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Looking for WIMP Dark Matter using Ultra-Cold Detectors and Other Techniques

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Overwhelming observational evidence indicates that most of the matter in the Universe consists of non-baryonic dark matter. One possibility is that the dark matter is Weakly-Interacting Massive Particles (WIMPs) that were produced in the early Universe. These relics could comprise the Milky Way's dark halo and provide evidence for new particle physics, such as Supersymmetry. After briefly reviewing some of the evidence for dark matter and the WIMP hypothesis, I will describe several ongoing searches for dark matter, with an emphasis on those using very low-temperature detectors. In particular, I will present the current results and future plans of our Cryogenic Dark Matter Search experiment, CDMS-II, which aims to see WIMPs using athermal-phonon and ionization sensitive detectors in the Soudan Mine. I will review the status of several other experiments which use a range of methods, from other types of low temperature sensors to promising room-temperature techniques.

¹(CDMS Collaboration)