



# 12TH ANNUAL CANADIAN CONFERENCE FOR UNDERGRADUATE WOMEN & GENDER MINORITIES IN PHYSICS

Tentative Event Program




**JANUARY 31 - FEBRUARY 2, 2025, UCALGARY CAMPUS**  
University of Calgary & University of Alberta





# **UNIVERSITY OF CALGARY LAND ACKNOWLEDGEMENT**

The University of Calgary, located in the heart of Southern Alberta, both acknowledges and pays tribute to the traditional territories of the peoples of Treaty 7, which include the Blackfoot Confederacy (comprised of the Siksika, the Piikani, and the Kainai First Nations), the Tsuut'ina First Nation, and the Stoney Nakoda (including Chiniki, Bearspaw, and Goodstoney First Nations). The City of Calgary is also home to the Métis Nation of Alberta (Districts 5 and 6).



# Friday January 31st

## PROGRAM SCHEDULE

	Time	Room
Registration	1:00 PM - 3:00 PM	TBD
SNOLAB Networking Workshop	2:00 PM - 3:00 PM	TBD
Graduate Applications Dr. Jo-Anne Brown		TBD
Welcoming Remarks	3:00 PM - 3:15 PM	TBD
Plenary Lecture 1 EDI in STEM Dr. Stefania Impellizzeri	3:15 PM - 4:15 PM	TBD
Snack Break	4:15 PM - 4:30 PM	TBD
Plenary Lecture 2 Physics Education Dr. Ania Harlick	4:30 PM - 5:30 PM	TBD
Quantum City/QAI Ventures Panel	5:30 PM - 6:30 PM	TBD
Graduate / Career Panel		
RAO Tour	6:45 PM - Late	RAO
Networking Event		TBD

# Saturday, February 1st

## PROGRAM SCHEDULE

	Time	Room
Plenary Lecture 3 Dr. Svetlana Kuznetsova	9:00 AM - 10:00 AM	TBD
Snack Break	10:00 AM - 10:15 AM	TBD
Student Oral Presentations	10:15 AM - 12:15 PM	TBD
Lunch (boxed)  Graduate / Industry Fair	12:15 PM - 2:15 PM	TBD
Plenary Lecture 4 Taryn Tomlinson	2:15 PM - 3:15 PM	TBD
Poster Presentations	3:30 PM - 4:45 PM	TBD
Plenary Lecture 5 Dr. Marie-Cecile Piro	5:00 PM - 6:00 PM	TBD
Banquet Dinner	6:00 PM - 7:30 PM	MacEwan Ballroom
EDI Panel  Networking event	7:30 PM - 8:30 PM	TBD

# Sunday, February 2nd

## PROGRAM SCHEDULE

	Time	Room
Plenary Lecture 6 Dr. Lindsay LeBlanc	9:00 AM - 10:00 AM	ENG 207
Snack Break	10:00 AM - 10:15 AM	TBD
Lab Tours	10:15 AM - 12: 15 PM	ES*, SB*
Lunch (Pickup)	12:15 PM - 1:15 PM	LDL
Plenary Lecture 7 Dr. Laura Curiel	1:30 PM - 2:30 PM	ENG 207
Plenary Lecture 8 Dr. Jo-Anne Brown	2:30 PM - 3:30 PM	ENG 207
Closing remarks	3:30 PM	ENG 207

# Speaker List

## Plenary Lecturers

**Dr. Stefania Impellizzeri, Toronto Metropolitan University**

EDI



Dr. Stefania Impellizzeri is an Associate Professor in the Department of Chemistry and Biology and the Jet Ice Research Chair in Sustainable Materials Chemistry at Toronto Metropolitan University. An expert in physical organic and materials chemistry, her studies focus on how plasmonic nanostructures enhance fluorescence in bioimaging and improve catalytic performance. She received the PCCP 2021 Emerging Investigator Lectureship for Outstanding Contributions as an Emerging Scientist and is a Board Member of CNC-IUPAC and NanoOntario. Impellizzeri also leads a research program to improve the environmental impact of the ice-making industry and address sustainability issues in arena management. Collaborating with industry leaders, she is advancing evidence-based policies and standards for 'greener ice' to be adopted by municipalities, clubs, and sports associations. Her interests in EDI focus on inclusive mentorship and excellence. She sits on the Canadian Society of Chemistry's Working Group on EDI, was recently appointed Dimensions Faculty Chair for TMU Science, and regularly speaks on the topic at conferences and university seminars.

