

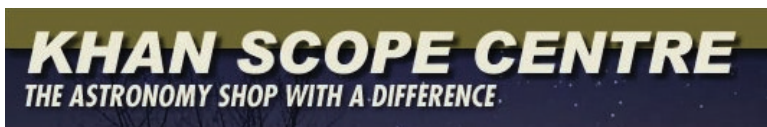
A lighthouse with a glowing red lantern room sits atop a dark, rocky island. The sky is filled with long, curved star trails, creating a sense of motion and time. The lighthouse has a white tower and a red lantern room. The overall scene is dark and atmospheric.

WELCOME!

2015 Royal Astronomical
Society of Canada
GENERAL ASSEMBLY

Stars by the Sea!

Thanks to our generous sponsors!



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Welcome letters

To everyone attending the 2015 RASC General Assembly:

Welcome to the part of Canada where the stars rise first! 2015 is a doubly significant anniversary year for the Royal Astronomical Society of Canada on the east coast of Canada. The Halifax Centre was founded 60 years ago, and 40 years ago Halifax hosted the first GA in Atlantic Canada.

We have arranged a full and varied agenda, including a reception for the Directors and the National Advisory Council, a visit to the largest tides on our planet, and the historic UNESCO World Heritage Site at Grand Pré. We have organised paper and posters sessions, a pub night and a BBQ, the Ruth Northcott Memorial Lecture and the Plaskett Lecture, and the RASC Annual General Meeting.

The GA will be closed out by a special presentation by a First Nations drumming group “Women of the Shore”, and end with the annual banquet and awards presentations.

If you have any questions during the GA, intercept one of our volunteers wearing a “Don’t Panic” yellow shirt.

Your GA Organizing Committee:

Patrick Kelly (GA Co-Chair)
Quinn Smith (GA Co-Chair)
Paul Gray (President, Halifax Centre)
Ian Anderson
Michael Gatto
Paul Heath
Martin Hellmich
Jim Millar
Mary Lou Whitehorne
Chris Young
Roy Bishop (Consultant)
Dave Chapman (Consultant)
Paul Evans (Consultant)

Dear delegates,

On behalf of the Saint Mary's University community, welcome to the General Assembly of the Royal Astronomical Society of Canada.

Given that the year 2015 marks both the 60th anniversary of the Halifax Centre RASC and the 40th Anniversary of the first assembly to be held in Atlantic Canada, it is quite fitting that this year's general assembly is held on the East Coast. This year's theme—"Stars by Sea"—celebrates this anniversary and illustrates the best of what Halifax has to offer: proximity to the ocean and great night-sky viewing just outside city limits.

As Dean of Science, I wish you all the best for an enjoyable conference. If you can find time between the many engaging workshops, talks, and demonstrations planned for you, I encourage you to visit the Halifax waterfront and soak up some salty summer air. You'll be glad you did!

Sincerely,



Dr. Steven M. Smith
Dean of Science

GA Schedule

Thursday, July 2, 2015

7:30 a.m. to 9:00 a.m.

Breakfast (included with Saint Mary's accommodations)
Dockside Cafeteria–Loyola Building

8:00 a.m. to 8:00 p.m.

Arrivals/airport shuttle/registration
Near Residence Desk–Loyola Building

9:00 a.m. to 12:00 noon

National Advisory Council / Board Meeting
Unilever Lounge–Sobey Building

9:00 a.m. to 12:00 noon

Downtown exploration (shuttle provided by GA, \$5 return)
Meet at the GA registration desk

12:00 noon to 1:00 p.m.

Lunch
Dockside Cafeteria–Loyola Building

1:00 p.m. to 4:00 p.m.

National Advisory Council / Board Meeting
Unilever Lounge–Sobey Building

1:00 p.m. to 4:00 p.m.

Downtown exploration (shuttle provided by GA, \$5 return)
Meet at the GA registration desk

6:00 p.m. onwards

NAC/BOD reception/BBQ at Abby Ridge Observatory
Meet at the GA registration desk

8:00 p.m. onwards

Social

Loyola Common Rooms

Friday, July 3, 2015

7:30 a.m. to 9:00 a.m.

Breakfast (included with Saint Mary's accommodations)

Dockside Cafeteria–Loyola Building

8:00 a.m. to 4:00 p.m.

Arrivals/airport/shuttle/registration

Near Residence Desk–Loyola Building

8:00 a.m. SHARP!!! to 5:30 p.m.

Main Tour (Wine and Tides) (limit 53 guests)

Meet at the GA registration desk

6:30 p.m. to 11:00 p.m.

Pub Night (Official Opening, must be legal drinking age) Plus,
get your picture taken with a piece of the Hubble Space Telescope!

Gorsebrook Lounge–Student Centre

10:00 p.m. onwards

Social

Loyola Common Rooms

10:00 p.m. onwards

Burke-Gaffney Observatory Open House

Meet at the GA registration desk

Saturday, July 4, 2015

7:30 a.m. to 9:00 a.m.

Breakfast (included with Saint Mary's accommodations)

Dockside Cafeteria–Loyola Building

9:00 a.m. to 10:15 a.m.

Paper Sessions

McNally Auditorium (front)

10:15 a.m. to 10:45 a.m.

Coffee Break / Poster Session

McNally Foyer

10:45 to 12:00 noon

Paper Sessions

McNally Auditorium (front)

12:00 noon to 1:00 p.m.

Lunch

Dockside Cafeteria–Loyola Building

1:00 p.m. to 2:20 p.m.

Paper Sessions

McNally Auditorium (front)

2:20 p.m. to 2:50 p.m.

Ice Cream break / Poster Session

McNally Foyer

2:50 p.m. to 4:05 p.m.

Paper Sessions

McNally Auditorium (front)

5:00 p.m. to 7:00 p.m.

BBQ (must be legal drinking age) + Ode To Hubble video winners

Gorsebrook Lounge–Student Centre

7:15 p.m. to 7:30 p.m.

Group photo

Sobey Building (on outside stairs)

8:00 p.m. to 9:30 p.m.

Northcott Lecture – Prof. Rob Thacker (Open to the Public)
McNally Auditorium (front)

10:00 p.m. onwards

Social
Loyola Common Rooms

10:00 p.m. onwards

Burke-Gaffney Observatory Open House
Meet at the GA registration desk

Sunday, July 5, 2015

7:30 a.m. to 9:00 a.m.

Breakfast (included with Saint Mary's accommodations)
Dockside Cafeteria–Loyola Building

9:00 a.m. to 11:00 a.m.

Annual General Meeting
McNally Auditorium (front)

11:00 a.m. to 12:00 noon

Joint NAC/BOD Meeting
McNally Auditorium (front)

12:00 noon to 1:30 p.m.

Lunch
Dockside Cafeteria–Loyola Building

1:30 p.m. to 2:30 p.m.

