



Photo: Rick Stankiewicz



January 18 to January 24, 2021

## RASC Weekly: Mysterious Dark Matter, Tracing stars, and Star Parties!

Tuesday, January 19, 2021 - 15:30 to 17:00 EST

### Insider's Guide to the Galaxy: The Science Behind Astrology

Planetary alignments, ascending and descending nodes, retrograde and prograde motion, where do all those astrology terms come from? Many astronomers will walk away when they hear someone start talking about it, but astrology's origins are deeply rooted in astronomy itself. We'll be talking about the astronomical origins of astrology, and discussing what is actually happening when people talk about Mercury being in retrograde.

[Register for Insider's Guide to the Galaxy](#)

Wednesday, January 20, 2021 - 19:30 to 21:30 EST

### Speaker's Night: Searching for the mysterious dark matter (Toronto Centre)

Speaker: Prof. Nassim Bozorgnia

The dark matter problem is one of the most exciting puzzles in our understanding of the Universe. The atoms in our bodies, planets, and stars make up only about 15% of the total matter content of the Universe. The mysterious dark matter makes up the other 85%. All evidence for dark matter comes from its gravitational interaction with ordinary matter. However, the nature and distribution of dark matter in the Universe still remain unknown. A variety of experiments are currently operating around the globe and searching for the dark matter particle. To interpret the results of these experiments, we need to know how dark matter is distributed in our Galaxy. I will describe how we can use astronomical data and cosmological simulations of galaxy formation to map the dark matter content in our Galaxy, and utilize this map to unravel the particle nature of dark matter.

Nassim Bozorgnia is an assistant professor in the Department of Physics and Astronomy at York University.

Who can attend: Everyone

Fee: Free

Registration: Not required

Organized by: RASC, Toronto Centre

[Join the Speaker's Night](#)

Thursday, January 21, 2021 - 21:30 to 23:00 EST

Thursday, January 21, 2021 - 19:30 to 21:00 MT

### RASC Calgary: Tracing the Lives, Deaths, and Explosions of Massive Stars

Presented by Sarafina Nance

Supernovae are cosmic events of gigantic power. Their explosions can shine as bright as a galaxy, a pinprick of extraordinarily bright light in the night sky. What is less well-understood, however, is which stars reach the point of explosion and how they evolve to their deaths. Interestingly, their explosions provide astronomers with key tools to uncover fundamental aspects of our Universe. While we know that the Universe is expanding at an accelerated rate due to dark energy, the rate of the expansion of the Universe is not well-constrained. Supernovae provide us with independent ways to measure this expansion and works to resolve one of the most pivotal questions in astronomy: How fast is the Universe really expanding?

Safina's Biography:

Sarafina received her undergraduate degree from the University of Texas at Austin's College of Natural Sciences. Her honours thesis was titled: "A Theoretical Investigation of Supernovae Progenitors". There she used astroseismology to understand stars that were about to undergo a supernova. Sarafina now works as a PhD student in the Department of Astronomy at the University of California, Berkeley. She investigates supernovae and uses them as a means to study both the make-up and ultimate fate of the universe. She works with the Lawrence Berkeley National Laboratory Centre for Computational Cosmology to use supercomputers to build models of the explosions of supernovae in the final stages. **(No Registration Required)**

Passcode: 106513

Note: if you have a Calgary Public Library Card you can also register [HERE!](#)

[Join Tracing the Lives, Deaths, and Explosions of Massive Stars](#)

Saturday, January 23, 2021 - 19:00 to 20:30 EST

### DDO: Observe the Sky (online star party)

Learn what's up in the sky tonight. You can view the night sky with the help of our astronomers with their telescopes. We will also offer a virtual tour of the David Dunlap Observatory!

Saturday, January 23, 2021 - 7:00pm to 8:30pm

Who can attend: Ages 6 and up

Fee for 6 up to 14 years old: \$14.50

Fee for 15 or more years old: \$16.39

Tickets: ActiveRH (Registration opens for Richmond Hill residents on December 9, 2020 at 7:00am; for non-residents on December 16, 2020 at 7:00am)!

