

Abstract Submitted
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A high resolution scintillation detector for nuclear reactor monitoring via antineutrino interactions¹ JONATHAN KESSLER², Southeast Missouri State University, REX TAYLOE³, Indiana University, Bloomington — We have constructed a prototype detector employing a novel method using wave-length shifting fibers and liquid scintillator. We evaluate the performance of a 1 cubic-meter device using this technique as a detector of electron antineutrinos from a nuclear reactor. These antineutrinos are measured via the inverse beta decay interaction. We have simulated the device to determine the efficiency and reaction rates for the device placed near a nuclear reactor. We propose that this type of detector will more efficiently veto backgrounds and track antineutrino interactions more effectively than detectors with lesser spatial and energy resolution. This will allow for a more accurate measurement when determining whether a critical amount of plutonium has been removed from the reactor core.

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