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Experimental Exploration of ^{69}Br and the rp-Process ^{68}Se Waiting Point[1] A.M. ROGERS*, NSCL MSU, M.A. FAMIANO*, M.S. WALLACE*, M.-J. VAN GOETHEM*, F. DELAUNAY*, W.G. LYNCH*, M.B. TSANG*, M. MOCKO*, J. LEE*, R.T. DE SOUZA*, S. HUDAN*, L.G. SOBOTKA*, R.J. CHARITY*, J. ELSON*, S. LOBASTOV, D. SHAPIRA, D. BAZIN, A. GADE, G. VERDE*, *HIRA COLLABORATION — To realistically model the rp-process, experimental data along the proton dripline are required. Of particular interest is the ^{68}Se waiting point region where proton capture is inhibited. The reaction rate for the 2p-capture process $^{68}Se + 2p \rightarrow^{70} Kr$ depends exponentially on the Q-value, which is poorly constrained. We have performed an experiment to measure Q-values of proton unbound states of nuclei, specifically ^{69}Br, at the NSCL Coupled Cyclotron Facility. The experiment is designed to reconstruct the decays of proton unbound nuclei such as ^{69}Br by detecting the decay protons using the MSU High Resolution Array (HiRA) in coincidence with a heavy residue, e.g. ^{68}Se, which is measured in the S800 spectrograph. Details of the experimental setup as well as preliminary experimental results will be presented.

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Andrew Rogers
National Superconducting Cyclotron Laboratory/Michigan State University
1 Cyclotron, East Lansing, Michigan 48824-1321

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