The Canadian Astroparticle physics Summer Student Talk (CASST) Competition 2023

Report of Contributions

Contribution ID: **1** Type: **not specified**

Quality assurance plan for the TeA plant

Thursday 17 August 2023 09:15 (15 minutes)

The SNO+ detector is located 2km underground in Sudbury, Ontario. The primary purpose of the experiment is to study extremely rare neutrinoless double beta decay using Te-130 as the double beta decay isotope. Te-130 was chosen due to it's high natural abundance and high energy double beta decay end point. The detector will be initially loaded with 0.5% Tellurium which corresponds to 4 tons of synthesized Te. As the detector is studying very rare low energy events SNO+ has a very limited background budget, therefore any active medium in the detector must go through a series of purification steps. To maintain the low levels of backgrounds a Telluric acid purification plant has been built underground and is currently under commissioning phase. The Telluric acid will be processed through the TeA plant where it will be put through rigorous cleaning steps to pull out any heavy metal impurities such as cosmogenic impurities, uranium and thorium through filtration, recrystallization and rinsing. A test run is scheduled to be done in November 2023 which will determine the effectiveness, safety and purification capability of the plant. An extensive quality assurance plan is developed to understand the processes and overall yield of the plant.

Topics - Please choose one:

Author: BAKER, James (SnoLab Student)

Presenter: BAKER, James (SnoLab Student)

Session Classification: Session I

Contribution ID: **2** Type: **not specified**

Sample Analysis Methodology for Telluric Purification

Thursday 17 August 2023 09:30 (15 minutes)

The SNO+ detector is a multi-tonne liquid scintillator neutrino detector located 2000 m underground near Sudbury, Ontario. In order to search for the proposed neutrinoless double beta decay ($0\nu\beta\beta$), the SNO+ scintillator cocktail will be loaded with tellurium-130. The 130Te will come from telluric acid, which is synthesized with butanediol before being added to the scintillator. The detector is designed to measure extremely sensitive low energy particle interactions. It is necessary then, that the tellurium used is purified extensively, as any contamination with radioactive isotopes will create events that will obscure physics data. To ensure low backgrounds, the telluric acid has been kept underground for multiple years to shield it from cosmogenics and will be purified through an underground plant. Multiple samples from the plant will be taken at different stages of purification during the first "test"batch to better understand the physical processes and to estimate the purification factors prior to tellurium loading. This talk will look at the analysis strategies for these samples and the processes for which the concentrations will be accurately determined. X-ray fluorescence (XRF) will be used to determine the concentrations of telluric acid. UV-Visible Spectroscopy (UV/Vis) will be used to determine the concentration of nitric acid. These will both give a good indication of the chemical interactions during the purification process. Finally, inductive coupled plasma mass spectrometry (ICP-MS) will be used to accurately determine the purity levels through the concentration of uranium and thorium isotopes. Due to the strict SNO+ background budget, it is absolutely vital that these analyses are conducted in a clean, safe, and accurate manner.

Topics - Please choose one:

Author: SMITH, James

Presenter: SMITH, James

Session Classification: Session I

Contribution ID: **3** Type: **not specified**

Adding Bis-MSB in the SNO+ Detector: Boosting the Light Yield One Batch at a Time

Friday 18 August 2023 09:15 (15 minutes)

The SNO+ experiment consists of a detector filled with liquid scintillator, which creates light when particles pass through it. To increase the light yield, a second wavelength shifter, bis-MSB, is added to the scintillator. I will be going through the steps in achieving the deployment of the first batch of bis-MSB. I will also be talking about the process of developing a method to measure bis-MSB concentration.

Topics - Please choose one:

Author: WEIMAN, Myla

Presenter: WEIMAN, Myla

Session Classification: Session IV

Contribution ID: **4** Type: **not specified**

Locating Muons with Timing Information in a Prototype for the MATHUSLA Detector

Thursday 17 August 2023 11:15 (15 minutes)

The MATHUSLA (MAssive Timing Hodoscope for Ultra-Stable neutraL pArticles) project is devoted to studying exotic, long-lived particle that, if found, could help answer many Beyond the Standard Model questions including dark matter interactions and the baryon asymmetry. MATHUSLA is a highly modular detector with a straightforward design. At UVIC, there is ongoing work to make a prototype which mimics one of the many modules making the detector. This is a multi-threaded process which includes building the physical prototype, characterizing the instrumentation, and solving the data acquisition puzzle. I will be discussing how our prototype will be locating muons within our detection volume using timing delays and what challenges this poses.