**Dr. Ania Harlick, University of Toronto**

Physics Education



Dr. Ania Harlick is currently an Associate Professor, Teaching Stream at the University of Toronto having previously been an Instructor at the University of Calgary. Originally from Poland, she earned her doctorate from Memorial University of Newfoundland and Labrador in 2010. Ania considers herself an accidental physicist with a passion for education. As her primary responsibilities are teaching university courses, most of her research focuses on implementing modern pedagogy into the design of course and laboratory components. As far as she is concerned, she has her dream job.

## Dr. Svetlana Kuznetsova, Yale

## Medical Physics



Dr. Svetlana Kuznetsova is a Medical Physicist at the Smilow Cancer Hospital and Assistant Professor at Yale University. Her career started with undergraduate summer research roles, specifically in biophysics, with an ultimate goal of entering the field of medical physics. She completed her Bachelor's Honours Thesis at the University of Calgary, where she investigated the behaviour of solid-state dosimetry systems in low energy range for radiation therapy purposes. Her graduate studies were also conducted at the University of Calgary with her research thesis centered on assessing geometrical radiation delivery accuracy for hypofractionated liver cancer treatments. She was then accepted to the medical physics residency program at the University of California – San Diego. Dr. Kuznetsova continues to focus on the improvement, advancement, and standardization of current radiation therapy tools and procedures for oncological applications. Her recent research interests include image registration approaches and auto-contouring applications.

## Taryn Tomlinson, Canadian Space Agency

## Space Physics



*Director of Sun-Earth System Sciences at the Canadian Space Agency (CSA)*

Taryn Tomlinson has spent her career committed to exploring and discovering space, from roles in academics to industry and now in government. After acquiring a bachelor's degree in electrical engineering from McGill University and a Master's Degree in Space Science from the University of California, San Diego, Taryn worked as an engineer in a number of California and German firms. She also co-founded a high-tech space startup in 2003, where she subsequently joined the CSA in 2008 to work on the robot "Dextre" for the International Space Station. Over the past 12 years, she has served as a senior project manager and systems engineer at the CSA, and as the Chief of Staff to the President. Now a director in the branch that uses Earth Observation (EO) data to help solve the greatest challenges of our planet today, including wildfires and climate change, she gravitates to discussions on innovation, leadership, and the contribution of the diverse players in the space sector ecosystem.



## Dr. Marie-Cecile Piro, University of Alberta      Astroparticle Physics



Marie-Cécile Piro is an Associate Professor at the University of Alberta in the Department of Physics and an Adjunct Professor in the Department of Earth and Environmental Sciences at Dalhousie University. She completed her undergraduate and graduate studies at the University of Montreal, where she earned her PhD in experimental particle physics for her research on bubble chamber detectors in dark matter searches. Dr. Piro continued her pursuit of dark matter as a postdoctoral associate in France, where she worked

with high-purity germanium detectors in a condensed matter group and conducted critical operations at the Modane underground laboratory. She moved to the US as a research associate and spent two years in the Gran Sasso underground laboratory in Italy to work on the world's largest xenon dark matter detector. Her strong leadership and extensive experience in using different detector technologies have allowed her to collaborate with several international research teams and to make significant contributions to world-leading searches for dark matter (Google Scholar).

In 2024, she was awarded the National Dorothy Killam Fellowship to support her pioneering work in advancing dark matter research.