Plaskett Lecture, The study of the Accretion of PSR J1023+0038.
Anne Archibald
McNally Auditorium (front)

2:30 p.m. to 3:00 p.m.

Coffee Break
McNally Foyer

3:00 p.m. to 4:00 p.m.

Painting the Vault of Heaven: the St. John's Lunenburg Celestial Ceiling. David Turner, Halifax Centre, and Randall Rosenfeld, National Archivist
McNally Auditorium (front)

5:30 p.m. to 6:00 p.m.

First Nations Smudging Ceremony
(alcohol & photograph restrictions; see Tours & Events)
McNally Entrance (outdoors)

6:00 p.m. to 6:30 p.m.

First Nations Drumming (no alcohol permitted)
McNally Foyer

6:30 p.m. to 10:15 p.m.

General Assembly Banquet
McNally Auditorium (rear)

10:00 p.m. onwards

Social
Loyola Common Rooms

Monday, July 6, 2015

7:30 a.m. to 9:00 a.m.

Breakfast (included with Saint Mary's accommodations)
Dockside Cafeteria–Loyola Building

7:30 a.m. to 12:00 noon

Checkout, departures for airport

Tours and Events

Thursday, July 2: Exploring Halifax

[NOTE: This is for those who will not be spending Thursday at the Board/Advisory Council meeting!] As the campus is so close to downtown, rather than providing tours, we will be operating a shuttle service between the campus and several points in the downtown. Call when you want to come back! Tickets are \$5 return. This service will operate between 9:00 a.m. – 12:00 noon as well as from 1:00 – 4:00 p.m. You can either return to the campus for lunch or enjoy lunch in one of Halifax's many restaurants. This way individuals, or groups can see the sites that interest them. Drop off locations will include Pier 21, The Maritime Museum of the Atlantic, Citadel Hill, and the Halifax Public Gardens.

Here is a listing of some of the things you may want to see, depending on your interests. Items with an asterisk (*) are National Historic Sites. Halifax has a lot of them!

[Nova Scotia Museum of Natural History.](#)

[Halifax Public Gardens*](#). One of the oldest Victorian gardens in North America. The pond even has a Titanic!

[Halifax Citadel*](#). Still in excellent shape as it was considered impossible to take so no one ever tried.

[The Old Town Clock.](#) Part of the Halifax Citadel NHS.

[The Grand Parade.](#) At the north end is City Hall*, a just-restored classic example of Second Empire architecture. At the south end is St. Paul's Church*, the oldest surviving Protestant church in Canada (1750).

[Halifax Central Library.](#) Come for the architecture, stay for the books! Don't miss the view from the coffee shop on the top floor! Check out the equatorial sundial on the lawn of the adjacent School of Architecture.

[The Halifax Court House*](#).

[The Old Burying Ground*](#). Also the location of the Parker-Welsford Monument to two Haligonians killed in the Crimean War. North America's only Crimean War monument.

[St. Mary's Basilica*](#). The tallest granite steeple in North America.

[Government House*](#). Official Residence of the Lieutenant-Governor. Public tours are available.

[Keith's Brewery Market](#). Those who like it, like it a lot.

[Discovery Centre](#). Hands-on science fun for all ages.

[Province House*](#). The oldest legislature in Canada. Also features a statue of Joseph Howe.

[Art Gallery of Nova Scotia](#). The largest art gallery in Atlantic Canada.

[Maritime Museum of the Atlantic](#). Exhibits include a deck chair from the Titanic, but they won't let you rearrange it.

[C.S.S. Acadia*](#). This hydrographic vessel is part of the Maritime Museum of the Atlantic's collection but is so big it has to float at the wharf by the museum.

[H.M.C.S. Sackville*](#). The last of Canada's 123 World War II corvettes which has been painstakingly restored. Berthed next to the Acadia.

[Historic Properties*](#). Restored wood and stone buildings that predate Confederation. Now used for shops, restaurants, etc.

[Canadian Museum of Immigration at Pier 21*](#). Over a million immigrants to Canada passed through here. Check and see if any of your ancestors did!

If you want to have someone else give you a tour of Halifax or its harbour here are some suggestions:

- Tall Ship Silva Sailing Cruises.
- The Big Harbour Tour. Let Theodore Tugboat take you on a tour of the Big Harbour!
- The Harbour Hopper. It's a truck, it's a boat. Get a tour of the city and the harbour!
- Food Tasting Tour. See the downtown and get a meal in bits and pieces along the way.

Since you have all day, if you want to go to Peggy's Cove, there are two tours that leave from downtown.

- Gray Line
- Ambassatours

Friday, July 3: Wine And Tides (Main Tour)

The General Assembly Committee has decided to go with one main tour, a wine and tides tour of the Annapolis Valley that will include a meal at a winery, a stop at a farm market, a trip to the Grand Pré dykes to see the tides and a visit to the Grand Pré National Historic Site which was recently declared a UNESCO World Heritage Site.

Come with us to experience the serene beauty of Nova Scotia's Annapolis Valley, along with one of the world's great wonders: the tides of Minas Basin. Today's moon phase will produce a range of 14 metres between high and low tide. That's appreciably larger than Minas Basin's average of 12 metres. But that's not all...

We make an early start by boarding the bus right after breakfast, to be at Evangeline Beach for low tide at 9:45 a.m. Minas Basin will look rather empty with vast mud flats exposed.

From the beach we will go to the new Grand Pré UNESCO World Heritage Site View Park, for unparalleled vistas of the historic dykelands of Grand Pré. The Landscape of Grand Pré is an exceptional living

agricultural landscape, claimed from the sea in the 17th century, and still in use today applying the same technology and the same community-based management.

From the View Park we will drive a short distance to Lockett Vineyards for lunch. The vineyard is situated high on a hill overlooking Cape Blomidon and the Minas Basin. The sweeping views will pop your eyes and the superb food may just pop your buttons. We will be greeted with a glass of welcome wine, have a short tour, and then it's a gourmet lunch while enjoying spectacular views. Do feel free to call home from the red British callbox in the middle of the vineyard!

Lunch menu

Choice of Daily Soup (*ask your server for today's selection*)

— or —

House Salad

Mixed greens, poached apple, sweet onion, candied walnuts & grape tomato with maple balsamic vinaigrette.

Choice of Panini

Atlantic beef, caramelized onion and Dragons Breath dijonnaise; Blackened chicken, romaine heart, Pete's brie & garlic aioli

— or —

House smoked salmon, arugula, red onion & herb mayo; Grilled zucchini, fired roma tomato, bell peppers, fresh herbs & goat cheese

After lunch, and a chance to buy a souvenir bottle or two, we will drive to a nearby farmer's market where you can sample more wonderful made-in-Nova Scotia products. Supper will be a little late this evening—you may want to pick up something to “tide” you over. We'll then drive through the beautiful campus of Acadia University, and on to Evangeline Beach for high tide at 2:39 p.m. We can guarantee that the extensive mud flats seen earlier will have completely disappeared.