Topics - Please choose one:

Particle

Author: AITKEN, Branden

Presenter: AITKEN, Branden

Session Classification: Session II

Contribution ID: **5** Type: **not specified**

Radon-222 Gas Assays of the SNO+ Detector

Thursday 17 August 2023 10:15 (15 minutes)

The SNO+ detector is located at SNOLAB 2km underground in Sudbury, Ontario. SNO+ is a large multipurpose detector looking for an extremely rare and proposed neutrino-less double beta decay, if observed will determine the Majorana nature of neutrinos. Therefore, backgrounds that may obscure the data are consistently monitored. Being underground prevents backgrounds from the cosmic flux, however, the mine environment presents other backgrounds. One of the most prevalent backgrounds comes from Radon-222, which is a daughter isotope of Uranium 238. The daughter isotopes of Radon decays by producing radioactive emissions that lies in the region of interest (ROI) for neutrino-less double beta decay. To prevent Radon-222 ingress, a cover-gas system using pure nitrogen was implemented in the SNO+ cavity and the Universal Interface (UI). The effectiveness of this cover-gas is determined through radon assays; a technique based on the signature alpha decays of Radon. The frequent assays are taken from various locations of the cover-gas and the sample is taken into custom made ZnS coated Lucas cells which are then brought to surface and placed into the DAQ system for counting. The radon present in the sample is then compared with the mine air and a reduction factor is determined; the SNO+ UI has a design specification of 10-5 reduction factor to mine air. This talk will present recent assay results and the challenges that have arisen during this time.

Topics - Please choose one:

Particle

Author: MOLINA COLINA, Ana Carla

Presenter: MOLINA COLINA, Ana Carla

Session Classification: Session I

Contribution ID: **6** Type: **not specified**

Exploring Dark Matter with SuperCDMS: Leveraging GANs and Other Machine Learning Techniques

Thursday 17 August 2023 11:30 (15 minutes)

See abstract attached as PDF.

Topics - Please choose one:

Particle Astro

Author: VANNIASINGHE, Mithun (University of Toronto)

Presenter: VANNIASINGHE, Mithun (University of Toronto)

Session Classification: Session II

Contribution ID: **7** Type: **not specified**

Detecting Radon with a Spherical Proportional Counter

Friday 18 August 2023 11:30 (15 minutes)

In highly sensitive experiments searching for dark matter, monitoring and reducing background radiation levels is essential. Radon (Rn) is a radioactive noble gas, which can diffuse into experiments, leaving its daughters inside the detector to decay. From the U chain, 222Rn has a half-life of 3.8 days. Some long-lived daughters, like 210Pb will pollute detectors for long periods of time. Most materials will contain some traces of U and Th which will result in emanating Rn. Screening the material is therefore critical when building a low background detector. Typically, Rn is measured via an assay where the Rn is concentrated and transferred into a Lucas cell. The Lucas cell is then attached to a photomultiplier tube which detects the alpha particles from the decay of 222Rn. This project explores an alternative decay detection method: a spherical proportional counter (SPC). Some potential advantages of a SPC compared to a Lucas cell would be the regeneration of the container and the use as a secondary trap. In this talk I will discuss the detector technologies, the experimental setup and the results from preliminary data taking.

Topics - Please choose one:

Author: FEARN, Lauren

Presenter: FEARN, Lauren

Session Classification: Session V

Contribution ID: **8** Type: **not specified**

Preliminary Steps Towards Simulating Gamma-Gamma Coincidence Events in the CTBT Dual Detector and Determining its Minimum Detectable Activity

Friday 18 August 2023 09:45 (15 minutes)

The Health Canada CTBT detector has the potential to improve the sensitivity of the low background gamma ray counting facility at SNOLAB. Since the CTBT detector is a dual detector design it is possible to observe gamma coincidence events in the detector. These events are significant as they offer the chance to lower the background noise floor in the detector by excluding events that fell outside the coincidence time window. We present the work taken to modernize the low background lab's GEANT4 simulations of the high purity gamma detectors and preliminary results on the CTBT detector's minimum detectable activity for coincidence events.

