

Abstract Submitted
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Characterization of single layer anti-reflective coatings for Ge and Si substrates and their potential use in low-background detectors

ERIN HANSEN¹, Univ of California - Los Angeles — Scintillating materials can be used to significantly reduce charged particle backgrounds in low-temperature bolometer-based rare-event searches; the ratio of signals from heat and light can identify charged particles as they pass through the detector. A second bolometer is introduced for light collection, typically made of Si or Ge whose indices of refraction cause an inherent loss due to reflections of incoming light. Antireflective coatings can be used to minimize this loss of sensitivity. Coatings of SiO₂, HfO₂, and TiO₂ were manufactured, and SiO₂ coatings were characterized at room temperature. Preliminary calculations suggest a decrease in reflection due to these coatings; non-normal incidence is also considered. Further tests for low temperature behavior are ongoing.

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