SUPERCDMS IN CANADA

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for the SuperCDMS collaboration

The Cryogenic Dark Matter Search (CDMS) experiments currently operates 30 cryogenic detectors with a total mass of about 5 kg in the Soudan underground mine in Northern Minnesota, aiming at detecting Weakly Interacting Massive dark matter Particles (WIMPs). CDMS provides the world best sensitivity for WIMP interactions over a wide mass range and is the only background free experiment in this field. The good understanding and control of potential background sources leads to the highest discovery potential. A further increase in sensitivity of several orders of magnitude is necessary to cover the bulk of the parameter range predicted for WIMPs by supersymmetric theories. However, with the present setup a background free experiment cannot be guaranteed over the whole range. Limitations are expected from potential contamination in the experimental setup as well as from cosmic radiation which still reaches the laboratory at a depth of about 800 m. The successor project, SuperCDMS, plans to install a new larger experimental setup for a detector mass of 100-200 kg with better controlled internal contamination in the new SNOLAB facility near Sudbury, ON. With its depth of about 2 km, SNOLAB provides a considerably better shielding against cosmic radiation. Furthermore, the entire laboratory is designed as clean room, making it easier to achieve the required cleanliness of the setup. These combined improvements should allow SuperCDMS to obtain a sensitivity approximately 100 times better than the best current published results.

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