## Dr. Lindsay LeBlanc, University of Alberta      Quantum



Lindsay LeBlanc (she/her) is an experimental atomic physicist working with ultracold atoms and quantum technologies at the University of Alberta, situated in Treaty 6 territory. Lindsay earned her BSc in Engineering Physics from the University of Alberta in 2003 and her Ph.D. in Physics from the University of Toronto in 2011, after which she headed to Gaithersburg, MD, where she worked with the Laser Cooling and Trapping Group of the Joint Quantum Institute (JQI) at the National Institute for Standards and Technology (NIST). Since 2013,

Lindsay has been back at the University of Alberta, where she is now an Associate Professor and runs the Ultracold Quantum Gases Laboratory, which focuses on both fundamental research and practical applications using atomic physics techniques. With her team, she is currently engaged in three research directions: quantum simulations with ultracold atoms; quantum communications with atomic systems; and microwave atom-optical quantum sensing with room temperature atoms. In addition to being a scientist, Lindsay is also a mother and a partner, a sister and a daughter; she enjoys trying new recipes in the kitchen, attempting to keep things alive in the garden, and being a part of the outdoors: hiking and cross-country skiing and just looking at the prairie skies.



## **Dr. Laura Curiel, University of Calgary**

## **Bio-Medical Engineering**



As co-founder and CEO of NovusTx Devices, a startup dedicated to developing non-invasive ultrasound-based neuromodulation for neurological and mental health, Laura Curiel specializes in Focused Ultrasound therapy research. She began her career as an Electronics Engineer at ITESM in Mexico, moved to France for her Master's and PhD, and later immigrated to Canada to work as a postdoctoral fellow, eventually becoming a researcher and professor. Her research focuses on creating tools to support the clinical translation

of focused ultrasound by establishing pre-clinical and experimental platforms. In addition, she investigates bio-effects, designs novel therapeutic devices, and explores advanced monitoring tools for therapy, aiming to optimize safety and efficacy across medical applications. Previously, she developed and tested probes for prostate cancer, applied modelling to improve clinical outcomes and conducted clinical evaluations of elastographic imaging techniques to enhance treatment assessment and lesion formation control. Her overarching mission is to refine focused ultrasound as a therapeutic approach, ensuring effective translation of research into clinical practice and commercial products.

## **Dr. Jo-Anne Brown, University of Calgary**

## **Radio Astronomy**



Dr. Jo-Anne Brown is currently a Professor and Graduate Program Director in Physics & Astronomy, at the University of Calgary. Her path to this position was highly non-linear. After graduating from high school in Lethbridge, she did a BSc in Physics at the University of Alberta, followed by an MSc in Electrical Engineering at Queen's University in Kingston. She then accepted a position as a hardware designer at Nortel Networks in Ottawa. She worked at Nortel for almost 3 years, before returning to school to do a PhD in Astrophysics at

UCalgary, for which won the Plaskett Medal (national thesis prize in astronomy and astrophysics in Canada); she was the second woman to win the Plaskett in the history of the award, and the only person from UCalgary to ever win it. Additionally, she has received 7 teaching awards in her career, 5 of which were student-initiated. While her research is focused on Radio Astronomy and Galactic magnetism, she also studies psychology and trains in karate. She continually endeavours to balance life between her work, being a mom, being a partner, and remembering to play outside as often as possible.

# Panels

## GRADUATE/CAREER PANEL

This panel aims to showcase different avenues students can take with a BSc in Physics/Astrophysics. The panellists come from diverse backgrounds and have unique experiences post-graduation.

**Panellists:** Courtney Krushel, University of Calgary; Rebecca Booth, University of Calgary; Paula Brandt, University of Calgary; Jordan Smith, Quantized Technologies Inc.

## EDI PANEL

The panellists will share their personal journeys, strategies for overcoming obstacles, and insights into how EDI can continue to shape the future of physics.

**Panellists:**

Ayesha Iqbal, SNOLAB; Paula Brandt, PhD Candidate, University of Calgary; Dr. Claudia Gomes da Rocha, Department of Physics and Astronomy Associate head EDI, University of Calgary.

## QUANTUM CITY & QAI VENTURES

This is a joint panel discussion with Quantum City and QAI Ventures promoting:

1. The quantum ecosystem in Alberta,
2. Quantum City Trainee Community (internship opportunities, project opportunities, etc),
3. Promote QAI Ventures activities in Alberta, and
4. Present career paths other than academia.

# Workshops

## NETWORKING FOR SUCCESS

In this workshop participants will learn about different types of networking, the importance of networking in academia, and tools for this style of communication. The workshop will cover crafting elevator pitches based on goals and tips for delivering impactful pitches. Participants will have the opportunity to practice their networking skills and meet peers during the session.

