

Abstract Submitted
for the HAW09 Meeting of
The American Physical Society

Study of the $^{14}\text{O} + \alpha$ reaction at low energy T. HASHIMOTO, S. KUBONO, H. YAMAGUCHI, S. HAYAKAWA, N.B. DAM, D. KAHL, Center for Nuclear Study, The University of Tokyo, T. KAWABATA, Kyoto University, Y. WAKABAYASHI, JAEA, N.H. LEE, A. KIM, M.H. HAN, J.S. YOO, K.I. HAHN, Ewha Womans University, Y.K. KWON, C.S. LEE, Chung-Ang University, T. TERANISHI, Kyushu University, S. KATO, Yamagata University, T. KOMATSUBARA, University of Tsukuba, B.X. WANG, B. GUO, G. BING, Y.B. WANG, W.P. LIU, CIAE — The $^{14}\text{O}(\alpha, p)^{17}\text{F}$ stellar reaction is one of the key reactions for the breakout from the Hot-CNO cycle to the rp-process. Since the cross sections depends on the product of α and proton widths of the intermediate states in ^{18}Ne , it is important to determine these widths. We performed an experiment of the $^{14}\text{O} + \alpha$ scattering with a thick target method at the CNS Radioactive Ion Beam (CRIB) facility. The experiment was carried out using a thick Helium gas target and position sensitive silicon telescopes. This measurement provides an excitation function of $^{14}\text{O} + \alpha$ scattering for an energy range of $E_{\text{cm}} = 1.7 - 5.9$ MeV. We will concentrate on the elastic scattering channel in this presentation, since the α -cluster structure in ^{18}Ne above the α - threshold would play an important role for the stellar reaction. Several α - resonances were observed in the present experiment. The experimental result will be presented, and the α cluster structure in ^{18}Ne and the significance to the stellar reaction will be discussed.

Takashi Hashimoto
Center for Nuclear Study, The University of Tokyo

Date submitted: 02 Jul 2009

Electronic form version 1.4