

Abstract Submitted
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Light yield of an undoped CsI crystal coupled directly to a photomultiplier tube at 77 Kelvin¹ JING LIU, University of South Dakota, MASAKI YAMASHITA, Institute for Cosmic Ray Research, University of Tokyo, ARUN KUMAR SOMA, University of South Dakota — A light yield of 20.4 ± 0.8 photoelectrons/keV was achieved with an undoped CsI crystal coupled directly to a photomultiplier tube at 77 Kelvin. This is by far the largest in the world achieved with CsI crystals. An energy threshold that is several times lower than the current dark matter experiments utilizing CsI(Tl) crystals may be achievable using this technique. Together with novel CsI crystal purification methods, the technique may be used to improve the sensitivities of dark matter and coherent elastic neutrino-nucleus scattering experiments. Also measured were the scintillation light decay constants of the undoped CsI crystal at both room temperature and 77 Kelvin. The results are consistent with those in the literature.

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