

Nominations

As the RASC Windsor Centre's immediate Past President, I am also the Nominations Committee Chair, entrusted to establish the proposed slate of Council Members and Officers for 2022.

This slate has been developed based on my having contacted all current Council Members and Executives to ask of their intentions to stay on Council and/or in their Executive positions and anyone from the General Membership who has put their name forward up to the end of November 15, 2021. Therefore the Nomination Period is now closed and Nominations "from the Floor" will not be entertained at the Virtual AGM on November 16, 2021.

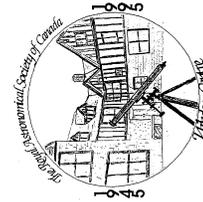
Please further note that on the current Proposed Slate for 2022, that the Executive positions of 1st and 2nd Vice President, Secretary as well as the Director of Observing reports are Open Positions and need to be filled. Further note, that the Appointed Positions as indicated on the Proposed Slate, which largely mirrors the current Appointed Positions are not voted on but are ultimately determined and set by the new incoming Council and Executive at the first Council Meeting in 2022 (usually in February) and may be filled by a Member in good standing. We are always looking for volunteers and this is a good way to get involved.

Thank you,
Michael Mastronardi
Past President – RASC Windsor Centre / Nominations Committee Chair"

Astrophotos



Randy Drum continues to add data to his image of the Pacman Nebula NGC 281 captured with his 100mm Skywatcher Esprit and ASI2600mc cooled camera.



AURORA



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The Royal Astronomical Society of Canada - Windsor Centre

November 2021

Flyer

Next Meeting

Tuesday, January 18, 2022

via

Online Zoom Meeting
begins at 7:30 p.m.

Speaker: TBA

Topic: TBD

Upcoming Events

Partial Lunar Eclipse: On the night of **Thursday November 18th** a partial (97%) lunar eclipse will occur. **Maximum eclipse is at 3:03 a.m.** when the Moon will be in the photogenic field of Taurus near the Pleiades and Hyades.

Double Shadow Transit: On **Tuesday November 23rd** from just before **7:00 until 9:30 p.m. EST** you can watch the shadows of Ganymede and Callisto transit the disk of Jupiter.

Geminid Meteor Shower: Peaks overnight on **Monday, December 13th**. Best views will be after the waxing gibbous moon sets at **3:30 a.m. EST until dawn**. You can catch **50 or more** meteors per hour from a dark site.

Winter Solstice: Winter officially begins for the northern hemisphere at **10:59 a.m. EST** on **Tuesday December 21st**.

Mercury and Venus: The year ends with a close encounter of **Mercury and Venus** on **December 28th and 29th**. Watch Mercury slide past Venus low in the southwestern sky after sunset.

Monthly Meeting Minutes October 19, 2021

The monthly meeting of the **Royal Astronomical Society of Canada - Windsor Centre** was held via Zoom Online Meeting.

Windsor Centre **President, Mahayarrahh-Starr Livingstone** chaired the meeting. Starr called **the meeting to order at 7:35 p.m.** and welcomed the members and our guest speaker **Dr. Laura Parker** to the online meeting.

Starr invited members to review the **minutes of the September 21, 2021 general meeting** which were printed in the Aurora newsletter. A **motion to accept the minutes** was made by Susan Sawyer-Beaulieu and seconded by Steve Pellarin. **MOTION CARRIED.**

Nancy Ng offered some words of recognition and appreciation to Steve Mastellotto and Greg Mockler. Steve is stepping aside from his position as Editor of the **Aurora, Director of Observing and Web Master.** Our Centre has benefited greatly from Steve's years of dedication in these areas. His amazing knowledge of astronomy has always made him the go-to guy for any problems we might have. His unique ability to focus the group on what's most important has been of immeasurable value. Greg will be leaving his position of **10 years as our Treasurer.** His flawless work has produced a pristine and professional record of our Centre's finances. There will be something more given to Greg later. Starr Livingstone will continue on as our president. During his first year he has affectively steered us through the storm that is Covid. He has found great speakers for these meetings. He and Brian Simpson have worked to create a calendar for 2022. Starr organized a workgroup to sand and stain the deck at Hallam and recently set up a station representing our Centre at Open Streets Windsor.

