

Abstract Submitted
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Digital Acquisition Development for Fast Neutron Detectors¹ T. SEAGREN, Westmont College, S. MOSBY², LANSCE P-27, MONA COLLABORATION, LANSCE P-27 TEAM — The use of the Modular Neutron Array (MoNA) at FRIB requires a thorough understanding of how neutrons propagate through the array. This leads to the increasing importance of accuracy in detector response simulations, particularly in the case of FRIB's higher beam energies. An upcoming experiment at the LANSCE facility at Los Alamos National Lab will benchmark neutron propagation through the MoNA array and provide a more complete validation of the simulation software. LANSCE also hosts the Chi-Nu experiment, which seeks to measure fission output neutrons using the high-intensity neutron beams there. In both experiments, the instantaneous rate on the detectors involved is expected to be very high, due to the LANSCE/WNR beam structure. Therefore, waveform digitizers with on-board processing are required in order for the experiments to succeed. These digitizers provide on-board timing algorithms using FPGA firmware, and several tests were performed in order to determine what the optimal timing filter settings were for a variety of detectors, including the plastic and liquid scintillators to be used in MoNA and Chi-Nu respectively. This work will inform the execution of the MoNA and Chi-Nu experiments at LANSCE. The details of the methods used and results will be presented.

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