GODDESS: Techniques for neutron-induced surrogate reaction measurements

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Neutron-induced reactions – e.g., (n,γ), (n,f), (n,p), (n,n') – are important for fundamental and applied nuclear science. Direct measurements of these reactions are limited to stable or long-lived isotopes. Therefore, validated surrogate reactions are required to inform these cross sections using both stable and radioactive ion beams. The GODDESS detector system [1], Gamma-Array ORRUBA: Dual Detectors for Experimental Structure Studies, has been deployed to inform neutron-induced reactions. This system exploits the ORRUBA (Oak Ridge Rutgers University Barrel Array) of position-sensitive silicon strip detectors coupled to gamma-arrays GAMMASPHERE or GRETINA or GRETA, in the future. The present poster will provide an overview of the GODDESS detector system and a summary of recent experiments to inform (n,γ), (n,n') and (n,p) reactions on radioactive isotopes.

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References:

[1] Pain, S.D. et al., Phys. Procedia (2017) **90** 455.