

SNOLAB is a new underground international science laboratory under construction two kilometers below ground near Sudbury, Canada, in the INCO Creighton nickel mine approximately 400 km northwest of Toronto. SNOLAB is an expansion of the existing facilities at the Sudbury Neutrino Observatory (SNO) which is a 1000-tonne solar neutrino detector in operation since 1999. The underground space will contain 53,000 sq-ft for experiments and supporting infrastructure and the entire facility will be operated as a clean-room to achieve a low radioactive environment. The depth underground is unprecedented for a facility of this size, and provides shielding from cosmic rays to allow detection of rare particle physics interactions. The scientific program at SNOLAB will emphasize topics in particle astrophysics requiring this increased sensitivity due to the depth and the clean environment. These topics include measurements of low energy solar neutrinos, cosmic dark matter searches, neutrino-less double beta decay, and the detection of geo-neutrinos, supernova neutrinos and reactor neutrinos. Other interdisciplinary fields will also make use of the facility, including seismology, studies in geophysics and the biological study of underground life forms. Excavation of the underground space is presently underway and is being done in two phases. The first phase adding 27,000 sq-ft will be completed, outfitted and operational in mid-2007. The second phase is being designed and is not yet funded. The SNOLAB facility also includes a surface building to provide chemistry and development laboratories, clean room areas, a warehouse, machine shop, auditorium, offices and meeting rooms. The surface building was completed and occupied in August 2005. This seminar talk is intended for a general audience. I will introduce the main scientific topics to be studied by the experiments to be constructed at SNOLAB. I will then describe the design of the laboratory, and report on the current excavation and construction status.