## GRADUATE APPLICATIONS

In this workshop participants will learn about the application process to graduate studies, specifically for physics-based programs. The workshop will be led as a talk by Dr. Jo-Anne Brown.

## EDI & TEACHING (SPEAKER ONLY)

This workshop is designed for professors and industry leads who work with undergraduate and graduate students. Its purpose is to brainstorm and discuss how students can be supported, and how EDI values can be integrated into research, academia, and industry. The workshop will be led by Dr. Stefania Impellizzeri.

# Laboratory Tours

## Rothney Astrophysical Observatory



### Biography

The University of Calgary's Rothney Astrophysical Observatory (RAO) is a facility dedicated to expanding knowledge of the universe. Located in the Foothills of the Rockies, the RAO is a centre of astrophysics, physics and science teaching and research. The role and purpose of the RAO is to promote interest in

Astrophysics, science, technology, and math through public access to the academic knowledge and research conducted at the facility. The RAO also strives to serve the community as a resource to science educators and as a support to science education in Alberta.

## Isotope Science Laboratory

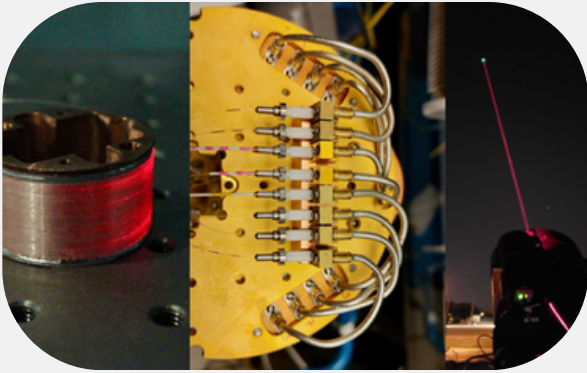


### Biography

Here in the Isotope Science Laboratory, we aim to broaden our understanding of physical, biological, and nuclear processes through the analysis and interpretation of isotopic composition of the elements. We apply our tools and knowledge to investigations in the Life, Environmental, and Nuclear sciences. We are a highly interdisciplinary research

group working closely with colleagues in the Life and Environmental Sciences. Current projects include using measurements of  $^{210}\text{Pb}$  in toenails to assess an individual's exposure to radon, measurement of zinc isotopic composition to understand how metals are processed in living systems, and working with TRIUMF, Canada's Particle Physics Institute, to develop next generation ion sources for precise mass measurements of exotic nuclei.

## QUANTUM CLOUD LAB

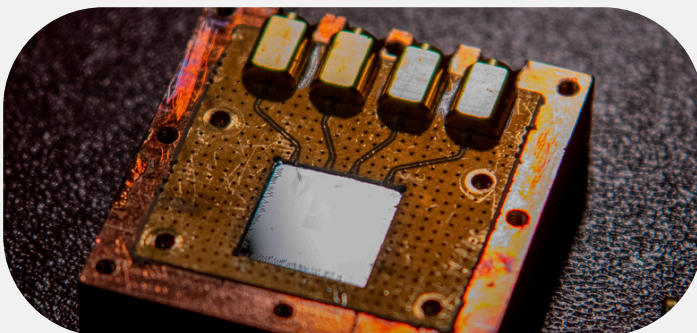


### Biography

We live in a connected world in which information technology has made it possible to work on the cloud, access your bank account, conduct a video conference, etc., from and to anywhere on the globe. Moreover, this can all be done securely! Quantum technologies offer a whole new set of promises and challenges to

our connected world. Quantum computers are poised to employ their remarkable power to solve essential, but currently, intractable computational problems and quantum metrology may open up a whole new set of possibilities for making fundamental measurements. However, the security and privacy of our communication will be challenged by these capabilities. In the Quantum Cloud Lab, we aim to develop experimental capabilities that will lead to practical implementations of quantum links forming the basis of quantum networks that connect distant quantum devices. The goal involves research into quantum-key distribution over fibre and free-space channels, non-classical light sources, quantum memory and more.

