

Abstract Submitted
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Characterization of Bias Effects on Sodium Iodide Detectors for Reaction Studies¹ DANIEL HERTZ-KINTISH, JOLIE CIZEWSKI, Rutgers Univ, ALEX CARLS, Tennessee Technological University, KELLY CHIPPS, STEVE PAIN, Oak Ridge National Laboratory, PAUL THOMPSON, University of Tennessee - Knoxville, DEION WADDELL, North Carolina A&T State University — Nuclear physics reaction and decay studies with radioactive ion beams need high-efficiency detectors for all radiations, including gamma rays. Sodium iodide crystals are well established as γ -ray detectors, favored for many years for their high efficiency and relatively low cost. Several thallium-activated sodium iodide detectors have been characterized with γ -ray sources in order for their properties to be well understood and that they may be properly utilized in future experiments. These detectors could be used in nuclear reaction measurements with radioactive ion beams to measure coincident γ -rays and light charged particles. My contribution was a careful analysis of the effects of the level of bias on the photomultiplier tubes to show how the efficiency and resolution of these detectors can be optimized by controlling this voltage. An analysis of gain shifts due to temperature variations, the photomultiplier aging process, and the bias was also included. This presentation would summarize the status of the characterization of the NaI detectors.

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Daniel Hertz-Kintish
Rutgers Univ

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