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Neutron Spectroscopy Studies with the CATRiNA Detector System[1] JESUS PERELLO, SERGIO ALMARAZ-CALDERON, BENJAMIN ASHER, LAGY BABY, NATHAN GERKEN, Florida State University — Experimental studies of exotic neutron-rich and neutron-deficient nuclei are becoming available due to the emergence of advanced radioactive beam facilities. New neutron detection systems are in need to study nuclear reactions with these exotic nuclei which involve neutrons as reaction by-products. Neutron detection arrays should be capable of performing neutron spectroscopy studies and using neutrons to 'tag' other by-products (e.g. -ray, -particle). The Compound Array for Transfer Reactions in Nuclear Astrophysics (CATRiNA), developed at Florida State University (FSU), is an array of 16 deuterated-benzene (C6D6) scintillators as neutron detectors with fast-response time, pulse-shape-discrimination capabilities and a structured pulse-height spectrum which combined with time-of-flight (ToF) information, allows for multiple correlations for neutron spectroscopy studies. CATRiNA was designed to perform spectroscopy studies of bound- and resonant-states and to be coupled with other detection systems to measure reactions relevant for nuclear structure and nuclear astrophysics. In this work, we will discuss preliminary results on experiments performed at FSU.

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