Topics - Please choose one:

Nuclear

Author: BRIDGEWATER, Maxwell

Presenter: BRIDGEWATER, Maxwell

Session Classification: Session IV

Contribution ID: **9** Type: **not specified**

Simulating Magnetic Fields in a Magnetically Shielded Room for a Neutron Electric Dipole Moment Experiment

Friday 18 August 2023 12:15 (15 minutes)

The discovery of a non-zero permanent neutron electric dipole moment (nEDM) could be direct evidence of new physics beyond the Standard Model, due to its CP violating nature. To measure the nEDM, stable magnetic fields are required. The TRIUMF Ultra Cold Advanced Neutron (TUCAN) collaboration is using a 5-layer Magnetically Shielded Room (MSR) to achieve the required level of magnetic field control. Before the MSR is ready for experimental use it must be characterized magnetically. This will be done using precision magnetometers scanned through the region of the EDM experiment on a mapping device. Simulations were performed to determine the precision of the measured magnetic field that can be extracted depending on the coarseness of the scan points. Our initial scans will be along axes with line-of-sight access from outside the MSR, and this limitation was also taken into consideration. I will report the success of these simulations and the impact on the mapping campaign, which will be performed in late 2023.

Topics - Please choose one:

Nuclear

Author: HEPWORTH, Thomas (The University of Winnipeg)

Presenter: HEPWORTH, Thomas (The University of Winnipeg)

Session Classification: Session V

Contribution ID: **10** Type: **not specified**

Monte Carlo Analyisis of Alpha Backgrounds

Thursday 17 August 2023 11:45 (15 minutes)

The necessity to account for backgrounds is a well known issue for any feasible Dark Matter detection experiment. One of the major sources of backgrounds is the emission of alpha particles associated with the decay of small amounts of radioactive isotopes present in the experiment.

Due to the quantum nature of radioactive decay, it is impossible to develop a deterministic model for the timing of the alpha particles. Furthermore, in the case of bubble chambers, the expansion and compression time –which follows any ionizing interaction within the chamber, and which permits to re-reach the superheated fluid state –render the detector "blind"after any detection, which further complicates the accounting of backgrounds.

In order to address this, a Monte Carlo based object-oriented simulation program was developed. The program is able to account for the dead-time associated to both alpha and non-alpha detections, and is able to predict the rate at which the isotopes are decaying within the chamber with promising accuracy, fast computation times and small memory requirements. Furthermore, the program is able to recreate the chain of events and associate every alpha observation to the decay process which generated it.

The program is currently being used to analyze the rate at which Rn-222 is being injected into the chamber of the PICO-40L experiment at the SNOLAB underground laboratory; but if proven reliable, could potentially be used to carry this sort of analysis in a vast amount of detection experiments.

Topics - Please choose one:

Experiment / Theory

Author: VOLIN, Mark (SNOLAB, Universidad Iberoamericana)

Co-authors: HALL, Jeter (SNOLAB/Laurentian University); Dr SEKULA, Stephen (SNOLAB and Queen's University)

Presenter: VOLIN, Mark (SNOLAB, Universidad Iberoamericana)

Session Classification: Session II

Contribution ID: **11** Type: **not specified**

Deeply Learning the Position Reconstruction of Antihydrogen Annihilations in ALPHA-g

Thursday 17 August 2023 10:00 (15 minutes)

The ALPHA-g experiment at CERN aims to perform the first-ever direct measurement of the effect of gravity on antimatter, determining its weight to within 1% precision. At TRIUMF, we are working on a new deep learning method based on the PointNet architecture to predict the height at which the antihydrogen atoms annihilate in the detector. This approach aims to improve upon the accuracy, efficiency, and speed of the existing annihilation position reconstruction. In this presentation, I will report on the promising preliminary performance of my model and discuss future development.

Topics - Please choose one:

Particle

Author: FERREIRA, Ashley (TRIUMF (CA))

Presenter: FERREIRA, Ashley (TRIUMF (CA))

Session Classification: Session I

Contribution ID: **12** Type: **not specified**

Predicting Oxygen Sensor Failures at SNOLAB using Data Analysis and Machine Learning

Friday 18 August 2023 11:00 (15 minutes)

In the Cube Hall at SNOLAB there are ten zirconium oxide-based sensors that monitor for oxygen deficiency hazards in case of an inert gas leak from the NEWS-G or DEAP-3600 experiments. While important for safety, these sensors occasionally fail, which can disrupt research by triggering a false alarm and evacuation of the Cube Hall. In this presentation I detail my analysis of historic oxygen sensor data in search of predictive patterns in the periods leading up to failures. I also describe my efforts to train a machine learning model to predict failures, a task that was complicated by the relative rarity of failure events in the dataset. This talk will highlight some of the challenges of preparing raw data for use in machine learning, as well as important considerations when designing and evaluating machine learning models.

