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The dual light-emitting crystals detector for WIMPs direct searches

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The dual light-emitting crystals can reflect the different ranges of nuclear recoils and electron recoils by the ratio of the two different scintillation components. CsI(Na) crystals at temperatures of -160°C have the best performance in several candidate crystals. An experiment called CINDMS is proposed for WIMPs direct searches based on the CsI(Na) crystals detector by IHEP. The 1T-scale experimental threshold is expected to be in the world advanced level through the background estimates. The initial stage of a 40 kg scale experiment was constructed at Daya Bay neutrino experiment underground laboratory for the accumulation of technology. 3 months of background data were collected at the temperature of -160°C , -120°C and room temperature. CINDMS1T or more large-scale experiment may be located deep underground laboratory of Jinping Mountain in Sichuan, China. This location provides vastly improved shielding from cosmogenic events which will reduce interference of known backgrounds particles.

Summary

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