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β-delayed neutron precursors with the Versatile Array of Neutron Detectors at Low Energies (VANDLE)[1] M. MADURGA, S. PAULAUSKAS, R. GRZYWACZ, S. PADGETT, University of Tennessee, D. BARDAYAN, ORNL, J. BLACKMON, LSU, J. CIZEWSKI, P. O'MALLEY, Rutgers University, S. LIDDICK, W.A. PETERS, ORAU, F. RAIOLA, F. SARAZIN, Colorado School of Mines — The production of radioactive ion beams of nuclei away from stability in new facilities such as Lerribs offers the opportunity of studying the properties of nuclear matter dominated by large proton-neutron imbalances, resulting in new effects like shell evolution and new magic numbers. The β-decay is an excellent probe of nuclear structure, a selective and well understood mechanism. However, for exotic nuclei, a significant fraction of the β-strength will populate neutron unbound states. The proposed VANDLE will consist of an array of 164 plastic scintillator bars to measure the neutron energy using time of flight technique. The expected large neutron energy dynamic range and its modular design will give the flexibility necessary to use the detector in experiments with requirements as different as β-decay of neutron rich elements to (d,n) reaction experiments. Results of the proof-of-principle measurement of the ^{89}Br β-delayed neutron emission will be presented.

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