3:15 PM	12:24 AM	2:35:00	62.3	12:24 AM - 2:59 AM
Thursday, July 27, 2023	9:00 PM	11:36 PM	3:02 AM	5:39 AM	4:35 PM	12:51 AM	2:11:00	72.7	12:51 AM - 3:02 AM
Friday, July 28, 2023	8:58 PM	11:33 PM	3:05 AM	5:40 AM	5:56 PM	1:28 AM	1:37:00	82.4	1:28 AM - 3:05 AM
Saturday, July 29, 2023	8:57 PM	11:30 PM	3:08 AM	5:42 AM	7:12 PM	2:23 AM	0:45:00	90.5	2:23 AM - 3:08 AM
Sunday, July 30, 2023	8:55 PM	11:27 PM	3:11 AM	5:43 AM	8:15 PM	3:35 AM	0:00:00	96.5	None
Monday, July 31, 2023	8:54 PM	11:24 PM	3:14 AM	5:44 AM	9:02 PM	5:03 AM	0:00:00	96.5	None

Vancouver

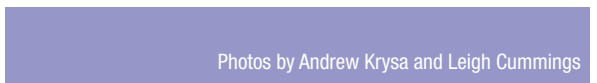
Total 42:20:00

Date - August 2023 (UT -7)	Sunset	Twilight ends	Twilight begins	Sunrise	Moonrise	Moonset	Hrs Dark	Moon %	Prime time
Tuesday, August 1, 2023	8:52 PM	11:21 PM	3:17 AM	5:46 AM	9:35 PM	6:36 AM	0:00:00	99.5	None
Wednesday, August 2, 2023	8:51 PM	11:18 PM	3:20 AM	5:47 AM	10:00 PM	8:07 AM	0:00:00	99.3	None
Thursday, August 3, 2023	8:49 PM	11:15 PM	3:23 AM	5:48 AM	10:19 PM	9:35 AM	0:00:00	95.8	None
Friday, August 4, 2023	8:48 PM	11:12 PM	3:26 AM	5:50 AM	10:36 PM	10:59 AM	0:00:00	89.4	None
Saturday, August 5, 2023	8:46 PM	11:09 PM	3:29 AM	5:51 AM	10:51 PM	11:00 AM	0:00:00	80.8	None
Sunday, August 6, 2023	8:45 PM	11:06 PM	3:31 AM	5:53 AM	11:08 PM	12:21 PM	0:02:00	70.6	11:06 PM - 11:08 PM
Sunday, August 7, 2023	8:43 PM	11:03 PM	3:34 AM	5:54 AM	11:26 PM	1:41 PM	0:23:00	59.7	11:03 PM - 11:26 PM
Monday, August 8, 2023	8:41 PM	11:00 PM	3:37 AM	5:55 AM	11:48 PM	3:00 PM	0:48:00	48.6	11:00 PM - 11:48 PM
Tuesday, August 9, 2023	8:40 PM	10:57 PM	3:39 AM	5:57 AM	12:17 AM	4:16 PM	1:20:00	38.0	10:57 PM - 12:17 AM
Wednesday, August 10, 2023	8:38 PM	10:54 PM	3:42 AM	5:58 AM	12:54 AM	5:27 PM	2:00:00	28.1	10:54 PM - 12:54 AM
Thursday, August 11, 2023	8:36 PM	10:51 PM	3:45 AM	6:00 AM	1:42 AM	6:28 PM	2:51:00	19.4	10:51 PM - 1:42 AM
Friday, August 12, 2023	8:34 PM	10:48 PM	3:47 AM	6:01 AM	2:40 AM	7:18 PM	3:52:00	12.1	10:48 PM - 2:40 AM
Saturday, August 13, 2023	8:33 PM	10:45 PM	3:50 AM	6:03 AM	3:46 AM	7:56 PM	5:01:00	6.4	10:45 PM - 3:46 AM
Sunday, August 14, 2023	8:31 PM	10:42 PM	3:52 AM	6:04 AM	4:55 AM	8:25 PM	5:10:00	2.5	10:42 PM - 3:52 AM
Monday, August 15, 2023	8:29 PM	10:39 PM	3:55 AM	6:05 AM	6:05 AM	8:46 PM	5:16:00	0.5	10:39 PM - 3:55 AM
Tuesday, August 16, 2023	8:27 PM	10:37 PM	3:57 AM	6:07 AM	7:14 AM	9:04 PM	5:20:00	0.3	10:37 PM - 3:57 AM
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Thursday, August 18, 2023	8:23 PM	10:31 PM	4:02 AM	6:10 AM	9:29 AM	9:31 PM	5:31:00	5.7	10:31 PM - 4:02 AM
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Sunday, August 21, 2023	8:18 PM	10:22 PM	4:09 AM	6:14 AM	1:01 PM	10:10 PM	5:47:00	26.3	10:22 PM - 4:09 AM
Monday, August 22, 2023	8:16 PM	10:20 PM	4:12 AM	6:16 AM	1:01 PM	10:27 PM	5:45:00	35.9	10:27 PM - 4:12 AM
Tuesday, August 23, 2023	8:14 PM	10:17 PM	4:14 AM	6:17 AM	2:18 PM	10:50 PM	5:24:00	46.4	10:50 PM - 4:14 AM
Wednesday, August 24, 2023	8:12 PM	10:14 PM	4:16 AM	6:18 AM	3:36 PM	11:21 PM	4:55:00	57.4	11:21 PM - 4:16 AM
Thursday, August 25, 2023	8:10 PM	10:11 PM	4:18 AM	6:20 AM	4:52 PM	12:06 AM	4:12:00	68.5	12:06 AM - 4:18 AM
Friday, August 26, 2023	8:08 PM	10:08 PM	4:20 AM	6:21 AM	6:00 PM	1:09 AM	3:11:00	78.9	1:09 AM - 4:20 AM
Saturday, August 27, 2023	8:06 PM	10:06 PM	4:23 AM	6:23 AM	6:53 AM	2:28 AM	1:55:00	88.0	2:28 AM - 4:23 AM
Sunday, August 28, 2023	8:04 PM	10:03 PM	4:25 AM	6:24 AM	7:31 PM	3:58 AM	0:27:00	94.9	3:58 AM - 4:25 AM
Monday, August 29, 2023	8:02 PM	10:00 PM	4:27 AM	6:26 AM	7:59 PM	5:31 AM	0:00:00	94.9	None
Tuesday, August 30, 2023	8:00 PM	9:57 PM	4:29 AM	6:27 AM	8:21 PM	7:02 AM	0:00:00	99.0	None
Wednesday, August 31, 2023	7:57 PM	9:55 PM	4:31 AM	6:29 PM	8:39 PM	8:30 AM	0:00:00	99.8	None