Topics - Please choose one:

Other

Author: LATOSINSKY, Katherine

Presenter: LATOSINSKY, Katherine

Session Classification: Session V

Contribution ID: **13** Type: **not specified**

All the light we cannot see: studying Dark Photon-Photon oscillations in astrophysical environments

Friday 18 August 2023 09:00 (15 minutes)

Dark matter (DM) comprises of nearly 80% of the mass of the universe, yet its exact nature eludes us. Specifically, the Dark Photon (DP) is a well-motivated candidate for DM, and offers a relatively simple extension to Standard Model (SM) physics. Dark photons act as a portal between SM and DM particles via kinetic mixing, thus oscillating into photons (and vice-versa) while propagating. For our consideration, DP form a part of the dark sector. These DP may be produced in the Sun, and due to the existence of a non-monotonic plasma potential in the Solar chromosphere, can oscillate back resonantly into photons. We study this oscillation phenomenon to calculate how many of such photons we can detect at Earth. Since the energies of these photons (produced via dark sector interactions) may be higher than that of photons produced via SM processes in the chromosphere, a comparison of the fluxes of these two types of photons can also lead to bounds on the dark photon-photon mixing parameter.

Topics - Please choose one:

Particle Astro

Author: CHUGH, Aditya (University of Toronto)

Co-authors: Prof. SCHUTZ, Katelin (McGill University); Mr BRAHMA, Nirmalya (McGill University)

Presenter: CHUGH, Aditya (University of Toronto)

Session Classification: Session IV

Contribution ID: **14** Type: **not specified**

Cleaning Data with the Neck Cut in SNO+

Friday 18 August 2023 11:15 (15 minutes)

SNO+ is a liquid organic scintillator detector aiming to study neutrinos. It is now completely full of scintillator with the addition of wavelength shifter having been completed. Within SNO+, there are events that have been dubbed "neck events". These events have been named as such because they occur around the neck of the detector and have a characteristic appearance. The neck and bottom areas of the detector are lit up with events, while the middle is not. As of today, it is still unknown what these events are caused by. They are not considered to be candidates for physics events, which would make a method for identifying them useful. It is hoped that applying a neck cut to the data will allow for these neck events to be reliably identified and removed. However, the neck cut was only applied when there was still water in the detector. Studying it now will give an insight on how the neck cut works for scintillator and if fine tuning of the cut is necessary for future use.

Topics - Please choose one:

Particle

Author: HOWARD, Victoria (SNO+)

Presenter: HOWARD, Victoria (SNO+)

Session Classification: Session V

Contribution ID: **15** Type: **not specified**

Characterizing Photomultiplier Tubes in nEXO's Outer Detector

Thursday 17 August 2023 15:30 (15 minutes)

The nEXO experiment aims to search for neutrinoless double beta decay in liquid 136Xe. It uses an inner detector, consisting of a time projection chamber, contained within an outer detector. The outer detector, filled with D2O and lined with photomultiplier tubes, shields the experiment passively by stopping cosmic backgrounds in the heavy water and actively by detecting the Cherenkov radiation emitted by traversing muons. In this talk, I will explain the challenges of characterizing the resistance and dark rate of PMTs, testing the light tightness of our PMT test enclosure and simulating the impact on photon collection of the position and orientation of the PMTs in the outer detector. As a result of these projects, we have begun defining a procedure for characterizing all the PMTs that will serve in nEXO's outer detector.

Topics - Please choose one:

Particle Astro

Author: KARAM, Kristofer (Université de Montréal)

Presenter: KARAM, Kristofer (Université de Montréal)

Session Classification: Session II

Contribution ID: **16** Type: **not specified**

Improving radon assay using activated charcoal

Friday 18 August 2023 10:00 (15 minutes)

Radon is a problematic radioactive inert gas to the highly sensitive detectors at SNOLAB. In attempts to improve our Radon trapping efficiency from samples of gases, a charcoal based trap was developed at SNOLAB. Radon binds to charcoal via the Van der Waals forces, a process that is made more prominent at cryogenic temperatures. Extraction and the determination of the amount of trapped Radon from a known quantity of gas constitutes an assay. Using a calibration source of known Radon emanation allows us to understand the trapping efficiency of our charcoal based trap.

