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Proton capture studies for the nucleosynthesis p-process using HECTOR[1] ANNA SIMON, C.S. REINGOLD, O. GOMEZ, F. NAQVI, University of Notre Dame, J. ARROYO, Illinois Institute of Technology, University of Notre Dame, M. CHAMBERLAIN, University of Notre Dame — The p-process is a nucleosynthesis scenario that occurs during an explosion of a supernova and produces the proton-rich isotopes of elements between Se and Hg. The p-process involves series of (γ,n), (γ,p) and (γ,α) reactions on pre-existing s-process seed nuclei. The reactions relevant for the p-process are studied in the lab via the inverse ones: capture reactions. The High EffiCiency TOtal Absorption SpectrometeR (HECTOR) was built for this purpose. HECTOR is a NaI(Tl) summing detector at the University of Notre Dame is comprised of 16 separate NaI(Tl) crystals and 32 photomultiplier tubes read by a digital data acquisition system. The array is designed for precision cross section measurements for (p,γ) and (α,γ) reactions across the p-process Gamow window. The efficiency of HECTOR is about 52.7 (2.0)% for the ^{60}Co source. The first measurements of the proton-capture reactions on Pd and Cd proton-rich isotopes will be presented in this talk. The results will be compared to the cross sections obtained with other techniques, when available, and to the Hauser-Feshbach model calculations using the Talys code.

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