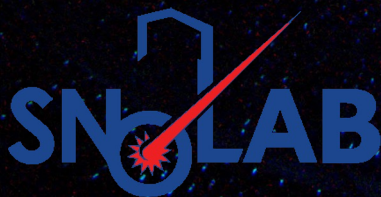




CASST 2022

The Canadian Astroparticle Summer Student Talk Competition

Programme
15-16 August 2022



Arthur B. McDonald
Canadian Astroparticle Physics Research Institute



*“Driving down the road I get a feeling
that I should have been home yesterday...
Yesterday”*

- John Denver, Patron Saint of Particle Physics

Sponsored by



Arthur B. McDonald
Canadian Astroparticle Physics Research Institute



Organizing Committee:

Benjamin Tam (Queen's)
Christine Kraus (SNOLAB)
Sarah Dawson (McDonald Institute)
Melissa Baiocchi (Queen's)
Erica Brunelle (SNOLAB)
Blair Flynn (SNOLAB)
Rachel Richardson (SNOLAB)
Sarah Dawson (McDonald Institute)
Mark Richardson (McDonald Institute)
Alex Pedersen (McDonald Institute)

Judges:

Dr. Christine Kraus (Head Judge)
Dr. Erica Caden
Dr. Szymon Manecki
Dr. Stephen Sekula
Shengzhao Yu
Remington Hill
Rachel Richardson

Online viewing information:

The competition will be held entirely online. To watch, register for free at our website:

<https://indico.cern.ch/e/casst22>

Registrants will be emailed connection information the day before the competition begins.

In-person viewing information:

All sessions and panels will occur in the Executive Learning Centre (ELC) located in the Fraser Building on the third floor. Pay and display parking is available in Lot B at a rate of \$8.00 per day.



COVID-19 public health measures and advice during CASST 2022

Wearing a mask will be your choice while on campus for the CASST Meeting, according to your comfort level or personal situation. Even with masks NOT being required we continue to recommend that individuals wear a mask when distancing cannot be maintained.

The vaccination policy came into effect on September 7th and is currently paused.

Overview from Sudbury Public Health

Provincial mask requirements have been lifted in most public settings, including:

- social gatherings and organized public events
- exercise, fitness activities, and sport activities
- retail settings
- personal care services
- restaurants, bars and other food or drink establishments
- places of worship
- public transit

You should continue to wear a mask if:

- you feel it is right for you
- you are at high risk for severe illness
- you are recovering from COVID-19 or have symptoms of COVID-19
- you are a close contact of someone with COVID-19 or symptoms of COVID-19

We thank you for your patience and understanding. We look forward to seeing you all in person or virtually while still hosting this event safely.

People with symptoms should stay isolated and join remotely.

Free rapid antigen tests are available for the general public for at-home use (Government of Ontario) and are available at participating pharmacies and grocery stores (Government of Ontario), as well as through select community partners in vulnerable communities.

You can contact one of the local testing centres for more information if needed: <https://www.phsd.ca/health-topics-programs/diseases-infections/coronavirus/>

CASST 2022

SNOLAB VIRTUAL WORKSHOP ETIQUETTE



If you haven't used Zoom before, download Zoom prior to the day of the meeting and familiarize yourself with any features you may need to use on the day - mute/unmute microphone, stop/start video, screen-share etc.

Please, join early - up to 5 minutes before the session start time. To help speeding up waiting-room admitting process, please make sure your Zoom name reflects workshop registration. You will join the workshop session already muted. This is important and perhaps the most critical tip on this list to avoid background noise and distractions for others.

1

WAITING ROOM

The host admits the attendees individually from the waiting room.

2

MUTE YOUR MIC

Be sure to mute your mic (lower-left corner of your screen) as soon as you sign on and whenever you are *not* speaking.

3

RAISE YOUR HAND

If you want to ask a question/speak, use the "raise hand" feature that is available at the bottom centre of the "participant panel".



Password
ZOOM links are password protected.



Close unneeded applications on your computer to keep an optimal functioning. You might want to use a headset with an external mic for best hearing and speaking capabilities



Chat Usage

You can ask questions and make comments silently if desired using the "Chat" feature (bottom and centre of your screen).

Special Event

Cultural Parallax under the Night Sky: The Science behind Indigenous Stories

Speaker: Will Morin, BFA, BA Indigenous Studies, B.Ed, MA, PhD (ABD)

Host: Dr. Christine Kraus; Planetarium Operator: Dr. Hoi Cheu



Art:
Heritage Bird, Will Morin

5:30 pm, August 15, 2022, Doran Planetarium, Laurentian University

Starting with practices of identifying constellations, Ojibway storyteller and knowledge carrier Will Morin will introduce how Indigenous people see the stars with a focus on Anishinaabe culture.

He will demonstrate how to unpack knowledge from the traditional stories of living Indigenous cultures.

Organizer: Canadian Astroparticle Summer Student Talk Competition

The Doran Planetarium is located in the basement of the Fraser Building.
Please see page 4 for information regarding directions to the building and parking.

