

Christine Kraus – HEP Seminar – November 10, 2022
SNOLAB

Title: Investigating the Nature of the Neutrino: SNO+ at SNOLAB

Abstract: Neutrinos are messengers that can help us learn about astronomical processes and objects as well as the nature of the neutrino itself. They might very well hold the key to finding out more about their mass and the way our Universe works. SNOLAB is a world-leading underground particle astrophysics laboratory located at VALE's Creighton mine in Sudbury, Ontario. SNOLAB provides a low background environment for rare event searches. The science program focuses on particle astrophysics: dark matter and neutrino studies, but it also includes biology and geology experiments.

The SNO+ experiment is the successor to the Sudbury Neutrino and the detector is filled with ~780 tons of liquid scintillator (LAB) to create a multipurpose neutrino detector. The primary purpose of SNO+ is to address the nature of the neutrino via the search for neutrinoless double beta decay by loading the liquid scintillator with natural Tellurium. The physics program also includes solar neutrinos, antineutrinos from reactor and the Earth and supernova neutrinos, should there be a galactic supernova.

This talk will give an overview over SNOLAB, the SNOLAB physics program with a focus on the SNO+ experiment.