Abstract Submitted
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Development of a neutron detector with tracking capabilities (NEXT)[1] DAVID PEREZ-LOUREIRO, UTK, ROBERT GRYWACZ, UTK and ORNL, LEONARD D. MOSTELLA, MUSTAFA RAJABALI, TTU, KYLE SCHMITT[2], UTK — Future rare isotope beam facilities, like FRIB, will make it possible to access the very neutron-rich side of the nuclear landscape, approaching, and even reaching the neutron dripline in certain cases. Far from stability, neutron separation energies become lower and accessible via beta decay. Therefore, beta delayed neutron spectroscopy will be an essential method of obtain information about the nuclear structure for very neutron-rich nuclei. The NEXT detector will be a high resolution neutron detector array based on time of flight measurements. It will be composed of small modules of neutron-discriminating plastic scintillator coupled to silicon photomultipliers (SiPMs) for the readout. During the R&D phase of the project prototypes of different geometries of the modules are being tested. Plastic scintillator coupled to 6 mm silicon photomultipliers are being used to investigate the timing capabilities of these detectors using digital electronics data acquisition. In parallel, detailed Montecarlo simulation codes are being developed to optimize light collection efficiency and define the final geometry of the array. The status of the project and most recent results will be presented in this contribution.

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