



Upcoming Events

RASC Winnipeg Centre Monthly Meetings (via Zoom)

May 13, 2022
June 10, 2022

Members' Observing Nights

May 14, 2022
June 11, 2022

Oak Hammock Marsh Astronomy Night

Cancelled for telescopes

Winnicentrics

The Royal Astronomical Society of Canada - Winnipeg Centre

Regular meetings of the Winnipeg Centre are normally held in the Robert B. Schultz Lecture Theatre in St. John's College at the University of Manitoba, 92 Dysart Road. Free parking is available in the lot across the street. The theatre is on the lower (basement) floor of the College. Meetings are usually held on the second Friday of each month from 7 p.m. to 10 p.m. After the meetings, members who wish to do so usually retire for pizza and more conversation about astronomical subjects.

However, due to the current restrictions imposed by Manitoba Health for the COVID-19 Pandemic all meetings are being held via Zoom at 7:00 PM on regular meeting nights as above. Regular meetings will resume once restrictions are eliminated and our members can meet in safety. We miss you!

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<https://bit.ly/2FrcZJZ>



<https://bit.ly/3iSmFed>

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Winnicentrics is published six times or more each year by the Winnipeg Centre, RASC. Winnicentrics is produced by and for the members of the Winnipeg Centre. Any opinions expressed are those of the author. Any questions or comments please email: newsletter@winnipeg.rasc.ca Or contact one of your Councillors above

Quick Notes

The Glenlea Observatory LX200 / Dome is CLOSED due to flood risk. Please contact observatory@winnipeg.rasc.ca for current info, assistance, or to request training on the telescope and dome. Glenlea Warm Room and Pad are also CLOSED.

Members Observing Nights are held the Saturday night after the Monthly meeting (weather permitting) at the observatory.

Member Meetings continue to be virtual due to COVID restrictions, please see your email or the RASC Winnipeg Forums for Zoom information.

Boston Pizza after-meeting social events continue to be virtual due to COVID restrictions, please see your email or the RASC Winnipeg Forums for Zoom information.

Visit our web site at:

www.winnipeg.rasc.ca

Visit our Facebook group at:

www.facebook.com/groups/rascwinnipeg

OPEN HOUSE at Lockhart Planetarium

Last Wednesday
of Every Month

240 University Coll
7:00 p.m.

CANCELLED until
further notice

UNIVERSITY
OF MANITOBA



President's Corner

By Dennis Lyons, RASC Winnipeg Centre President

Well, if the weather would just cooperate, we could all get together under the stars again. With the uncooperative weather Council has closed Glenlea until the flood risk subsides.

Council continues to work on your behalf, and I am pleased to announce that The RASC Winnipeg Centre is back in the public outreach business. There are currently three confirmed events with more to hopefully be announced once the details are confirmed. Friday May 6th from 5-9 is a joint event with the Manitoba Museum downtown. We are hoping to have material for the public about the Artemis Program from the Canadian Space Agency. Saturday May 7th from 1030-430 will be at Chapters Polo Park for Astronomy Day where a display booth and solar observing will happen. Later that evening at McNally Books at Grant Park there will be an evening observing event. If you want to volunteer just let myself or one of the members of Council know so we can plan accordingly.

The committees working on the Bylaw review and Policies and Procedures are making progress and the goal is to present some documents in the fall. Thank you to Judy and the Mikes for keeping this moving. In addition to this Mark Irvine is developing a Finance Policy and Procedures Manual.

Being a member of the RASC Winnipeg Centre provides you with the opportunity to volunteer and hone your skills. The Council is recruiting for the following positions: Explore the Universe Coordinator, Volunteer Coordinator, Mentor Coordinator, Meeting Coordinator, Light Abatement Committee, Youth Outreach Coordinator, and a Spring Star Party Coordinator. Most of these positions are expected to take up no more than a couple of hours per month. If you would like more information, please contact one of the Council members.

Mike Karakas is pleased to let everyone know that the Club Loaner Scope Program is again operating and if you want to borrow a scope or binoculars, please contact him directly.