Vancouver

Total 85:55:00

Astromony Day at SFU



Photos by Andrew Krysa and Leigh Cummings

Members' Gallery



Cat's Eye Nebula by Phil Lobo

The Cat's Eye Nebula (NGC 6543) is a bright planetary nebula located in the constellation Draco and is visible all year. It is about 3000 light years away. The author was able to observe the nebula quite easily from the city without a filter using a 150mm Newtonian. At 80x magnification, it appeared as a bright grey cloud about the size of Jupiter. The magnification helped to distinguish it from nearby stars. The image above shows the bright inner nebula that is visible in modest telescopes as a small white oval, and also a considerably larger dim, irregular outer halo. (The author is not certain if large amateur telescopes can detect the outer halo.) The inner nebula is shown at a larger scale to the right. One of the two oval rings that are perpendicular to each other is not quite what it seems, as can be seen by looking up the Hubble Telescope's spectacular image. The Cat's Eye Nebula is considered one of the most complex planetary nebulae known. (200mm f3.9 Newtonian, QHY 163M, 40min Ha, 40min OIII).





The Whirlpool Galaxy (M51) by Rob Lyons

It took this galaxy's light 31 million years of travel through the cold, dark vacuum of space to reach us. M51 is interacting with its neighbour, NGC 5195, in a cosmic dance, albeit an incredibly slow one! For this image, I used my Celestron Edge HD 8" telescope at the full 2032mm and f10. I used a ZWO ASI533MC Pro camera along with an Optolong L-Pro filter to help cut down on light pollution. I also made use of my ASI533MM Pro monochrome camera along with an Antlia 3nm hydrogen alpha filter to help bring out the red in some of the star forming regions of the galaxy. By shooting this target when it was at its highest point in the sky, I managed to get a really clean image from right in the city. When a target is at zenith directly overhead, the effect of both the atmosphere and light pollution are considerably lessened compared to when they are closer to the horizon.