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Beta-delayed neutron spectroscopy of spherical and deformed neutron emitters with VANDLE[1] THOMAS KING, University of Tennessee, C. J. GROSS, Oak Ridge National Laboratory, R. K. GRZYWACZ, University of Tennessee/ORNL, S.V. PAULAUSKAS, University of Tennessee, K.P. RYKACZEWSKI, D.W, STRACENER, Oak Ridge National Laboratory, S.Z. TAYLOR, University of Tennessee, VANDLE COLLABORATION — For many neutron-rich isotopes, the main decay mode is through beta-delayed neutron and gamma emission. Neutron and gamma coincidences provide information necessary to extract the beta-strength distribution. These distributions are inputs to test nuclear models needed for r-process modeling. The detailed data on beta decay feeding to neutron-unbound states are used to calculate reactor decay heat and understand the antineutrino spectrum. A series of measurements with selective ion sources was performed at the On-Line Test Facility (OLTF) at Oak Ridge National Laboratory with the Versatile Array of Neutron Detectors at Low Energy (VANDLE). These experiments revisited decays of spherical and deformed isotopes produced in proton induced fission of 238U, which included beta delayed precursors of bromine, rubidium, cesium, and iodine. Unique data sets with neutron and gamma ray coincidences were collected. Achieving high coincidence efficiency required the addition of high-efficiency gamma-ray detectors consisting of 16 LaBr3 crystals (HAGRiD) and a large volume set of NaI detectors to VANDLE. Preliminary results will be presented.

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