Soon a new system of contacting members and sharing information will be rolled out over the next few months. It will be on the Groups.io format and has been used successfully by other Centres for some time now.

Council is reviewing the IT and other devices that will be required for the meetings to be broadcast on social media and possibly zoom so the members outside of Winnipeg can continue to participate.

I would like to take this time to thank Gord Tulloch for all the great work he has done for the Centre as the Vice President and Webmaster. Gord is stepping down from the VP position but will continue as the Winnicentrics Newsletter Editor. Please share your thanks with him the next time you see him.

As you can see the Centre is springing into action again and it is a wonderful feeling. Hopefully we will see you at one of these first public events and have a chance to chat.

Clear Skies,
Dennis Lyons

Editor's Message

By Gord Tulloch, RASC Winnipeg Centre Newsletter Editor

As I write this, we are bracing for yet another Colorado Low bringing 30-50mm of rain to an already saturated Winnipeg, but we have seen a few good evenings that have enabled us to get out under the stars while the nights come early, the weather is tolerable, and the mosquitos still sleep! I hope members have been able to take advantage of the good nights we've been lucky to encounter. I'm personally thrilled to have been able to get my backyard observatory back up and running for the new season at long last! My new (to me) scope and various gear accumulated over the winter is in place so I'm eager to get it put into use. I absolutely disavow any responsibility for the rain however!

You'll notice this issue is a bit thinner than most, because I have not received any contributions from the members. While I love to write about astronomy, and often write articles destined for my website (www.gordtulloch.com) that I'm pleased to share with the members, there is only so much the newsletter editor can write without the effort leaving the realm of "fun hobby stuff" to the realm of "not-fun work stuff".

Articles and images for this newsletter might be a great way to start getting involved in your Centre. Even a short email can be turned into an article. So, lets do this – next issue I would like to publish a feature called "My Astronomy Journey". Over the next few months, send an email in to newsletter@winnipeg.rasc.ca telling me your story, and include a couple of snapshots if you can. Total newbie or sophisticated pro, we all have a story about our journey. Tell me yours!

My last newsletter as Editor will be the November/December 2022 issue. If you think you might be interested in taking on the newsletter, it would be great to work on it together for a few months. Feel free to contact me at newsletter@winnipeg.rasc.ca to find out whats involved and start working into the role slowly.

In the meantime, here's wishing clear skies to all and a pleasant start to the summer.

Upcoming Meetings

May 13 2022 Meeting (Zoom)

- Silvia Graca "How I built a backyard observatory", Beginner's Session
- Bryan Stach, RASC Winnipeg Centre "Whats Up?"
- Silvia Graca SWSP Update
- Dr. Danielle Pahud, University of Manitoba "What's New?"
- Main Speaker: Darren Hennig – Dark Nebula: Welcome to the Dark Side

June 10, 2022 Meeting (Zoom)

- TBA, Beginner's Session
 - Bryan Stach, RASC Winnipeg Centre "Whats Up?"
 - Dr. Michelle Boyce, University of Manitoba "What's New?"
 - Main Speaker: Dennis Lyons – Green Laser Pointer Training & Certification
-

Dr. Tapping's Corner: High Energy Astronomy

By Ken Tapping, NRC-CNRC



Fermi Gamma Ray Space Telescope (NASA)

When we look at the sky on a clear night, far from city lights, we see blackness, speckled with a few thousand stars, and the silvery smear of the Milky Way. Its peaceful tranquillity is deceptive, because there is a lot of high-energy stuff going on. To really see it, we need to look at other wavelengths.

Light is an electromagnetic wave; so are ultraviolet, infrared, radio, X-ray and gamma ray emissions. The only difference between them is their wavelength. Radio waves are the longest: kilometres to a millimetre or so. Infrared waves have lengths ranging from a millimetre to maybe 400 nm (a “nm” is short for nanometre, which is a billionth of a metre). The electromagnetic waves we can see, which we call “visible light” have lengths between about 800 nm (red)

to 400 nm (blue). Then we get to ultraviolet (400 – 10nm) then X-rays (10 -0.01nm). Waves with smaller wavelengths are called gamma rays. Electromagnetic waves come in indivisible packets called quanta. The shorter the wavelength, the more energy contained in that quantum. To produce quanta of a given wavelength means the appropriate amount of energy needs to be available. Making gamma rays requires extreme amounts of energy. Making something “gamma ray hot” requires temperatures of billions of degrees. These may occur in exploding giant stars, but most cosmic gamma rays are not produced by heat.

