

Abstract Submitted  
for the HAW05 Meeting of  
The American Physical Society

**Development of a high-precision method for alpha resonant scattering measurements for nuclear astrophysics** HISASHI FUJIKAWA, CNS, Univ. of Tokyo, S. KUBONO, A. SAITO, G. AMADIO, J.J. HE, H. YAMAGUCHI, CNS, Univ. of Tokyo, Y. WAKABAYASHI, Kyushu Univ. / CNS, Univ. of Tokyo, S. NISHIMURA, RIKEN, L.H. KHIEM, IOP-VAST, H. OHTA, A. OZAWA, M. YAMAGUCHI, T. YASUNO, Univ. of Tsukuba — An experiment was performed for a development on the experimental method to measure heavy ion +  $\alpha$  resonant scattering. This method should be useful for studies of astrophysical ( $\alpha$ ,p) reaction and  $\alpha$ -cluster structures. The experiment was performed using  $^{16}\text{O}$  beams at 40 and 60 MeV, supplied by a tandem accelerator at Univ. of Tsukuba. The goal of this development is to obtain with high precision the resonant scattering data with the thick target method that use a gaseous helium of a large volume at room temperature. We used a 300-mm long helium target at a pressure of 600 Torr to stop the beam fully in the gas. We set the telescope of position sensitive silicon detectors inside the same gas target at several angles, and identified emitted alpha particles and protons by  $\delta E$ -E method. In order to obtain the angular information, in addition to the position of detectors, the position where the corresponding reaction occurred has to be determined precisely by taking into account the energy and the energy loss of emitted particles in the gas as well as kinematics. The experimental result and the analysis will be discussed.

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Date submitted: 25 May 2005

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