

Abstract Submitted
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Simulations for DESCANT - a neutron array for TRIUMF-ISAC¹ JAMES WONG, P.E. GARRETT, J. BANGAY, K.G. LEACH, C. SUMITHRARACHCHI, C.E. SVENSSON, University of Guelph — A novel neutron tagging array is being developed for the study of high-spin states of neutron-rich systems. This ground-breaking design will be based upon an array of liquid deuterated scintillators for neutron detectors and is called the DEuterated SCintillator Array for Neutron Tagging or DESCANT. DESCANT will serve as an auxiliary detector for the TIGRESS spectrometer located at TRIUMF's ISAC radioactive ion beam facility. DESCANT is comprised of 70 fully close-packed neutron detectors which subtends an angle of $\theta = 65.5^\circ$ and covers 92.6% of this solid angle or 1.08π sr. The multiple scattering of neutrons between detectors is commonly dealt with by vetoing signals collected in adjacent detectors. This results in a much-reduced detection efficiency for higher neutron multiplicity events. The measured pulse height spectrum is forward-peaked and this information can be correlated with the time-of-flight to overdetermine the neutron energy, thus rejecting multiple scattering without the need to veto nearest neighbours. Results from early feasibility tests will be presented, along with the status of our GEANT4 simulations of the array performance.

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