

Abstract Submitted  
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**Value-Assigned Pulse Shape Discrimination for Neutron Detectors**<sup>1</sup> CHI-EN TEH, National Superconducting Cyclotron Laboratory, MSU, HIRA COLLABORATION<sup>2</sup> — Using the waveforms from a digital electronics system, an offline analysis technique on pulse shape discrimination (PSD) has been developed to improve the  $n$ - $\gamma$  separation in a bar-shaped NE-213 scintillator that couples to a photomultiplier tube (PMT) at each end. The new improved method, called the "valued-assigned PSD" (VPSD), quantifies the separation between neutrons and gamma rays. Position dependence of PSD can be taken into account and automated using VPSD method. The resulting  $n$ - $\gamma$  identification is much improved when compared to the traditional technique that uses the geometric mean (GM) of light outputs from both PMTs. This technique has been applied successfully to a recent experiment to better extract the neutron spectra for understanding the nuclear equation of state (EoS).

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