From the beach we will drive three kilometres to the dyke at the west end of Long Island, where you will see the dyke wall restraining Minas Basin, preventing its waters from inundating the fields behind the dyke.

The final stop for the day will be a visit to the nearby Grand Pré National Historic Site that commemorates the Grand Pré area as a centre of Acadian settlement from 1682 to 1755, and the Deportation of the Acadians, which began in 1755 and continued until 1762.

After this final stop, we will board our bus at 4:30 p.m. for the one-hour drive back to Saint Mary's University. You will arrive in plenty of time to recover from the tour and get ready for the next event: PUB NIGHT!

Friday, July 3: Pub Night

Friday night is Pub Night at the 2015 GA, starting at 7:00 p.m. After a day of relaxing, exploring Halifax, or enjoying our "Wine and Tides" tour, join us at the Gorsebrook Lounge (located on the ground floor of the Student Centre for the opening ceremony and social event of the GA. We will have lots of pub food to satisfy your hunger, east coast music by the Saunders Brothers, an east versus west challenge, and an opportunity to meet and socialize with fellow registrants. Your event fee includes plenty of food, one free drink, and an evening of fun and music. Come join us for a good old Nova Scotia kitchen party.

PLUS: The European Space Agency/Hubble Telescope had an international competition called Ode to Hubble, to mark the 25th anniversary of the launch of the Hubble Space Telescope. The winners were recently announced and two Nova Scotians, Halley Davies and Martin Hellmich (the latter is a Halifax Centre member) won the Under-25 category! Their prize included an actual piece of the HST which was brought back from one of the repair missions. On the pub night you can have your picture taken with it!

Friday, July 3: Burke-Gaffney Observatory Open House

Beginning at 10:00 p.m. on both Friday and Saturday evenings the university's Burke-Gaffney Observatory will be open for GA attendees. The observatory houses a new Planewave CDK24 telescope (0.6-metre). Visual observing or even CCD observing (if interested) will be available. It is conveniently located on the roof of the Loyola residence building where many of you will be staying. This event is free.

Saturday, July 4: BBQ

After a day of enjoying the GA paper session talks, or exploring the Halifax area, join us at the Gorsebrook lounge (located on Saint Mary's campus) for a summer BBQ. The bar will be open to quench your thirst, and the grill will be cooking up some delicious food. For those of you with a taste for more exotic fare, lobster will be available as a food option. Please select your food option when registering for this event. There will be plenty of time to enjoy the BBQ before attending the Ruth Northcott lecture, later in the evening.

PLUS: There will be a screening of the winning entry from the Ode to Hubble video competition (see Friday Pub Night for details) as well as a short talk on how the winners came up with their idea and then made it a reality.

Saturday, July 4: Ruth Northcott Lecture

Please join us in the beautiful McNally Auditorium for the 2015 Ruth Northcott lecture. This year we are delighted to present Prof. Rob Thacker of Saint Mary's University. Prof. Thacker is a well-known public speaker and a member of the Canadian Astronomical Society. In his talk, Prof. Thacker will discuss the concept of, and research being undertaken, into Galactic Archeology.

Saturday, July 4: Burke-Gaffney Observatory Open House

Beginning at 10:00 p.m. on both Friday and Saturday evenings the university's Burke-Gaffney Observatory will be open for GA attendees. The observatory houses a new Planewave CDK24 telescope (0.6-metre). Visual observing or even CCD observing (if interested) will be available. It is conveniently located on the roof of the Loyola residence building where many of you will be staying. This event is free.

Sunday, July 5: 2015 GA Banquet

The banquet is the premier social event of the GA and will be held on campus in the beautiful McNally Auditorium. Please join us for a wonderful evening of food, wine, award presentations, talks, and a truly unique experience presented by the "Women of the Shore". The banquet is an opportunity to acknowledge and appreciate the local First Nations heritage, and share in the traditions of both modern western and First Nations cultures. "Women of the Shore" is a First Nations Big Drum group. They will open the banquet with a smudging ceremony and the laying of tobacco, followed by their drumming and traditional First Nations singing.

The ceremony will be held just outside the McNally Building (weather alternate will be the foyer). Due to cultural considerations, it is requested that no alcohol be present during the ceremony. Photography & video of the drumming and singing is welcome after the first song, The Honour Song, is completed.

Following the banquet and awards, Cathy Leblanc and Dave Chapman will present the talk "One Moon—Two Eyes", describing their investigation of lunar time-telling using a blend of First Nations' teachings and western science.

Conference Meal Plan

The majority of our conference meal plan offerings will be served out of the Dockside Cafeteria located in the Loyola building at the University. The Dockside Cafeteria is centrally located within the University's residence complex. As "Bed and Breakfast" type accommodation is the only type of lodging arrangement provided by the University should you elect to stay on campus, a daily breakfast voucher is included with the cost of lodging and is separate from the Conference Meal Plan. Costs for the various Conference Meal Plan offerings are listed within the GA Registration Sign-Up Webpage under "GA Options." A summary of the Conference Meal Plan is as follows:

Thursday, July 2, 2015

7:30 – 9:00 a.m.

Breakfast at the Dockside Cafeteria

12 Noon – 1:00 p.m.

Lunch at the Dockside Cafeteria

7:00 p.m.

Supper at the Abbey Ridge Observatory (BOD and Advisory Council Members only—limited availability)

Friday, July 3, 2015

7:30 – 9:00 a.m.

Breakfast at the Dockside Cafeteria

12 Noon – 1:00 p.m.

Lunch at the Dockside Cafeteria

6:30 – 11:00 p.m.

Supper: "Pub Night" and opening ceremony at the Gorsebrook Lounge (on campus)

Saturday, July 4, 2015

7:30 – 9:00 a.m.

Breakfast at the Docksider Cafeteria

12 Noon – 1:00 p.m.

Lunch at the Docksider Cafeteria

5:00 – 7:00 p.m.

Supper: “East Coast BBQ” at the Gorsebrook Lounge (on campus)

Sunday, July 5, 2015

7:30 – 9:00 a.m.

Breakfast at the Docksider Cafeteria

12 Noon – 1:00 p.m.

Lunch at the Docksider Cafeteria

6:30 – 10:15 p.m.

General Assembly Banquet and closing ceremony in the beautiful McNally Auditorium (on campus). The banquet will be opened by the “Women of the Shore”, a unique First Nations drumming group.

Monday, July 6, 2015

7:30 – 9:00 a.m.

Breakfast at the Docksider Cafeteria

Halifax Skyline



Poster Presentations

The poster sessions will be held in the McNally Auditorium foyer, adjacent to the location of the paper sessions, on Saturday July 4th. An opportunity will be available to view the poster sessions both before and after the paper sessions, as well as during the morning coffee break (10:15 to 10:45 a.m.) and afternoon coffee and ice cream break 2:20 to 2:50 p.m.). Poster authors will be present during the breaks. Poster papers are listed below in alphabetical order by author.