## INTEGRATED HYBRID QUANTUM CIRCUITS



### Biography

We are an interdisciplinary research group based at the Institute for Quantum Science and Technology at the University of Calgary. Comprising both experimental and theoretical researchers, our primary focus is on the reversible

quantum interface between superconducting circuits and quantum optical systems. Our lab is dedicated to advancing quantum communication technology that seamlessly integrates with superconducting processors, enabling the construction of large-scale quantum networks. Furthermore, we actively engage in the development of non-invasive quantum sensing and imaging techniques, specifically designed for applications involving delicate and light-sensitive materials.



# BARCLAY LAB



## Biography

First built in 2013 and expanded into a newly renovated space in 2021, this lab houses apparatus for nanophotonic device characterization and cryogenic spectroscopy of single quantum emitters. Key tools include nanopositioning systems for

tapered fiber probing of nanophotonic devices, confocal microscopy and spectroscopy systems, and tunable diode lasers. It's home to state of the art instruments from Montana Systems (Nanoscale Workstation), many swept wavelength tunable lasers, high-speed electronics (20 GS/s AWG, real-time spectrum analyzers, etc.), single photon detection hardware, etc. Devices created and studied by our group members concentrate optical energy into nanoscale volume, enhancing nominally small effects such as the optical coupling of radiation pressure from single photons to the motion of mechanical nanoresonators. In the ultimate limit, even for a weak input consisting of only a single photon, these effects can significantly modify the linear response of a nanophotonic device, leading to fundamental studies and practical quantum technologies.

# CODE OF CONDUCT

For CCUW\*iP 2025, we are adopting the Code of Conduct of the University of Calgary. By registering for this conference all participants agree to abide by this code of conduct. Behaviour that violates our code of conduct will not be tolerated and under given circumstances can have the consequence of revoking the privilege to participate in CCUW\*iP 2025.

CCUW\*iP 2025 delegates have a right to belong and a responsibility to treat one another with respect. Acts of discrimination, harassment, or bullying will result in immediate action, and notification of appropriate authorities, if necessary. This includes but is not limited to: sexual harassment, intimidation, threatening behaviour, sustained disruption, use of offensive or demeaning language including unwelcome or offensive jokes, unwanted photography, screenshots or recording without consent, engaging in biased, demeaning, or hostile commentary based on individual characteristics such as age, race, ethnicity, sex, sexual orientation, gender identity or expression, marital status, nationality, political affiliation, ability status, educational background, or any other characteristic protected by law.



# GUIDELINES ON GENDER-INCLUSIVE LANGUAGE

The Canadian Conference for Undergraduate Women and Gender Minorities in Physics (CCUW\*iP) includes and welcomes women and gender minorities across Canada. We kindly request that presenters and participants use gender-neutral language during presentations and conversations. Our audiences represent a diverse range of gender identities, and inclusive communication ensures that everyone feels respected and valued. Thank you for your support in fostering an inclusive environment.

Our team is committed to providing a safe and inclusive environment that fosters the exchange of scientific ideas, encourages open and respectful dialogue, and is free of harassment and discrimination.

We respect each other, take care of each other, and support the success of all.

# Acknowledgements

We would like to thank those who aided in the planning and execution of this conference. It would not be possible without their help.

## UNIVERSITY OF CALGARY

Dr. Dave Knudsen, Department of Physics and Astronomy  
Dr. Claudia Gomes da Rocha, Department of Physics and Astronomy  
Dr. Jo-Anne Brown, Department of Physics and Astronomy  
Nancy Jing Lu, Faculty of Science Business Operations  
Grace Gallo, Faculty of Science Business Operations  
Melody Harris, Faculty of Science Marketing and Communications  
Owen Stockden, Faculty of Science Marketing and Communications  
Angela Murphy, Faculty of Science Development  
Dr. Laura Mazzino, Department of Physics and Astronomy  
Dr. Laleh Behjat, Department of Electrical and Software Engineering

## UNIVERSITY OF ALBERTA

Dr. Roger Moore, Department of Physics  
Dr. Marie-Cecile Piro, Department of Physics  
Dr. Sharon Morsink, Department of Physics  
EDI Committee, Department of Physics

## CANADIAN ASSOCIATION OF PHYSICISTS

Francine Ford, Executive Director  
Ellen Molloy, Association Manager