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An Exploratory Study of ^{38}Ca(α,p) Resonance States in ^{42}Ti using the ^{46}Ti(^{4}He,^{8}He)^{42}Ti Reaction ALEXANDER LONG, GEORG BERG, JOACHIM GOERRES, DARSHANA PATEL, RASHI TALWAR, MICHAEL WIESCHER, MANOEL COUDER, University of Notre Dame, KICHIJI HATANAKA, HIRO FUJITA, YOSHITAKA FUJITA, ATSUSHI TAMII, KENJIRO MIKI, TAKESHI ITO, BIN LIU, Research Center for Nuclear Physics, Osaka University, JOHN GREENE, Accelerator Target Laboratory, Argonne Nation Laboratory, Physics Division — During type 1 X-ray bursts, if temperatures becomes sufficiently high, (α,p) reactions (αp-process) can effectively bypass the slower β^+ decay waiting points of the rp-process in the lower mass region A $\leq$ 40. The reaction flow of the αp-process can reach all the way up to Sc where very little information is known about the resonance states above the α-threshold in these proton rich nuclei. This endpoint of the αp-process comes from an ever increasing coulomb barrier and a possible suppression of alpha strengths in the compound nuclei of the (α,p) reactions. In order to investigate the end point of the αp-process, the ^{38}Ca(α,p)^{41}Sc reaction was indirectly studied by measuring resonance states in the compound nucleus, ^{42}Ti, using the ^{46}Ti(^{4}He,^{8}He)^{42}Ti reaction with the Grand Raiden spectrometer at RCNP. The procedures of this experiment along with results will be presented.

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