

Abstract Submitted
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The structure of ^{72}Ni via beta-delayed neutron spectroscopy of ^{72}Co ¹ ANDREW KEELER, ROBERT GRZYWACZ, S GO, T T KING, M MADURGA, S V PAULAUSKAS, S Z TAYLOR, University of Tennessee, B CRIDER, S LIDDICK, R LEWIS, Michigan State University, J H HAMILTON, C ZACHARY, E H WANG, Vanderbilt University, N T BREWER, Oak Ridge National Laboratory, A FIALKOWSKA, Rutgers University, P D O'MALLEY, M HALL, Notre Dame University, M M RAJABALI, Tennessee Technical University, S ILLYUSHKIN, Colorado School of Mines — Studies of beta decays can give important insights into the structure of the nucleus. Measurements of closed-shell nuclei provide important benchmarks for structure models, which are used in simulations of r-process nucleosynthesis. This work studies beta decays and beta-delayed neutrons of ^{72}Co produced at MSU's National Superconducting Cyclotron Laboratory using the Versatile Array of Neutron Detectors at Low Energy. To carry out this experiment, a novel position-sensitive scintillating detector was developed to enable the sub-nanosecond timing resolution that VANDLE requires, which silicon-based position-sensitive detectors would be unable to provide. A gamma spectroscopy setup including an HPGe Clover and LaBr3 HAGRID detectors provides the necessary spectroscopic information for a full reconstruction of the ^{72}Co decay strength.

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