After having introduced the apparatus and the procedure to conduct assays, I will mainly present the progress we have made in (1) understanding the background from our charcoal trap and the surface assay board, (2) the determination of the amount of Radon emanation from our calibration source, (3) identification of a source of virtual leak in our assay system, and (4) the plan and goals for the next four months. I will also briefly make mention of some other activities I have been involved with at SNOLAB, for example the underground assays on the SNO+ UI gas.

Topics - Please choose one:

Experiment / Theory

Author: AHMED, Yusuf (SNOLAB)

Presenter: AHMED, Yusuf (SNOLAB)

Session Classification: Session IV

Contribution ID: **17** Type: **not specified**

Nuclear beta decay of rare neutron-deficient isotopes

Thursday 17 August 2023 12:00 (15 minutes)

Studies of short-lived radioactive isotopes, at the limits of nuclear binding (the "drip lines"), are crucial for understanding how the nuclear force evolves toward the extremes. In neutron-deficient nuclei, measurements of β-delayed proton emission, can be used to constrain proton-capture reaction pathways in nucleosynthesis and test isospin symmetry. In this talk, I will present my analysis of the proton drip-line nucleus, ^{22}Si, from a β-delayed proton decay spectroscopy experiment performed at the National Superconducting Cyclotron Laboratory (NSCL). My analysis involved determining proton energies, proton intensities, and calculating β-decay branching ratios. I will discuss the results of several newly discovered energy states in the daughter nucleus, ^{22}Al. To develop a similar experimental program here in Canada, our group at the University of Regina built a novel silicon strip detector array that will be coupled with the Gamma-Ray Infrastructure For Fundamental Investigations of Nuclei (GRIFFIN) facility at TRIUMF. An overview of the detector design, construction, and future plans will be presented.

Topics - Please choose one:

Nuclear

Author: SHAH, Dhruval (University of Regina)

Presenter: SHAH, Dhruval (University of Regina)

Session Classification: Session II

Contribution ID: **18** Type: **not specified**

Maximum Likelihood Estimation of Errors for Measuring the Flux of Neutrons in the SNO Lab Underground Laboratory

Friday 18 August 2023 10:15 (15 minutes)

SNOLAB's Background Survey Improvement Project aims to update and improve the measurement of the background neutron flux in the underground lab from the results presented in the SNOLAB Technical Reference Manual (Duncan et al., 2016). The project uses Bubble Detector Spectrometers (BDS) manufactured by Bubble Technology Industries (BTI) which uses an unfolding algorithm to calculate the spectra of the neutron flux. The BDS are designed for higher neutron fluxes and gives unreasonably large errors for the data collected in the underground laboratory. A Maximum Likelihood Estimate (MLE) method is being developed to improve the analysis at these low neutron rates.

Topics - Please choose one:

Experiment / Theory

Author: SOWARD, Tatum (SNO Lab)

Presenter: SOWARD, Tatum (SNO Lab)

Session Classification: Session IV

Contribution ID: **19** Type: **not specified**

Monte Carlo Simulations of Dark Matter Detectors for SuperCDMS

Friday 18 August 2023 12:00 (15 minutes)

The SuperCDMS experiment is a direct detection dark matter (DM) experiment currently located at the SNOLAB underground facility in Sudbury, Ontario. Employing cryogenically cooled silicon and germanium crystals held just above absolute zero, the experiment detects DM particles via nuclear and electron recoils. The High Voltage (HV) detectors boast a low energy threshold granting high sensitivity to low mass particles while the interleaved Z-dependent Ionization and Phonon (iZIP) detectors effectively discriminate signals from normal matter interactions. Through the strategic arrangement of these detectors in towers, the SuperCDMS experiment increases the probability of detecting a DM particle and establishes world-leading limitations on DM interactions with normal matter. Maximizing the sensitivity of the experiment, and performing R&D to extend the sensitivity in the future necessitates a thorough understanding of individual detectors

Monte-Carlo simulations play a pivotal role in the process of understanding the detector physics. The SuperCDMS Detector Monte-Carlo (DMC) relies on the Geant4-based Condensed Matter Physics (G4CMP) package. By simulating many physical processes in the cryogenic semiconductor crystals –including electron and hole propagation, and phonon and charge carrier transport –and detector response, the simulation is able to match the data acquired from test facility runs of HVeV detectors (gram-scale prototypes with single electron-hole pair sensitivity) extremely well.

