Abstract Submitted
for the DNP20 Meeting of
The American Physical Society

Neutron-Induced Reaction Cross-Section Measurements of Short-Lived Nuclei[1] OLIVIA DICKINSON , Providence College, TUNL and Duke University , FNU KRISHICHAYAN, SEAN FINCH, CALIVN HOWELL, WERNER TORNOW, TUNL and Duke University — Nuclear reaction cross-section data, such as (n,2n), (n,γ) and (γ, n) producing short-lived isotopes (s $\leq$ $T_{1/2}$ $\leq$ m) are critically important to a breadth of scientific fields including applications relevant to national security, medical isotopes, and fission and fusion reactor technology. However, not much experimental data is available due to various associated limitations including poor counting statistics. This limitation can be overcome by using the cyclic activation technique by way of a fast-irradiated sample transfer system. With the availability of the fast transfer system, RABITTS at TUNL, the cyclic activation technique can be used to study such reaction cross sections for nuclei having half-lives between seconds and minutes. The primary isotopes of interest are ^{73}Ge, ^{77}Ge, ^{91}Mo, ^{114}In,^{116}In, and will be produced using quasi-monoenergetic neutron beams from the 10 MV Tandem laboratory at TUNL. An array of highly efficient and broad energy germanium detectors will be used for the gamma-ray counting. A detailed energy and efficiency calibration of the detector array along with the conceptual and computational work related to the project will be presented.

[1]NSF Award 1757783- REU Site: Undergraduate Research in Nuclear and Particle Physics at TUNL/Duke University ; National Nuclear Security Administration Stewardship Science Academic Alliances grant no. DE-NA0003884, and U.S. Department of Energy under grant no. DE-FG02-97ER41033

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Date submitted: 31 Jul 2020 Electronic form version 1.4