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The next generation projects in Deep Underground Laboratories

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Developments at SNOLAB

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ABSTRACT

Following the success of the SNO solar neutrino project, the astroparticle physics research facility based 2km underground at the Vale Creighton nickel mine, near Sudbury Ontario, has been expanded to host a variety of new experiments. The depth reduces cosmic radiation to a flux of 0.27 muons/m^2/day, reducing interactions from both the cosmic ray initiated muons, and the secondary products from spallation reactions. SNOLAB also operate the entire underground complex as a Class 2000 clean-room, to ensure a controlled environment from mine dust and other contaminants. The experiments require the quiet radiation environment, from the cleanliness and reduction in cosmic rays activity that SNOLAB affords. The construction phase of the expansion is now complete, and infrastructures for the initial suite of experiments are being implemented. These experiments focus primarily on sub-atomic physics, with studies of supernova and low energy solar neutrinos, neutrino-less double beta decay and Galactic dark matter searches.

This talk will outline the initial science programme that will be conducted at SNOLAB, detailing some of the first projects which will be deployed. The status of the facility itself will be discussed, detailing the facility environment and space, and summarising available space for future projects, and illustrating the purpose and requirements for a deep underground laboratory.