Explaining the Low Luminosity Tail of the AGN Luminosity Distribution

*Mann Hani & Dr. Rob Thacker,
Saint Mary's University*

Galaxy formation and evolution appear to be directly influenced by the central black hole's (BH) properties and activity. Therefore, understanding BH activity is a key question in modern astronomy. Although observations appear to indicate that supermassive BHs tend to spend a large fraction of time at low luminosities, most simulated models spend too much time at high luminosities. This discrepancy is troublesome because BH activity directly determines the observed number density of quasars and active galactic nuclei (AGN). We present some preliminary results of numerical simulations of galaxy mergers using different BH feedback algorithms, accretion algorithms, and initial conditions with the intent to better understand the lack of low luminosity activity during a BH's lifetime in the numerical models.

Maan Hani is a graduate student (MSc) at Saint Mary's University, where his research is supervised by Prof. Rob Thacker. Maan uses numerical simulations to study the evolution of supermassive black holes at the centres of galaxies and their effect on the host galaxies' evolution. Maan received his BSc (honors in astrophysics) from Saint Mary's University in 2013, and studied how different star formation algorithms impacted the simulated galaxy models he generated. Maan

was just accepted into the PhD program at the University of Victoria, where he will continue studying the formation and evolution of galaxies (using both simulations and observations) under the guidance of Prof. Sara Ellison.

Prof. Thacker bio is on page 30.

Finding Planets Orbiting Other Stars: Does Size Matter?

*Melanie Seabrook and Emma Seabrook,
Toronto Centre*

In the last twenty years, there has been a growing interest in finding planets that lie outside of our solar system. They are called “exoplanets”. For the past two years, we have been observing the night sky as members of the Royal Astronomical Society of Canada, and have taken a keen interest to exoplanets. We wondered if one could measure an exoplanet transit from Earth and if so, how would the size ratio of the exoplanet to its parent star affects the dip in brightness. Using the transit photometry method, we coordinated transit observations and generated the light curves of four exoplanets to determine the correlation between the planet’s size and the dips in brightness recorded. Our results show that if the planet and the parent star are closer in size, then the transit depth will be bigger.

Melanie Seabrook is in Grade 10 at Thornlea Secondary School and Emma Seabrook is in Grade 8 at Henderson Avenue Public School in Thornhill (near Toronto). They both joined the Toronto Centre in October 2012. They gave a presentation at the David Dunlap Observatory (DDO) for speaker night in March 2014 and at the Ontario Science Centre at the RASC Recreational Night in July 2014 on “Exoplanets: Exploring Worlds Beyond Our Own”. This past April, they received their “Explore the Universe” certificates. Just before that, in March, they were awarded the Gold Medal at the Ontario Science and Technology Fair for their project on Exoplanets: “Finding Planets Orbiting Other Stars: Does Size Matter?”. They also have fun volunteering at the DDO public nights. While Emma would like to pursue astronomy as a career, Melanie is interested in going into biology and medicine, although she is also curious about the field of astrobiology.

Success Stories from Long Time Domain Astronomy

*David Turner, Halifax Centre
& Saint Mary's University*

Regular cadence imaging of the entire sky is well known to produce marvelous serendipitous discoveries: novae, supernovae, new periodic variable stars, etc. Less recognized is research involving the effects of gradual stellar evolution: period changes in pulsating stars, discoveries of long-period eclipsing systems of astrophysical interest, and monitoring the precursors to future core-collapse supernovae. Illustrated here are a variety of such results, with particular emphasis on their importance to astrophysical problems.

See bio on page 33.

Paper Presentations

Morning Session

Astronomy Without Borders

Andrea Misner, Winnipeg Centre

Join high school teacher, Andrea Misner, and her astronomy class on their astronomical adventures. Discover how they navigated the night skies locally and around the world.

Andrea Misner grew up just outside of Bridgewater, Nova Scotia. She studied astrophysics at Saint Mary's University, where she joined the Halifax Centre in 2001 and has been a member ever since. Andrea then pursued a secondary degree in education and is now a high school science teacher. In 2009 she moved to Winnipeg where she is currently teaching physics and astronomy at Maples Collegiate High School.

The Scientific Rationale for the New ISO Standard for Solar Filters

B. Ralph Chou, Toronto Centre

A new ISO standard for filters used in solar eclipse glasses and similar products is in the last stage of development. This presentation will summarize the scientific rationale for the transmittance requirements in the new standard. The implications for solar eclipse eye safety will be discussed.

B. Ralph Chou has been a member of the Toronto Centre since 1971. Now a Professor Emeritus of Optometry & Vision Science at the University of Waterloo, he is an expert on eye protection, professional competency assessment and visual and ophthalmic standards, and is well known for his work on solar eclipse eye safety. Ralph was the lead writer of the ISO standard for solar filters and serves as Chair of the Canadian Standards Association Technical Committee on Industrial Eye and Face Protection. He is Canadian delegate to several ISO technical standards committees on eye protection and ophthalmic optics.

The New RASC Website—Challenge and Opportunity

Denis Grey, Toronto Centre

The Society is in the process of building a new website at www.rasc.ca—new platform, new capabilities, new focus—as much “new” as we can manage within limited time and budget. This presentation will highlight how our new website will help to grow the Society and meet our objectives, as well as to introduce you to some key members of the team who are working on the project.

Denis Grey is Past President of the Toronto Centre and is currently the Society's Treasurer. He has been involved with the Society's website since 2004 and this is the third renewal of our website in which he has participated.

Coffee Break

The Ocean Tides of 2015

Roy Bishop, Halifax Centre

The ocean tides of 2015 include the largest tides to date in this century. In particular, early this autumn, an unusual confluence of astronomical geometries causes the tides of September 29 to be the largest in 18 years. The Moon's phase, orbital eccentricity, orientation of the major axis of its orbit, and tilt of its orbital plane to the ecliptic are all involved. The Sun orchestrates this music of the spheres by imparting a varying eccentricity, a rotation, and a wobble to the lunar orbit, while also making its own direct contribution to the tides. The music reaches a crescendo in late September with a total lunar eclipse and the largest tide in several years at the site of the largest tides on Earth: Nova Scotia's Minas Basin.

Roy Bishop helped to re-establish the Halifax Centre in 1970, and was president of the Centre when it held the first GA in Atlantic Canada 40 years ago. He is a past-president of the national Society, and a former Editor of the Observer's Handbook. His talk today is his 376th public talk.

Walk To The Moon—A Hands-On Demo

Paul Heath, Halifax Centre

Explaining distances in astronomy can be a challenge. This simple hands-on, interactive demo lets your audience experience the distance to the Moon. With your audience's help, you will compare planetary sizes, generate questions on mankind's exploration of the Moon, show some basic effects of gravity, all while you and your audience are pacing out the distance to the Moon. This will then lead to questions on how far are the planets as well as the stars.