Programme

EDT	August 15	August 16
8:30		
9:00	Activity - Networking (9:00 - 9:45) Welcome (9:45 - 10:00)	SNOLAB Virtual Tour 8:30 - 10:00
10:00	Student Talks 10:00 - 11:36	Student Talks 10:00 - 11:00
11:00	Break (11:36 - 11:50)	Break (11:00 - 11:15) Student Talks 11:15 - 12:15
12:00	Student Talks 11:50 - 13:14	Lunch 12:14 - 13:00
13:00	Lunch 13:14 - 14:00	Panel - Microcredentials 13:00 - 14:00
14:00	Panel - Careers 14:00 - 15:00	Student Talks 14:00 - 15:00
15:00	Student Talks 15:00 - 16:00	Break (15:00 - 15:15) Student Talks 15:15 - 16:15
16:00	Break (16:00 - 16:15) Student Talks 16:15 - 17:15	Break (16:15 - 17:00)
17:00		Panel - EDI & Allyship 17:00 - 18:00
18:00	Planetarium Show 17:15 - 19:00	Results (18:00 - 18:30)
	Dinner and social activities to follow	

Please find the most up to date schedule here: <https://indico.cern.ch/e/casst22>
 Panel information can be found here: <https://www.snolab.ca/news-events/snolab-events/casst-2022/>

List of Speakers

All times are in Eastern

Session 1 (10:00am 15 August 2022)

How the Sun Shines	Maggie Oxford
Neutron Beam Solid Transmission Monte Carlo Simulations	Ry Cyna
The decoherence curve - measuring the lateral distribution of muons in cosmic-ray air showers	Guilherme Caumo
Monte Carlo simulation of the muon flux in DEAP-3600	Lorenzo Mirasola
Modelling the Kinematics of an Ultra Diffuse Galaxy to Determine its Dark Matter Content	Henry White
Waveform fitting algorithm for LoLX pulse data	Laura Gonzalez Escudero
Ar2D2 Detector Simulation	Megan Foster
Lovelock Black Holes in the Five-Dimensional Spacetime	M. Nabyan Arkan

Session 2 (11:50am 15 August 2022)

Calibrating an Ocean-Floor Observatory: Conquering Currents at the Pacific Ocean Neutrino Experiment	Hamish Johnson
Regulating Thermal Control for the Scintillating Bubble Chamber Experiment	Ezri Wyman
Getting Your Head in the Clouds: Construction of a Small Cloud Chamber	Michael Hetu
Investigating Improvements to Event Selection Cuts Against Neck Alpha Backgrounds for DEAP-3600	May Wittenberg
Probing Exotic Scalar Fields by Utilizing the GPS System	Yu Li
Fuzzy Dark Matter: Dead or Alive!?!?	Boris Zupancic
Studying Muon Events Within SNO+	Victoria Howard

List of Speakers

All times are in Eastern

Session 3 (3:00pm 15 August 2022)

Simulations of Muon-Induced Backgrounds to nEXO	Regan Ross
Quantum fluctuations masquerade as halos: Bounds on ultra-light dark matter from quadruply-imaged quasars	Alex Laroche
Radon Gas Assays for the SNO+ Experiment	Juliette Deloye
Axion Quark Nugget Annihilation With Baryon Gas Versus Observed Excess Diffuse Ultraviolet Radiation	Michael Sekatchev

Session 4 (4:15pm 15 August 2022)

Laser-Driven Photon Emission in SiPMs with MIEL	Zachariah Charlesworth
NEWS-G Detector Calibration	Irina Babayan
nEXO Guide Tube Presentation	Emily Laxton
Simulating Asymmetric Dark Matter in Stars	Madelynn Mast
Scintillating Bubble Chamber Silicon Photomultiplier Pulse Analysis	Ciaran Byles-Ho

Session 5 (10:00am 16 August 2022)

K40 Backgrounds in the SNO+ Neutrino Detector	Parmesh Ravi
hetDB: Tracking transient observations from the past, present, and future	Alex Galvin
Commissioning a CTBT Coincidence Detector System Underground at SNOLAB	Derek Kong
Observational Anomalies and New Dark Force	Ami Patel
Live Long and Prosper: The MATHUSLA Detector for LLPs at CERN	Benjamin Humer & Rufat Ismayilov

List of Speakers

All times are in Eastern

Session 6 (11:15am 16 August 2022)



Characterization of an in-gas Laser Ablation Ion Source through SIMION Simulations	Katherine Lei
Analyzing a novel class of background events in the SNO+ detector	Matt Marzano
Building a Temperature Controlled Performance Test Setup for SiPMs	Jack Macaulay
Upgrading and updating the SNOLAB hpgge-radiopurity.snolab.ca material database	Gwyn Armstrong
Using Chroma ray-tracing software to determine the trigger conditions for nEXO's Outer Detector	Liam Retty
LiquidO: Exploring the properties of opaque liquid scintillators	Spencer Guerin

Session 7 (2:00pm 16 August 2022)

Developing an In-Gas Laser Ablation Ion Source for Ba-Tagging	Minya Bai
Producing the World's Cleanest Noble Gas for DEAP-3600	Sarah Rourke
Analysis of leaching on PTFE shielding through the detection of alpha particle emissions.	Pranav Sairam
Non Existence of Electric Field of Point charge at very close distance	Kareem Hassaan

Session 8 (3:15pm 16 August 2022)

VERA Apparatus and Measurement of Photon Detection Efficiency	Noah Albano
Particulate Matter Detection with Silicon Photomultipliers	Maia Henriksson-Ward
Tagging efficiency of BiPo's in SNO+	Maria Jose Ortiz
CUTE Neutron Calibration System	Sierra Jess
Development of a Compton Gamma-ray Imager using Cubes of CsI(Tl)	Fadi Younes
Isolating the Sound of Dark Matter: Our HELIOS Suspension	Noah Baker



*“Dark and dusty,
painted on the sky”*
