

AUPAC

2024

Welcome to the Atlantic Undergraduate Physics and Astronomy Conference 2024!

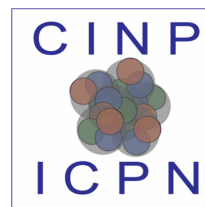
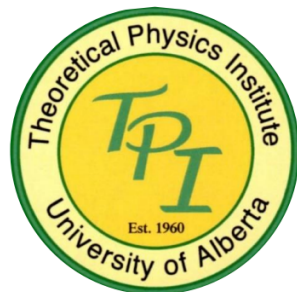


In partnership with

MountAllison
UNIVERSITY



Science Atlantic



Canadian Institute of Nuclear Physics

Institut canadien de physique nucléaire

General Information

Land Acknowledgement

We would like to acknowledge that we are located within the territory of Mi'kma'ki, the unceded, ancestral territory of the Mi'kmaq. Our relationship and our privilege to live on this territory was agreed upon in the Peace and Friendship Treaties of 1752.

Because of this treaty relationship, it is to be acknowledged that we are all Treaty people and have a responsibility to respect this territory.



12 - Wallace McCain Student Centre (MCCAIN)

18 - Sir James Dunn Building (DUNN)

22 - Purdy Crawford Centre for the Arts (PCCA)

25 - Jennings Dining Hall (JENNINGS)

Follow our Instagram for Updates: [@aupac_2024](https://www.instagram.com/aupac_2024)

Your student organizing committee:

Co-Chairs: Maggie Kerr & Shannon Bowes

Members: Andrew Hess, Andrianna Scott, Laura Hubbert

Special thanks to Dr. David Hornidge, Kellie Mattatall, Fraser Turner, and the Mount Allison Physics Department

Conference Schedule

| Friday, February 2nd | | |
|----------------------|---------------------------|------------|
| 5:00pm | Check in | Dunn Foyer |
| 5:30pm | | |
| 6:00pm | | |
| 6:30pm | | |
| 7:00pm | Opening Ceremony | Dunn 113 |
| 7:30pm | Speaker: Dr. Shirin Enger | Dunn 113 |
| 8:00pm | AUPAC Cup | Dunn 113 |
| 8:30pm | | |
| 9:00pm | | |
| 9:30pm | | |
| 10:00pm | | |

| Sunday, February 4th | | |
|----------------------|---|------------|
| 8:30am | Breakfast | Jennings |
| 9:00am | | |
| 9:30am | Student Presentations: Atmospheric Physics and Oceanography | Dunn 108 |
| 10:00am | | |
| 10:30am | Coffee Break | Dunn Foyer |
| 11:00am | | |
| 11:30am | Speaker: Dr. Rachel Chang | Dunn 113 |
| 12:00pm | | |
| 12:30pm | Lunch | Jennings |
| 1:00pm | | |
| 1:30pm | Speaker: Dr Robbie Sanderson | Dunn 113 |
| 2:00pm | | |
| 2:30pm | Awards and Closing Ceremony | Dunn 113 |

| Saturday, February 3rd | | |
|------------------------|--|------------------------|
| 8:30am | Breakfast | Jennings |
| 9:00am | | |
| 9:30am | Student Presentations: Medical & Biological Physics, High Energy Physics | Dunn 106 & Dunn 108 |
| 10:00am | | |
| 10:30am | | |
| 11:00am | The Institute of Theoretical Physics Coffee Break | Dunn Foyer |
| 11:30am | Speaker: Dr. Shohini Ghose | Dunn 113 |
| 12:00pm | | |
| 12:30pm | The MTA Conference Support Fund Lunch | Jennings |
| 1:00pm | | |
| 1:30pm | Student Presentations: Astronomy and Astrophysics, General Relativity, Material Science and Condensed Matter | Dunn 106 & Dunn 108 |
| 2:00pm | | |
| 2:30pm | | |
| 3:00pm | | |
| 3:30pm | The MTA Physics Department Coffee Break | Dunn Foyer |
| 4:00pm | Grad Fair | PCCA |
| 4:30pm | | |
| 5:00pm | | |
| 5:30pm | | |
| 6:00pm | Banquet | McCain |
| 6:30pm | | |
| 7:00pm | Speaker: Dr. Art McDonald | McCain |
| 7:30pm | | |
| 8:00pm | | |

Note: The events in McCain will be on the first floor in Tweedie Hall, directly opposite the entrance when you walk in.

Code of Conduct:

Every attendee has the right to participate in and enjoy AUPAC to the fullest. This is a space for open discussion where everyone is welcome and we will not tolerate any disrespect or harassment. If you feel uncomfortable at any point, please find one of the student committee members and we will help you.

