Study on ^{26m}Al(p,γ) Reaction at the SNe Temperature

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One of the isotope of aluminum, ^{26}Al, plays an important role in the study on the Galaxy. The γ-ray observatory has been detecting 1.809 MeV β-delayed γ-ray from the ground state of ^{26}Al for more than two decades. Its half life is 7.75×10^5 years and is sufficiently short on the scale of the galactic evolution and long enough to disperse in the interstellar medium. Hence, the abundance of this nuclide is one of the candidate to understand the nucleosynthesis in massive environments such as Wolf-Rayet stars, AGB stars and supernovae.

However, the abundance of ^{26}Al in interstellar medium from the observed flux has been inconsistent with nuclear reaction network calculations. One of the clue to solve this discrepancy is its isomer, ^{26m}Al. Since its spin-parity is 0^+, it directly decays to the ground state of ^{26}Mg without emitting γ-ray. Despite the difference of the spin-parity between the ground state and the isomeric state, they could be under thermal equilibrium in high temperature environments, so that there is a possibility that the calculated flux sinks below the network calculation [1].

Up to now, the experimental data are scarce, and Hauser-Feshbach calculations are used. In order to complement the one of the destructive reaction of ^{26m}Al, we performed the experiment at CNS low-energy radioactive ion beam separator (CRIB) and measured the elastic scattering of ^{26m}Al(p,γ) reaction with the cocktail ^{26g,m}Al RI beam. The experimental condition and the discussion of preliminary result will be presented.

[1] R.C.Runkle, A.E.Champagne and J.Engel (2001) *"Thermal Equilibration of ^{26}Al", The Astrophysical Journal*, 446, 970–978