Organized by: RASC, Toronto Centre <https://rasc.ca/>

Location: Oak Ridges Community Centre

[Buy Tickets for Observe the Sky Star Party](#)

### Astro-image of the Week

Rick Stankiewicz

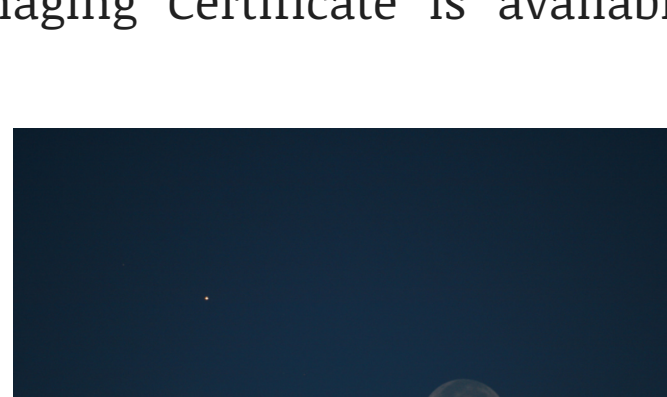
We are featuring winners of RASC's AstroImaging Certificate. Winners will be featured in the banner of RASC Weekly. More information on the RASC AstroImaging Certificate is available [here](#).

#### 03-MOON WITH EARTHSHINE:

"Venus & Mars Join a Young Moon" This grouping of Moon and planets in the evening sky was a celestial treat worth savouring.

Venus and Mars are at just over

0.5 degree separation and they are less than 1 ¼ degree apart from a young waxing crescent Moon. This is one of my nicer images of earthshine. Along the terminator there is some irregularity from the mountains and valleys on the lunar surface and yet the earthshine portion is lit well enough from the reflected light from Earth to register most of the maria. I find that taking earthshine images before the twilight sky darkens too much, yields the best results. Details: February 20, 2015, south of Peterborough, Otonabee Township, Ontario. Canon 400D with tripod mounted Sigma lens at ISO 400, 8/5 sec., f/5.6, 300mm



To see the large image, check out the [RASC AstroImaging Zenfolio page](#).

### Telescope Data Available For Purchase!

Calling all astroimagers! The data from our Robotic Telescope is finally available for purchase. This is the perfect gift for the aspiring astroimagers in your life, and with no shipping costs! ALL of the data from the RASC Robotic Telescope for 2019 and 2020 is now available for purchase. You'll receive data for over 30 different narrowband and LRGB targets, including targets from our DSLR camera.

Head to our online store to purchase this item! Choose the item (adult or student) that applies to you or the person you're buying the item for. If you plan on gifting this purchase to someone, please email [telescope@rasc.ca](mailto:telescope@rasc.ca) to inform them of your intent.

[Buy Now](#)

## This Week's Observing Targets

Sunday, January 24th

### Mercury at Greatest Eastern Elongation

The planet Mercury reaches greatest eastern elongation of 18.6 degrees from the Sun. This is the best time to view Mercury since it will be at its highest point above the horizon in the evening sky. Look for the planet low in the western sky just after sunset.

### Send in your Observing Certificate applications!

Did you complete Explore the Universe, Explore the Moon, or another one of the RASC Observing Programs? Send in your application to your Centre's representative or to the chair of the Observing Committee at [observing@rasc.ca](mailto:observing@rasc.ca). Following review, you'll receive your certificate and pin in the mail!

## Member Highlights



Alan Ward, the president of the Sudbury Centre, and Peter Pekurar, a member of the K-W Centre, are collaborating on refurbishing the Banting telescope for the Dorner Museum. They are making two new mirrors for this historic instrument, one for installation and one for display. In what must surely be a first, Peter has been demonstrating the actual mirror grinding process live through monthly Zoom meetings! We are watching as he progresses through the grinding process, along with glimpses of other projects he has in the works, including a 25 inch f/2.8 or f/3 telescope! Alan will likely be coating the Banting mirrors in his optical workshop in Sudbury once Peter has finished constructing them. They will also be laser-etched with production details.

Alan has won prizes for optical craftsmanship at Stellafane and has taken a portable vacuum coating apparatus there for demonstration and use. Peter has crafted several large aperture, fast focal ratio telescopes and used an innovative silvering technique on several large mirrors. They make an impressive team!

Do you know a member who you think deserves a spot in our newsletter? Let us know! Email [communications@rasc.ca](mailto:communications@rasc.ca) with your submissions.

[view this email in your browser](#)