Paul Heath is a past president of the Halifax Centre. He has been teaching basic astronomy for over thirty years, mostly to youth. Because of this, he has developed

many hands-on demonstration materials to help present astronomy topics to both youth and adults. He emphasizes a hands-on approach where the audience is involved in the delivery of the material. His hope is to encourage further exploration because they had fun at the presentation.

The Renovation of the Burke-Gaffney Observatory and its Social Media Interface

Dave Lane, Halifax Centre

The talk will start by describing the recent renovation of the Burke-Gaffney Observatory (BGO) including its second-generation automation software, based on the automation in place at the Abbey Ridge Observatory for a decade. The talk will end with a new feature, hopefully unveiled at the GA, an ability to interact with the BGO via social media.

Dave Lane is a life member of the RASC and a past-president both the Halifax Centre and the national Society. He is the Director of the Burke-Gaffney Observatory and has operated an automated backyard observatory for more than 10 years. These days, he is mostly interested in developing observatory automation software and doing variable star observations. Dave has been honoured by receiving several awards of recognition for service and achievement from the RASC and others, including the naming of asteroid 117032: Davidlane.

Afternoon Session

Studies of the Variable Star Betelgeuse using Observations from Amateur Astronomer

Frank Dempsey, Toronto Centre

Betelgeuse is a well-known red giant star and a variable star that varies by about 1 magnitude and has been observed by numerous variable star observers. Observations contributed by amateur astronomers can be accessed and analyzed on the website of the American Association of Variable Star

Observers (AAVSO). Here, the magnitude observations of Betelgeuse have been examined using tools on the AAVSO website for plotting, period analysis and power spectrum analysis. The results are presented along with some discussion of the astrophysical details known about red giants and Betelgeuse, as well as with considerations for future observations of this fascinating star.

Frank Dempsey is an amateur astronomer and has been a member of the Toronto Centre for over four decades. His astronomical interests are far-ranging; from constellation starlore to reading about latest research, from solar system components to cosmology. His backyard telescopes with apertures ranging from 8 to 25 cm are used mostly for variable star observing. His involvement with variable star observing includes being a member of the American Association of Variable Star Observers (AAVSO) for several decades and contributing variable star observations to the AAVSO using visual, photoelectric photometry, and CCD photometry methods, and more recently, analysis of the large database of observations.

Small Observatories

Charles Ennis, Sunshine Coast Centre

The author, President of the Sunshine Coast Centre, has not only been working on the construction of his Centre's small observatory, he has researched small observatories in 11 countries, interviewing 133 individuals and clubs. This experience helped him identify the common problems and mistakes encountered in building such observatories, as well as discovering all manner of creative solutions and unorthodox structures. He wrote a handbook on small observatories for the RASC to help people interested in building themselves such an observatory. He will describe what he has learned about what to do (and what not to) when approaching a project such as this.

Charles Ennis got his first telescope as a child but when he got involved in a law enforcement career working night shift that interfered with that passion. Charles retired as a detective from the Vancouver Police Department in 2005

after 28 years service. Charles was awarded the Governor General's Exemplary Service Medal for his service. In April 2013, Charles retired, bought a new telescope, and joined the Sunshine Coast Centre that August. Within months he became their media director and in December 2014 became the centre's president. Charles serves on the two national committees (Publications and Communications) and is now a trustee and speakers coordinator for the Public Speakers Program. Charles is the author of 20 books including a Small Observatories Handbook for the RASC.

Near-infrared Photometry of Venus

Richard W. Schmude, Jr., Kingston Centre

The author used an SSP-4 photometer manufactured by Optec Inc. along with filters transformed to the Mauna Kea J and H system to measure the brightness of Venus. Two goals of this study are to measure the photometric constants of Venus in near-infrared wavelengths and to search for atmospheric changes. A total of 13 sets of J- and H-filter measurements have been made as of March 16, 2015. Preliminary values of the normalized magnitudes are $J(1,0) = -5.63$ and $H(1,0) = -5.61$. The uncertainty for both values is 0.1 magnitudes. These are consistent with geometric albedos of 0.77 (J) and 0.57 (H). The data are consistent with there being no large brightness changes in Venus' atmosphere between January 28, 2015 and March 16, 2015.

Richard W. Schmude, Jr. was born in Washington DC. He attended public schools near, or in, Washington D.C., Los Angeles, and Houston. Graduating from high school in 1976, he attended North Harris County College and Texas A&M University and received his Doctorate in Physical Chemistry from Texas A&M University in 1994. Since September 1994 he has been employed at Gordon State College as a professor of chemistry. He is a member of the Kingston Centre—Kingston is also the city where his paternal grandmother graduated from high school. He is a member of the American Astronomical Society, the Association of Lunar and Planetary Observers, and the British Astronomical Society. Richard has focused much of his research on measuring the brightness of the planets in visible wavelengths. In 2014, he began carrying out J- and H-band (near-infrared) brightness measurements of the brighter planets.

What Do We Do in the Society Office?

Randy Attwood, Toronto Centre

The day-to-day running of the Society requires that we lease office space and hire staff. Most RASC members do not really know what these people do all day. This talk will look behind the scenes at the activities at 4920 Dundas Street and try to answer that question—What do we do in the Society Office?

Randy Attwood has been fascinated with astronomy and space exploration since the Apollo missions. He and his wife Betty travel the world to witness total solar eclipses. He has also witnessed twelve space shuttle launches and one shuttle landing. He produced and hosted a local astronomy cable television show in the 1980s and has appeared on local and national radio and television since 1981 including CTV, CBC, Global, and the Discovery Channel, to comment on various aspects of astronomical discoveries and space exploration—both manned and unmanned. In 2012, the International Astronomical Union renamed asteroid 260235 “Attwood” in his honour. Attwood is a Past President of the RASC, a Past President of the Toronto Centre, and the founder of the Mississauga Centre. He is currently the Executive Director of the RASC.

Ice Cream Break

A New Observatory for Science

Damien Lemay, RASC Unattached

Four years ago, I moved from downtown Rimouski to the countryside where I built a three-level observatory which I use almost exclusively for the observation of variable stars. The building hosts two telescopes (35 cm and 20 cm) sitting on six-metre-high pillars. A CCD camera serves as the detector on each instrument. I concentrate on Cataclysmic Variable (CV) stars, which are the meat of the pro-am group Center for Backyard Astrophysics (CBA). Many of these stars are very active and exciting to follow. Another source of important targets of opportunity are those from

the AAVSO Alert Notices. During my talk I will illustrate the main phases of the construction of the observatory and I will show some of the data I produced for the CBA and the AAVSO.

