

Abstract Submitted
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Design Study of DESCANT - DEuterated SCintillator Array for Neutron Tagging¹ JAMES WONG, P.E. GARRETT, University of Guelph — The fusion-evaporation reaction has been a useful tool for studying nuclei. A program of such reactions is being planned to take place at the TRIUMF facility in Vancouver, Canada using the TIGRESS array of gamma-ray detectors. A particular advantage of using these reactions is that they probe nuclei at moderate-to-high angular momenta. It would be of great interest to extend the study of high-spin states to neutron-rich systems. Following the formation of the fused compound system, the highly-excited state may lose energy by “evaporating” particles. Neutron evaporation is the predominant decay mode from neutron-rich compound systems so neutron detectors will be required. The probability of neutrons multiple scattering is quite high so a detector array must be able to differentiate between multiple neutrons evaporating from the reaction and a single neutron scattering multiple times. To address this issue we investigate the use of a novel neutron detector array – one based on an array of deuterated liquid scintillators as neutron detectors. Results from early feasibility tests will be presented, along with the status of our GEANT4 simulations of the array performance.

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