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## **Deep Underground Physics: the SNOLAB Science Programme**

*Monday, 16 June 2014 13:00 (45 minutes)*

The field of astroparticle physics studies many of the major outstanding questions in contemporary astroparticle and sub-atomic physics, through the study of naturally created particles within the Universe. These questions range from “what makes up most of the Universe”, through “what accelerates the most energetic particles in the Universe” to “why are we here at all?” These studies are undertaken by deploying extremely sensitive particle detectors into various environments, often extreme and challenging, to provide the required conditions to search for rare events, faint signals or weak interactions. The SNOLAB astroparticle physics research facility based 2km underground at the Vale Creighton nickel mine has been developed from the initial successful SNO project to host a new programme of experiments. 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. These all require the quiet radiation environment that SNOLAB affords, due to the reduction in cosmic rays activity and clean-room operation of the facility. This talk will outline the initial science programme that is being conducted at SNOLAB, detailing some of the first projects that have been deployed. The status of the facility itself will be discussed, illustrating the purpose and requirements for a deep underground laboratory, and a brief review of the global situation in underground physics will be given.

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