Damien has been interested in astronomy since he was a teenager and has been a member of the RASC for half a century. He has been involved in just about all aspects of amateur astronomy; visual observing, film and CCD photography, mentoring many newcomers, and giving hundreds of talks. He received the Society's Chant Medal in 1987, was President of the RASC from 1990 to 1992, and was the recipient of the 2010 Ken Chilton Prize. Over the years he has had many permanent observatories, the last one (which he built all by himself) is three stories high and hosts two Schmidt-Cassegrain telescopes (35 cm and 20 cm) which he uses mainly for variable star observing. In this regard, he provides data to the AAVSO and the Center for Backyard Astrophysics. He still does visual observing with an equatorially mounted 60-cm (24-inch) Newtonian.

Miniature Telescopes I Have Made

Barry Matthews, Ottawa Centre

After retiring from my optical repair business in 2012, there were many nights that I was not able to observe in my backyard observatory due to weather and age, so I started to build scale telescope models. By the time of the GA I will have completed a model of William Herschel's telescope with which he discovered Uranus, Einstein's telescope, and two of Captain Cook's Gregorian telescopes he took to Tahiti to observe the transit of Venus. I will describe my research and the process of making these models, along with showing the actual models.

Barry Matthews has been a member in the RASC for the better part of four decades. During this time he has taken on various roles at the local and national levels, in official and un-official endeavours. Barry served a number of years as national representative of the Ottawa Center, Chair of the History Committee, and is a member of the Antique Telescope Society, the Herschel Society, and the Association of Lunar and Planetary Observers. His astronomical interests have included double stars, lunar/solar sketching, and telescope instrumentation. A one-time resident of Halifax, Barry was instrumental in re-establishing the Halifax Center in 1970.

On retiring and closing his optical repair business in 2012, Barry found that he had more time to pursue astronomy in his backyard observatory. Unfortunately he also found that due to some health problems, too many cloudy nights, and the cold Ottawa winters he began a new series of projects.... making scale model telescopes! What to do when it is too cloudy, too cold, your observatory is frozen shut, and it's just too difficult to go out and observe? What Barry found was an interesting alternative for his astronomical interests.

Hunting Exoplanets From Your Backyard

Paul Mortfield, Toronto Centre

Twenty years ago, the first exoplanet was discovered. Today over 1800 are known, and even more potential candidates need follow-up observations to be confirmed. With equipment available today in the hands of most astrophotographers, observations and measurements of exoplanet transits can be easily accomplished. What makes this convenient for the amateur is that the observations can be done from home under urban light-polluted skies. This talk will highlight the process, techniques, and resources used by the author to capture exoplanet transits. This is a great way for astronomy clubs and individual astrophotographers to contribute to the scientific community.

Paul Mortfield enjoys using his telescopes for photography and science projects. Along with photographing the beautiful sights in the night sky, he has discovered four asteroids and enjoys photographing lots of comets. He has worked on several NASA spacecraft missions, hosted educational broadcasts on NASA-TV, and is a member of NASA's Education Products Review team. Paul is the Director of the David Dunlap Observatory and is currently President of the Toronto Centre.

Finding Planets Orbiting Other Stars: Does Size Matter?

Melanie & Emma Seabrook, Toronto Centre

York Regional Science Fair Winners Melanie and Emma will talk about their award-winning exoplanet project.

Melanie Seabrook is in Grade 10 at Thornlea Secondary School and Emma Seabrook is in Grade 8 at Henderson Avenue Public School in Thornhill (near Toronto). They both joined the Toronto Centre in October 2012. They gave a presentation at the David Dunlap Observatory (DDO) for speaker night in March 2014 and at the Ontario Science Centre at the RASC Recreational Night in July 2014 on “Exoplanets: Exploring Worlds Beyond Our Own”. This past April, they received their “Explore the Universe” certificates. Just before that, in March, they were awarded the Gold Medal at the Ontario Science and Technology Fair for their project on Exoplanets: “Finding Planets Orbiting Other Stars: Does Size Matter?”. They also have fun volunteering at the DDO public nights. While Emma would like to pursue astronomy as a career, Melanie is interested in going into biology and medicine, although she is also curious about the field of astrobiology.



Halifax Public Gardens

Northcott Lecture

This lecture honours Ruth Northcott (1913–1969)—Professor, RASC President, and RASC Editor.

Raiders of the Lost Galaxy

Prof. Rob Thacker (SMU)

We live in ruins. The formation of the Milky Way destroyed generations of progenitor galaxies, and wove their remnants into the beautiful galaxy we know today. Finding, identifying, and then piecing together all the relics of these long-lost progenitors is the goal of Galactic Archaeology. A number of upcoming and ongoing telescope projects, including a facility proposed to replace the Canada-France-Hawaii telescope, combined with new theoretical breakthroughs, are about to truly revolutionize our knowledge of the history of our galaxy. Yet there are great challenges ahead. In this talk I'll present a fun overview of ongoing and upcoming projects in galactic archaeology, and where the “hidden dangers” may lie—they aren't black mambas or whips!

Prof. Thacker is one of Canada's pre-eminent scientists in the field of galaxy evolution and structure formation and is a Full Professor and Canada Research Chair at Saint Mary's University. Formerly the Chair of the Astronomy and Physics Department, he is now serving as the Acting Director of the Institute of Computational Astrophysics. His dedication and service to the Canadian astronomical community is extensive. He was a member of the CASCA Board between 2007 and 2010, and has since been invaluable in advising and assisting the Board on issues ranging from the state of financial support for astronomical research to national initiatives related to High Performance Computing. He was one of the seven members of the 2010 Long-Range Plan Panel and transitioned on to the first Long-Range Plan Implementation Committee. Beyond astronomy, he is also the Chair of Compute Canada's Advisory Council on Research. A strong advocate of public outreach, Prof. Thacker has given over 30 interviews in the media since 2011 and continues to give numerous public talks on astronomy-related subjects.

Plaskett Lecture

Dr. Anne Archibald

Accretion is a process that occurs throughout the universe when material falls inward onto a central object, perhaps a star or black hole. Some old neutron stars go through a phase of accretion that spins them up to hundreds of turns per second. In fact, the object PSR J1023+0038 still goes through episodes of accretion; in 2008 it was a radio pulsar ticking along quietly, but in 2013 it began accreting. I will talk about our observations of this object, and the prospects for finding more. These are reasonably bright optical objects, and monitoring them with modest optical telescopes is going to be important.

*Dr. Anne Archibald (Dept. of Physics, McGill University) has been awarded CASCAs J.S. Plaskett Medal for her PhD thesis *The End of Accretion: The X-ray Binary/Millisecond Pulsar Transition Object PSR J1023+0038* which she completed under the supervision of Victoria Kaspi. Using several different telescopes at a variety of wavelengths, Dr. Archibald established the transitional nature of the system from low-mass X-ray binary to millisecond radio pulsar, the first such object discovered and a key “missing link” in our understanding of neutron star binary evolution.*

Banquet Speakers

One Moon—Two Eyes

Cathy LeBlanc & Dave Chapman

Cathy and Dave met while partnering at the Keji Dark-Sky Preserve, and their connection eventually led to a collaborative research project on the role of the Moon in traditional Mi'kmaw time-telling practices. Several presentations have emerged from the Mi'kmaw Moons project, which

employs a Two-Eyed Seeing approach: blending traditional First Nations ways of knowing and seeing with “Western” scientific ways of knowing and seeing. This methodology will be the main focus of their banquet presentation “One Moon—Two Eyes”, which will be equally thought-provoking and entertaining.