Plenary Speakers

Dr. Shirin Abbasinejad Enger

McGill University

February 2, 7:30 PM - 8:30 PM

DUNN 113



Dr. Shirin Abbasinejad Enger is a tenured Associate Professor in the Gerald Bronfman Department of Oncology at McGill, as well as the Director of the Medical Physics Unit. She is a holder of a Tier 2 Canada Research Chair in Medical Physics and is the Research Director of Translational Physics and Radiobiology at the Lady Davis Institute and Segal Cancer Centre of the Jewish General Hospital.

Dr. Abbasinejad Enger's multidisciplinary research involves development of applied technology to address current limitations in radiotherapy treatment and imaging of cancer. She has multiple patents and has received competitive funding to develop her innovations from proof of concept to clinical trials.

Plenary Speakers

Dr. Shohini Ghose

Wilfred Laurier University

February 3, 11:30 AM - 12:30 PM

Virtual Pre-Recorded Presentation (DUNN 113)



Dr. Shohini Ghose researches quantum information science – the study of how the laws of quantum physics can be harnessed to transform computation and communication, and to develop novel tasks such as teleportation. Her work also explores the fundamental connections between classical chaos theory and quantum physics, and has led to the first experiments directly showing the effect of chaos on quantum entanglement.

As founding Director of the Laurier Centre for Women in Science (WinS), she also works on research projects and leads initiatives to explore and address gender issues and diversity in science. Dr. Ghose is the NSERC Chair for Women in Science and Engineering, and has a new book called *Her Space, Her Time: How trailblazing women scientists decoded the hidden universe*.

Plenary Speakers

Nobel Laureate Dr. Art McDonald

McDonald Institute
February 3, 7:30PM - 8:30PM
Tweedie Hall



Dr. Art McDonald is the Director of the SNOLAB association, a worldwide scientific collaboration based in Sudbury, Ontario. Dr. McDonald was instrumental in the conceptual and physical design of the SNO Collaboration, and in the eventual data-taking and analysis phases of experiments carried out there. SNOLAB conducts research about neutrinos and dark matter.

Models of the Sun predicted a larger amount of solar neutrinos than what detectors on Earth observed, which was the leading initiative behind Dr. McDonald's establishment of SNOLAB. There were concerns that perhaps our models of the sun or our understanding of the basic laws of physics were incorrect, but the SNO experiment discovered that neutrinos change "flavour" as they travel from the Sun to the Earth, changing the way they are collected in particle detectors. This remarkable SNOLAB discovery earned Dr. McDonald the Nobel Prize in Physics in 2015.

Plenary Speakers

Dr. Rachel Chang

Dalhousie University

February 4, 11:30 AM - 12:30 PM

DUNN 113



Dr. Chang is a Canada Research Chair in Atmospheric Science from Dalhousie University. Her research is motivated by atmospheric processes that take place in marine, coastal, and polar environments, primarily through studying the sources, transport, and loss processes of atmospheric aerosol and determining its effect on climate through liquid fog and cloud droplets. Dr. Chang's lab focuses on making ambient measurements, but their work is complemented by modelling and laboratory experiments.

Dr. Chang and her research team also examines the chemical composition and sources of particles in the Arctic throughout the year. This work will help us better understand how particles affect air quality and climate, and how we can control their effects for the benefit of society.

Plenary Speakers

Dr. Robbie Sanderson

Wind Energy Institute of Canada
February 4, 1:30 PM - 2:30 PM
DUNN 113



Dr. Robbie Sanderson joined the Wind Energy Institute of Canada (WEICan) in December of 2017. Dr. Sanderson is involved in overseeing data collection at the Institute with a focus on facilitating research collaborations. Dr. Sanderson has recently transitioned to wind energy research, but views it as an important step to meeting the ever-expanding demand for renewable power. Dr. Sanderson will be presenting a talk entitled *Net-Zero Emissions 2050, Great! But What Now?*

In 2021, the Canadian Net-Zero Emissions Accountability Act became law, which cemented Canada's commitment to net-zero emissions by 2050. One of the paths toward net-zero emissions is the expansion and diversification of the existing power grid to include more renewable generation. Due to the variability of renewable generation and it supplanting conventional generation, concerns of grid stability increase as the percentage of renewable energy grows.

The Wind Energy Institute of Canada has two main avenues of research; increasing the reliability of assets to keep renewable generators producing, and investigating and demonstrating methods to strengthen a power grid with more renewable generators. A few examples of this research will be shown and discussed.

Gold Sponsors:

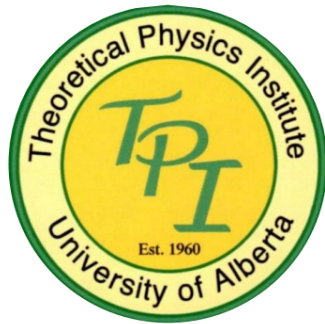
Mount Allison University Conference Support Fund



Silver Sponsors:

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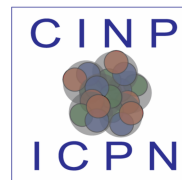
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Thank you for attending AUPAC

2024!

