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High precision ^{24}Mg(p,t)^{22}Mg reaction to determine the ^{18}Ne(α,p)^{21}Na reaction rates A. MATIC, A.M. VAN DEN BERG, H.J. WÖRTCHE, M.N. HARAKEH, T. ADACHI, Y. FUJITA, Y. SHIMBARA, H. FUJITA, K. FUJITA, K. HATANAKA, Y. SAKEMI, Y. SHIMIZU, Y. TAMESHIGE, A. TAMII, M. YOSOI, J. GÖRRES, P. LEBLANC, M. WIESCHER, G.P.A. BERG, S. O'BRIEN, H. SCHATZ, T. WAKASA, JINA COLLABORATION, KVI GRONINGEN TEAM, RCNP OSAKA TEAM — The direct measurements of astrophysically interesting reactions are best possible tools in order to investigate stellar reaction rates. Often indirect techniques can be used to obtain nuclear physics information needed by astrophysical models. We performed ^{24}Mg(p,t)^{22}Mg experiment at RCNP by use the Grand Raiden spectrometer and the WS beam line. In this experiment we achieved an unprecedented resolution of 13 keV for (p,t) experiment and we were able to resolve 12 new levels in ^{22}Mg. We shoved that for ^{18}Ne(α,p)^{21}Na reaction the most dominant resonances at low stellar temperatures are 5 very closely spaced resonances between 8.2-8.6 MeV. Present experiment gave a valuable data necessary for the calibration and guidance for the future direct experiments. We showed that resolution necessary for the direct ^{18}Ne(α,p)^{21}Na reaction measurements need to be about 30 keV. The experimental technique will be discussed, experimental results and reaction rates will be presented.

A. Matic
KVI Groningen

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