Topics - Please choose one:

Author: PAUDEL, Sam (University of Toronto)

Presenter: PAUDEL, Sam (University of Toronto)

Session Classification: Session V

Contribution ID: **20** Type: **not specified**

External Cross in LoLX1

Thursday 17 August 2023 15:45 (15 minutes)

LoLX1 is a small light sensing detector using SiPMs and Liquid Xenon. A small drawback of SiPMs is that they occasionally emit secondary photons outward from their sensing surface – these photons can trigger other SiPMs in the detector and this process is known as external cross talk. In order for larger, SiPM using, experiments to have better energy resolution, external cross talk must be studied.

Topics - Please choose one:

Experiment / Theory

Author: CHARLESWORTH, Zachariah

Presenter: CHARLESWORTH, Zachariah

Session Classification: Session II

Contribution ID: **21** Type: **not specified**

Finding Primordial Black Holes via their Photon Rings

Thursday 17 August 2023 09:45 (15 minutes)

The Event Horizon Telescope image of the photon ring around M87*, a black hole, captivated the world, and this achievement was named Breakthrough of the Year by Science Magazine in 2019. How could we use these photon rings to detect primordial black holes? Since light can orbit around a black hole, instead of looking for black holes through gravitational lensing events, in which we can only search in the space between us and the source, we could potentially look for events in all the space around us if light is sufficiently deflected by the black hole. Considering how much light would come from these events we can determine how viable it is to detect PBHs this way.

Topics - Please choose one:

Astronomy

Author: PATY, William

Presenter: PATY, William

Session Classification: Session I

Contribution ID: **22** Type: **not specified**

The Legacy of SNO

Thursday 17 August 2023 16:00 (15 minutes)

The Sudbury Neutrino Observatory was home to the SNO experiment that hunted for solar neutrinos. In 2015 a Canadian scientist was co-awarded the Nobel Prize in Physics for the discoveries made by this project, and such a legacy of Canadian science should have a dedicated website. To offer an accessible website describing the SNO experiment and the science of SNO, a new website is being built with more ease of navigation, more images, and all new written pieces. These pieces are first written for a general audience, and then more technical information is also available. Some of the new pages include information on the Solar Neutrino Problem, the SNO Collaboration, the construction of the laboratory, what SNO discovered, the people involved, and much more. The SNO experiment fundamentally improved our understanding of neutrinos and put Canada on the international stage for scientific collaboration and advancement. Therefore, a dedicated website made accessible for all is an important step in sharing this legacy with the world.

Topics - Please choose one:

Science communication

Author: OXFORD, Maggie

Co-author: Dr RICHARDSON, Mark (McDonald Institute)

Presenter: OXFORD, Maggie

Session Classification: Session II

Contribution ID: **23** Type: **not specified**

Cryogenic Distillation

Friday 18 August 2023 09:30 (15 minutes)

Argon and krypton gas was enriched using cryogenic distillation. The goal is to measure the HETP (height equivalent theoretical plate) for krypton gas based on the data that was collected to see if it is the same as it is for argon. If it is, then from there the VPIE (vapour pressure isotopic effect) can be extrapolated by assuming that the HETP is constant for all noble gases.

Topics - Please choose one:

Experiment / Theory

Author: WICKMAN, Drake

Presenter: WICKMAN, Drake

Session Classification: Session IV

Contribution ID: **24** Type: **not specified**

Roboshifter for SNO+

Thursday 17 August 2023 16:15 (15 minutes)

In recent years, it has become increasingly difficult to find detector operators among members of the SNO+ collaboration due to the time consuming and monotonous nature of this necessary work. Hence, we aim to replace the bulk of day-to-day detector operation with a new tool named 'Roboshifter'. There are many interesting challenges when transitioning a large and long-standing experiment like SNO+ to a radically different mode of operation, as well as some interesting considerations when developing such a long-standing project as a summer student.

Topics - Please choose one:

Experiment / Theory

Author: DROBNER, David (Queen's University)

Presenter: DROBNER, David (Queen's University)

Session Classification: Session II

Contribution ID: **25** Type: **not specified**

Scavenger Assay Development

Friday 18 August 2023 11:45 (15 minutes)

This is a new assay technique that is being developed and characterized for future use on scintillator within the SNO+ experiment.

Topics - Please choose one:

Experiment / Theory

Author: PALESHI, Keegan (Laurentian University)

Presenter: PALESHI, Keegan (Laurentian University)

Session Classification: Session V