Cathy LeBlanc (Acadia First Nation) studied Native Studies at Saint Thomas University, and is currently working as the Physical Activity Strategy Coordinator for Acadia First Nation, one of the 13 Mi'kmaq bands in Nova Scotia. She is active in her personal and professional life promoting and preserving the health, knowledge, and well-being of local First Nation communities. For the last year, she has been a member of the First Nation big-drum group Women of the Shore, the pre-banquet performers.

Dave Chapman (RASC Halifax Centre) is a Life member of the RASC, having joined the Ottawa Centre in the late '60s, and then the Halifax Centre in the early '80s after a 10-year hiatus. He studied physics in university and is now retired from a 31-year career as a Defence Scientist with DND, specializing in underwater acoustics. For the past 5 years, he has been Editor of the RASC Observer's Handbook. He has earned the RASC Messier certificate and the certificate for the Isabel Williamson Lunar Observing Program, and was the 1986 recipient of the Simon Newcomb Award.

Painting the Vault of Heaven: the St. John's Lunenburg Celestial Ceiling

*David Turner, Halifax Centre, and
Randall Rosenfeld, National Archivist*

From just after Canadian Confederation to 2001, one of the largest and most enigmatic star maps in the world could be found on the chancel ceiling of St. John's Anglican Church (founded 1754), in the heart of the picturesque and historic UNESCO World Heritage site of Lunenburg, Nova Scotia (1753). On Halloween night 2001 much of the church, particularly the ceiling and roof, became the victim of a deliberately-set conflagration.

gration, but in the aftermath the congregation and community effected a meticulous restoration. The lead author was brought in as a consultant for the celestial ceiling in 2004, and in the course of work with Julie-Jayne and Margaret Coolen of Era Studios he discovered that the original star pattern depicted the sky from Lunenburg at the beginning of the first Christmas, specifically at sunset on December 24, 1 AD. That makes it possibly unique among such artifacts, but also raises a host of compelling questions. Who designed the ceiling? Who painted it? Why was it installed? What were the models? What does it imply about the nature of astronomical culture in 19th-century Nova Scotia? Why and how was knowledge of the true nature of the St. John's celestial ceiling lost? To parishioners it was known only as the Mariner's Sky. This presentation introduces the ceiling and its replication, and provides possible answers for those and other questions about what is a most intriguing east-coast astronomical monument. Presented here, in some cases for the first time, are the results of recent research conducted in Canada and England by the authors.

D.G. Turner is Professor Emeritus of Astronomy and Physics at Saint Mary's University and a life member of the RASC, spending 6 years as editor of its Journal (1994–2000) and receiving a Service Award in 2001. Asteroid 27810 Daveturner is named in his honour. He is a native of the Toronto suburb of Leaside, with academic degrees from the University of Waterloo and University of Western Ontario. He was on faculty at the University of Toronto and Laurentian University prior to moving to Halifax, and is a founding member of the Sudbury Astronomy Club, with 6 years directing the Doran Planetarium. His research entails the study of open star clusters, interstellar extinction, variable stars, and the chancel ceiling stars of St. John's Church, Lunenburg. He is on a variety of editorial boards in addition to the JRASC, and is a member of the AAVSO council. He is well published, with a variety of interesting discoveries, including about 20 poorly-populated open clusters and the smallest-amplitude Cepheid variable, which is not Polaris. His work on the chancel ceiling stars at St. John's Church has been an obsession in his years of semi-retirement.

R.A. Rosenfeld is the Archivist of the Royal Astronomical Society of Canada, a position he has held since its creation in 2008. He was trained at the University of Toronto and the Pontifical Institute of Mediaeval Studies, and researched and published on the tools and technologies of communication ca. 500–1500. Since

2008 he has published numerous articles on astronomical artifacts in a variety of journals, with a particular interest in the graphic records of observations and how they were made. He is a contributor to the second edition of Springer's Biographical Encyclopedia of Astronomers (2014). He is a recipient of the RASC's Simon Newcomb Award (2012), the RASC's President's Award (2012), he has twice achieved high standing in the Annual Griffith Observer Writing Contest (2008 & 2013), and the IAU named Asteroid 283990 Randallrosenfeld (2004 SG2) in his honour. He has acted as an adviser to institutions planning exhibitions of astronomical artifacts, and is a member of the CASCA Heritage Committee. He was the keynote speaker at the 2013 convention of the Antique Telescope Society at the Washburn and Yerkes Observatories.

General Information

Off-Campus Dining

Halifax has a wide variety of restaurants. If distance is not a problem, you can search for your favourite type of restaurant at <http://tinyurl.com/hfx-eateries>.

There is a listing of nearby fast-food restaurants at <http://tinyurl.com/hfx-fast-food>.

Downtown Halifax is not so large that you can't stroll around and look for something that will pique your interest. A map of Downtown Halifax can be found at <http://tinyurl.com/hfx-map>

An alphabetical listing of all downtown restaurants, many with a link to their web site, is at <http://tinyurl.com/Halifax-Dining>.

Areas with a higher concentration of restaurants include:

- Spring Garden Road, from Tower Road to Brunswick Street.
- Dresden Row, north from Spring Garden to Sackville Street.

- Blowers Street from Argyle Street to Grafton Street.
- Argyle Street from Blowers Street to Carmichael Street.
- Barrington Street from Spring Garden Road to Prince Street.
- Historic Properties (north end of Halifax Waterfront).
- Lower Water Street (from Historic Properties to Morris Street.)

On-Campus Dining

During the Summer Session, on-campus food services are reduced. The main cafeteria is the Dockside cafeteria located near the residences in the Loyola building. There is also a Tim Horton's coffee outlet in the Loyola Building, close to the accommodation registration desk. Cafeteria opening times are noted in the GA meal plan, and meals can be purchased (if required) at the cafeteria. Evening meals are not available at the cafeteria during the weekend, but are available for GA events when registering for the GA.

Saint Mary's University is located close to downtown Halifax which boasts a vast array of dining experiences. On Wednesday and Thursday (for those not attending the BOD / Advisory Council meetings and functions), may we suggest exploring downtown Halifax and its gastronomic delights (see Off-Campus dining).

Shopping and Services

Bank Branches (closest locations to campus)

Royal Bank: There is an RBC ATM in the Loyola Building at the opposite end of the hallway from the registration desk.

Bank of Montreal: Downtown at George and Hollis, Spring Garden and Queen. Also Quinpool and Harvard.

