

Abstract Submitted  
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**Temperature Dependence of Pulse Shape in Sodium Iodide**

FIELD ROGERS, Yale University, DM-ICE COLLABORATION — Thallium-doped sodium iodide (NaI(Tl)) scintillating crystals are used as the sensitive detectors in several direct detection dark matter experiments. DM-Ice is a NaI(Tl) dark matter experiment which employs pulse shape discrimination methods for background characterization and event selection. An understanding of the temperature dependence of NaI(Tl) response is required to compare experimental locations and run parameters. The first generation detector, DM-Ice17, is operating under a 2200 m.w.e. overburden in the South Pole ice at  $-20^{\circ}\text{C}$ . Meanwhile, a set of R&D test detectors, DM-Ice37, is operating under a 2850 m.w.e. overburden in the Boulby Underground Laboratory at  $+20^{\circ}\text{C}$ . We describe the differences in pulse shape and light yield at varying temperatures for gamma, alpha, and neutron scintillation events in NaI(Tl) and demonstrate temperature dependence for NaI(Tl) scintillations across a broad range of energies.

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