

$^{18}\text{Ne}(\alpha,\alpha)^{18}\text{Ne}$ scattering measurement for study on astrophysically-important ^{22}Mg nuclide

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The $^{18}\text{Ne}(\alpha,p)^{21}\text{Na}$ reaction, one of the breakout reactions from hot-CNO cycle, plays a crucial role in understanding the X-ray bursts and the nucleosynthesis in the rp-process. Because this reaction rate is dominated by the energy levels of ^{22}Mg above the α -threshold at 8.14 MeV, studying the ^{22}Mg nuclide may improve our understanding of the X-ray burst. In order to study the level properties in ^{22}Mg nuclide, the $^{18}\text{Ne}(\alpha,\alpha)^{18}\text{Ne}$ scattering reaction was measured in inverse kinematics by using radioactive ^{18}Ne beams and ^4He gas cell target at the Center for Nuclear Study Radioactive Ion Beam Separator (CRIB) in RIKEN Nishina center. By adopting thick-target method, the energy levels in ^{22}Mg ranging from ~8.5 MeV to 18 MeV were populated. Details of the experiment and the preliminary results will be discussed in this presentation.

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