Director of Observing Report for October 19 to November 16: Celestial Splendors by Dr. Susan Sawyer-Beaulieu, PhD., P.Eng. Susan began by sharing multiple photographs of energetic members sanding and staining the deck at Hallam observatory. **Thanks to Starr Livingstone, Monica, Rob and Jeremy Hansen, Donna Ronconi, Nancy Ng and Laura Burgess).**

Susan continued by displaying **member's images** with accompanying detailed exposure information. Two compelling **Milky Way images** captured by **Jeff Peacock and Jack Zhu** were shown. They had found very dark skies at **Port Franks and Haliburton County** respectively. **Randy Groundwater's** image of **Orion constellation** was photographed from his backyard at 3:30 a.m. **Randy Drumm** worked with 200 stacked images of 4 minutes each to give us the glowing **Bubble Nebula** seemingly floating within the constellation of Cassiopeia. This is NGC 7635 which was accompanied by the open cluster Messier 52. **Brian Simpson's** 5.5 hrs of integration revealed a colourful portion of the **Eastern Veil Nebula** which is found tucked under the wing of Cygnus the Swan. Susan shared a few methods to accurately view this supernova remnant along with a star chart to aid in location. **Art Rae** offered us impressive images of the **Moon and Venus** photographed from his backyard in River Canard. A beautiful bright orange shot of the **Sun** was successfully captured by **Juliana Grigorescu** with the use of her Coronado Ha PST.

Susan presented the **moon phases** for October and November. The location of the constellations in the night sky for tonight and up to our next meeting were displayed. The times and dates for future opportunities to view **Mars, Mercury and Venus** were listed.

Main Speaker

The Dark Universe, Professor Laura Parker, Department of Physics & Astronomy, McMaster University. Professor Parker provided detailed scientific research to help us better understand some of the observational evidence regarding **dark matter and dark energy.** A pie-chart revealed that dark matter and dark energy combine to make up around **95% of the universe.** They have both proven to be difficult to directly observe or study. For instance, dark matter has mass and gravity but it doesn't give off light or interact with light in any way. Scientists are now using the **motion of galaxies** which provides a window into understanding dark matter and dark energy. From a long list of methods to study these mysterious energies, Laura focused on three useful approaches. **Galaxy Clusters, Galaxy Rotation Curves and Gravitational Lensing** have each provided interesting data.

As early as 1933 a Swiss astronomer **Fritz Zwicky**, working out of Caltech was studying the motion of **galaxy clusters.** His research provided a way to calculate the mass of a cluster of galaxies. His methodology is still being used today. Move up to the early 1970's and find observational astronomer **Vera Rubin** measuring how fast stars and gas are moving around the centre of some nearby galaxies. These **galaxy rotation curves** provide information on the mass of a galaxy. An unexpected finding from this research revealed that matter rotated just as fast at the far edges of a galaxy as it did close to the core. In order to reconcile these findings researchers believed there must be large amounts of mass present that can't be seen or detected. This mass become known as dark matter. **Gravitational lensing** is another independent way to measure how much mass is out in the universe. Laura stated that this method is a natural consequence of **Albert Einstein's** view of gravity. Einstein believed that out in space, light would be affected by the mass of a large object. Today **advanced technologies** are able to measure this lensing disturbance and arrive at the mass of certain galaxies. With this data they concluded that the total mass of a galaxy must also include vast amounts of dark matter.

Research on exploding stars provides information on dark energy. Laura explained how the **brightness of Type 1a Supernovae** are used to measure large distances in space. After applying some complicated math it became evident there must be some type of dark energy driving the **accelerated expansion** of the universe. Professor Parker gave us a glimpse into some of the research being done to better understand the mysteries universe.

Meeting adjourned at 9:20 p.m.. Recorded by Nancy Ng, Secretary, RASC Windsor Centre.