An example of a source of “non-thermal” gamma rays is a lump of radioactive material, like radium. The atoms of such substances are highly unstable, and tend to disintegrate into smaller atoms, a process

Dr. Tapping's Corner: High Energy Astronomy (cont.)

called nuclear fission. This releases a lot of energy, with some of it in the form of gamma rays. Since producing gamma rays requires large amounts of energy, they provide a powerful tool for studying the high-energy universe.

Gamma rays damage cells and destroy living tissue, so it is fortunate that incoming cosmic rays are blocked by our planet's atmosphere. This means that to observe them, we need to put our "gamma ray telescopes" in space. The latest of these, the Fermi Gamma Ray Space Telescope, launched in 2008, is the latest of a series of orbiting gamma ray observatories.

The gamma ray sky shows a bright band coinciding with the Milky Way, and a sprinkling of many starlike sources scattered over the sky. Some shine more or less steadily; some vary in brightness over time. Others appear for a few days or so and vanish. Then there are some that flash on for a few milliseconds to seconds, and then vanish. The Moon glows dimly in gamma rays, due to it being bombarded with cosmic rays, highenergy particles pervading our galaxy.

We think the gamma ray glow from the Milky Way is produced by cosmic rays. When these smash into dust grains or quanta of ultraviolet radiation, they generate quanta of gamma rays. Exploding giant stars can produce gamma rays by nonthermal, nuclear processes. Occasionally we see some in solar flares. A particularly interesting case arises when there are two stars closely orbiting each other. One of the stars has aged to the point where it is a white dwarf. Then, as the other star gets old, it starts to swell, entering its own prewhite-dwarf stage. This leads to its older partner pulling that material down onto its surface. This accumulates until a critical mass has accumulated, and it all explodes as a sort of super-sized hydrogen bomb, giving off a burst of gamma rays. Most galaxies have black holes in the middle. Some have really massive black holes. When they pull in a particularly large mouthful of material, they produce floods of gamma rays. Gamma rays reveal a dynamic, exotic view of the universe. However, since we enjoy those dark, clear, tranquil skies, it is a good thing we can't see them.

RASC Winnipeg Centre Certificate Recipients

Explore the Universe

Gail Wise, Mike Stephens, Janet Pollock, Janice Low, F. Lindsay Price, Ralph Croning, Terra Jentsch, Corey LeBerge, Corrine Robinson, Kevin Dromereski, Robin Clarke

Explore the Moon - Telescopic

Corrine Robinson, Kevin Dromereski, Margaret Childs

Messier Catalogue

Grant Gussie, Kevin Black, Richard Turenne, John Smith, Alan Sherlock, Timothy Zacharias, Gail Wise, Raymond Andrejowich, Stan Runge, Bernie Plett, Michael Karakas, Sean Ceaser, Gilbert Raineault

Finest NGC

Kevin Black, Gail Wise, Stan Runge, Mike Stephens, Gilbert Raineault, Sean Ceaser

Isabel Williamson Lunar

Mike Stephens

Herschel 400

Gilbert Raineault, Mike Stephens

Astroimaging - Deep Sky

Sheila Wiwchar

Astroimaging - Wide Field

Sheila Wiwchar

From the RASC Winnipeg Workshops: DIY Photometric B and V Filters

By Gord Tulloch, RASC Winnipeg Centre

I've been interested in photometry for quite a long time, starting in the early 2000s when I bought a photometric V (visual spectrum) filter paired with a monochrome camera to take images of variable stars and use differential photometry techniques to estimate the brightness of the variable. However after the kids arrived I ended up selling off my gear and putting the observatory in mothballs until 2019 when the kids were old enough to not want Mom and Dad around and we could begin to indulge in hobbies again! However I did spend some time continuing to dabble in photometry using iTelescopes, notably taking a lot of images of the star AG DRA which went into outburst while I was watching – very cool!

