

Transfer reaction measurements using proton beams for astrophysical reaction rates and proton branching ratios

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Transfer reaction measurements in normal kinematics using light stable beams are very powerful tools to study the properties of single-particle states of unstable nuclei important for astrophysical phenomena. The measurements are also useful to extract the proton branching ratios of populated excited states of unstable nuclei. In the presentation, we will summarize the results of proton branching ratio analysis for radionuclide ^{22}Mg which were populated through a previous $^{24}\text{Mg}(p,t)^{22}\text{Mg}$ reaction measurement. The measured branching ratios provide constraints on the proton partial widths, which have implications for X-ray burst nucleosynthesis. Details of the data analysis and our future plan for the $^{40}\text{Ca}(p,t)^{38}\text{Ca}$ reaction will be presented.

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