Bank of Nova Scotia (Scotiabank): Downtown at Hollis and Prince, Scotia Square (Duke and Barrington), Spring Garden and Brenton (walk north on Robie). Also Coburg and Robie, Quinpool Centre (Quinpool and Vernon)

Canadian Imperial Bank of Commerce (CIBC): Downtown at Duke and Barrington, Spring Garden and Dresden. Also Quinpool and Kline.

Royal Bank: Downtown at Duke and Upper Water, Spring Garden and Summer. Also Quinpool and Oxford.

Toronto-Dominion: Downtown at Barrington and George, Spring Garden and Birmingham. Also Quinpool and Vernon.

Drug Stores (closest to campus)

Atlantic SuperStore (Barrington and Kent)

Lawton's (Spring Garden and Brenton)

Shoppers Drug Mart (Fenwick and Lucknow; also Spring Garden and Dresden Row)

Sobeys (Queen and Kent)

Grocery Stores (closest to campus)

Atlantic SuperStore (Barrington and Kent)

Sobeys (Queen and Kent)

Convenience Stores/Fast Food (closest to campus)

A&W (Spring Garden and Brenton (lower level Park Lane Mall), also Scotia Square)

Big General (South and Henry)

Fenwick Convenience (South Park and Fenwick)

Kentucky Fried Chicken (Quinpool and Harvard)

Needs (Queen and Kent)

McDonalds (Spring Garden and Brenton, also Scotia Square, Quinpool and Harvard)

Starbucks (Spring Garden and Queen, also Scotia Square)

Subway (Queen and Fenwick, also Spring Garden and Brenton, Argyle and Salter)

Tim Horton's (on campus in Loyola building, also Barrington and Smith, Spring Garden and Birmingham, Scotia Square, Lower Water Street and George)

Liquor Stores (closest to campus)

Nova Scotia Liquor Commission, Atlantic SuperStore (Barrington and Kent)

Nova Scotia Liquor Commission, Sobeys (Queen and Kent)

Nova Scotia Liquor Commission (Clyde and Dresden)

Nova Scotia Liquor Commission, Port of Wines (Queen and Doyle)

Major Shopping Centres and Distance from Saint Mary's University

Park Lane 1.2 km (Spring Garden east of Public Gardens)

Scotia Square 1.5 km (Duke and Barrington)

Halifax Shopping Centre 4 km (Mumford Road)

Mic Mac Mall 6 km (Dartmouth near intersection of Highways 111 and 118)

Things to know...

Rules and regulations: Delegates staying in residence will be expected to conduct themselves in accordance with Saint Mary's University Guest Rules and Regulations. These will be provided to you by e-mail from the University upon confirmation of your reservation. Please remember that you are not the only guests staying on campus the weekend of the GA.

Checking in: Guests will be required to provide photo ID and a credit card. Check-in time is any time after 3:00 p.m.. With advance notice, an earlier check-in time can be arranged.

Checking out: Check out is 11:00 . With advance notice, a later check-out time can be arranged. Return room keys to the front desk. Lost/unreturned keys may be subject to a \$100 fee.

Pets: Pets of any kind are not permitted within any of the guest accommodations, with the exception of a certified guide animal.

Smoking: Saint Mary's University is a non-smoking facility. Smoking is not permitted in any Residence Services building. A cleaning fee will be charged to cover the cost of cleaning and extra housekeeping services. Charges will be applied to the credit card provided on file.

Damage policy: Any incident involving guests, which requires additional custodial, security, or maintenance work may result in cleaning, replacement and/or repair charges associated with damage to any University property. Charges will be applied to the credit card provided on file.

Guest parking: Free guest parking is included with all accommodation booked at Saint Mary's University.

Elevator access: Delegates with mobility issues are welcome to request an assignment to a unit located on or above the ground floor.

Laundry facilities: A 24 hour reception and laundry facilities provide added guest convenience

Fitness facilities: A fitness centre is available on-site at Saint Mary's University, and access is provided with your accommodation registration

Internet access: All rooms have wireless internet access, as does most of the University. The front desk will provide log-in and password information.

Telephone information: Local calls must be dialled with 10 digits (dial 7 for an outside line). The local area code for Halifax is 902

What is provided: Bed linens and towels are provided in each bedroom. Kitchen supplies are NOT provided in any of the Residence Buildings, Travel Suites, or Apartments.



Grand Pré National Historic Site

SMU campus map

A PDF version of this map can be found at <http://www.smu.ca/documents/campus-map.pdf>



One University. One World. Yours.

CAMPUS MAP



- | | | | |
|------------|--|-------------|-------------------------------|
| A | Atrium | ME | McNally East |
| AA | Alumni Arena | MM | McNally Main |
| B | Burke Building | MN | McNally North |
| C | Cafeteria | MS | McNally South |
| HC | Homburg Centre for Health and Wellness | O | The Oaks |
| LA | Loyola Academic Complex | P | Parking |
| LR | Loyola Residence | PM | Parking Meters |
| PPL | Patrick Power Library | 883 | 883 Robie St |
| RR | Rice Residence | 867 | 867 Robie St |
| S | Science Building | 960 | TESL / BDC |
| SB | Sobey Building | 5907 | 5907 Gorsebrook Ave |
| SC | O'Donnell Hennessey Student Centre | 5960 | Gorsebrook Research Institute |
| VR | Vanier Residence | | |

Anniversaries 2015

350 years

G.D. Cassini determined the rotation periods of Mars and Jupiter, 1665

300 years

The first total solar eclipse to be widely publicized, by Edmond Halley, 3 May 1715

250 years

Castle Frederick Observatory, Falmouth, Nova Scotia, the earliest astronomical observatory in the Western Hemisphere for which images survive (JRASC, Aug. 2012, pp. 142-149), 1765

150 years

In four equations, James Clerk Maxwell unified electricity and magnetism, and established that light, the messenger from the stars, is an electromagnetic wave, 1865

150 years

Clarence Augustus Chant, the father of Canadian astronomy, founder of the astronomy program at the University of Toronto and of the David Dunlap Observatory, creator of the RASC *Journal* and *Observer's Handbook*, and founder of the RASC's system of Centres, was born, 1865

100 years

Albert Einstein published the General Theory of Relativity, the basis of our understanding of spacetime, from GPS technology to orbital motion and cosmology, 1915

60 years

RASC Halifax Centre formed, 1955

50 years

Cosmic Microwave Background discovered, confirming that the Universe began with a Big Bang, 1965

40 years

First RASC GA in Atlantic Canada, Halifax Centre, 1975

20 years

The Halifax Centre's Saint Croix Observatory founded, 1995

20 years

First supernova discovered from Canada, at SMU (Paul Gray and Dave Lane), 1995

0 years

Longitude of the ascending node of the lunar orbit on the ecliptic = 180 degrees, an event that occurs at 18.61-year intervals and produces larger ocean tides, particularly in the Bay of Fundy's Minas Basin, 2015