Photometry is the science of determining brightness of stars using a series of standardized filters of varying bandpasses: U (Ultra violet) B (Blue) V (Visual or yellow-green) R (Red) I (Infrared) are the bands that became standard between 1990 and 2000. By taking pictures of stars through a series of these filters, the true color of the star (notably it's B–V colour index, which is a good indication of the temperature of a star) can be calculated. In conjunction with the spectral type, B-V can also be used to measure interstellar absorption. The big problem for citizen scientists for photometry is the cost of these filters, generally \$200-400 each. So despite the fact we have relatively cheap monochrome CMOS and CCD cameras and filter wheels, filters are a big obstacle to overcome.

One possible alternative is the use of OSC (one shot color) and DSLR (digital single lens reflex cameras) which essentially are monochrome sensors with Bayer matrices in front of the pixels which provide RGB (in fact most cameras have 4 segment RGGB matrices). AAVSO has published a guide to using these cameras for photometry so you can certainly submit observations using OSC cameras.

While I have used DSLRs for a lot of my imaging, I've decided to move to color CMOS cameras for EAA (electronically assisted visual astronomy) and monochrome CMOS cameras for astrophotography, spectroscopy, and photometry. I find dedicated astronomy cameras to be much less cumbersome and cranky to deal with than DSLRs, since I never look through a viewfinder. My current mono camera is a ZWO ASI183M with a 1" Sony IMX183 sensor with a 5496x3672 pixel resolution and a 2.4µm pixel size along with a ZWO 5 position USB filter wheel. An ASI294MC camera is used for EAA.

With telescopes becoming more and more automated, and particularly with the advent of easily used plate solving to ensure my telescope was actually pointing at the right star (a big problem during my first attempts) my interest in doing photometry is rekindled, but the cost of filters has kept me using iTelescopes (most of which are equipped with UBVRI filters) for my observations. However, an intriguing article from the British Astronomical Association caught my eye – "*Low-cost BVRI Filters for CMOS/CCD Photometry*" by Tex Moon (https://britastro.org/vss/low_cost_BVRI_filters.pdf). Tex also found the cost of photometric filters to be too high for the average citizen scientist and set up to test regular Wratten planetary imaging filters for use in photometry. His results were good enough that I did the same thing, starting with the important B and V filters.

DIY Photometric B and V Filters (cont.)

Based on Tex's comments that GSO planetary filters seem to have good transmission characteristics that match his results, I set out to find some rebranded GSO filters on Amazon. The Astromania filters I discovered appear to be GSO filters, so I picked up a Wratten #56 Green and #12 Yellow (for a V filter) and a Wratten #38 Blue filter with a SVBONY IR UV cut filter (for a B filter). Each of these filters was approximately \$25 so for \$100 I got the equivalent of \$800 worth of photometric filters. Assuming they work!



Wratten #56 and #12 filters produce Photometric V filter



Wratten #38 Blue and IR/UV Cut product Photometric B filter

Eliminating the need to swap filters in my ZWO electronic filter wheel to do science imaging versus regular astrophotography would be nice. Since the V filter is fairly close to green and B filter is fairly close to blue, based on published spectral responses, I decided to just replace my standard blue and green filters with my DIY photometric filters and see what the results look like. This would mean my 5-slot filter wheel would be normal Red, V for green, B for blue, normal IR/UV cut for Luminance, and my Star Analyzer 100 grating for spectroscopy. No swaps needed!

The only issue with mounting the DIY V and B filters in my filter wheel was physical size – a pair of filters screwed together are too long to fit. Following the advice in the BAA article I decided to unmount one of the filters and added it to the second filter housing, which of course meant I needed to disassemble the filter. Each filter has a pair of tiny slots in a threaded ring that threads into the filter housing to secure the filter, so back to Amazon for the correct tool to disassemble filters. A \$22 tool purchase later I was in business. I've needed this tool for ages so it's nice to finally need one enough to get one!



Spanner tool used for Optical Work

Members Image Gallery

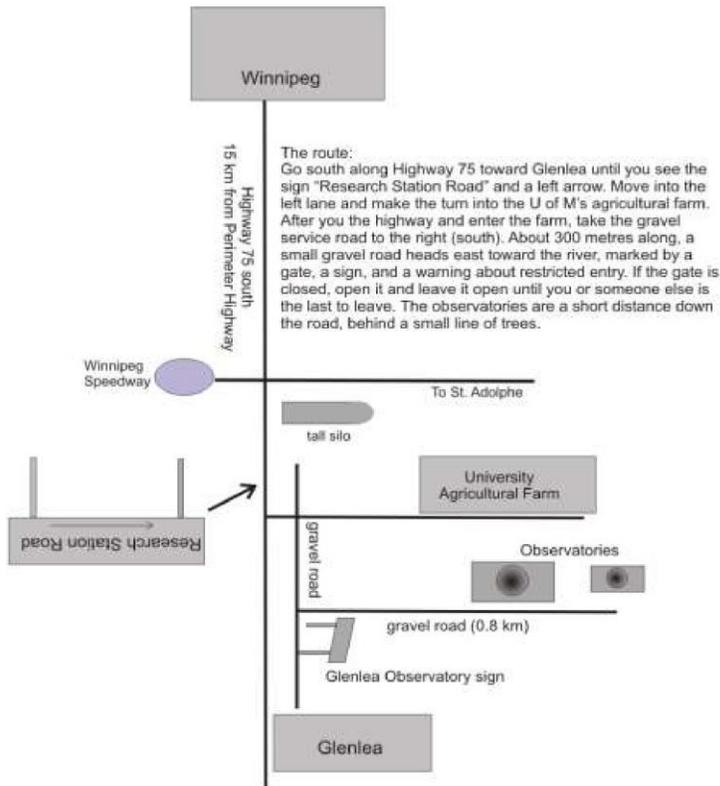


Ziggy Hammerling – M42 with a WO ZS81. 0.8 reducer ASI385, ASIAIR Plus



Ian Dixon – M104 - One of my favourite galaxies. The central bulge and the very prominent ring of dust characterize this beautiful galaxy. I used a 120mm Esprit apo (first light) 2600 mc pro camera 1.8 hours integration (22 x 300 sec @ 100 gain; - 20°C cooling) 20 flats 20 bias 10 darks (300 second exposures) stacked with APP, secondary processing with Pixinsight (GAME script for masking)

Glenlea Observatory Information



The Winnipeg Centre maintains a working observatory, pad, and warm room at the University of Manitoba's Research Farm. The observatory contains a 30 cm Meade LX200 telescope on a fork mounting. Members of the Centre may sign up to use this telescope by emailing:

observatory@winnipeg.rasc.ca

provided they have first taken a short instruction course on its use.

The Meade provides outstanding views of the night sky. Its large aperture collects more than 1800 times as much light as the human eye. It is capable of magnifying more than 500 times under favourable conditions.

The warm room also provides a convenient place for members to take refuge from winter temperatures and summer mosquitoes, or to wait out a passing cloud. The building also provides desk space and lighting for planning a night's observing session. A concrete pad in front of the warm room and observatory provides a convenient space to place members' telescopes while conducting personal observing programs. A computer is available as well.

Etiquette requires that you approach the observing site with your headlights off if that's possible on your model of car. Headlights should remain off, but you can still use your parking lights to drive. Proceed slowly, and be careful about parked cars along the road, or people walking. If you cannot turn off your headlights, make a cardboard or garbage bag mask to dim the lights or, raise the parking brake lever one click-stop. This usually turns the headlights off on most, if not all, cars. You might wish to turn around at the end of the road so that you are facing the direction back toward the highway at the end of the evening.

Remember to turn off all lights, make sure doors are locked, and close the gate if you are the last one to leave!

