Abstract Submitted
for the HAW09 Meeting of
The American Physical Society

Study of charged pion photoproduction on deuteron and proton YUNCHENG HAN, Lanzhou University & Tohoku Univeristy, NKS2 COLLABORATION — Pion photoproduction on nucleon and nuclei is an important tool to explore hadron structure and meson-baryon interaction. Charged pion production γd$\rightarrow$ π^- pp and γd$\rightarrow$ $\pi^+\pi^-$np with $E_\gamma$from 0.67 to 1.1 GeV, and γp$\rightarrow$ $\pi^+\pi^-$ p with$E_\gamma$from 0.67 to 0.92 GeV were measured with the second generation of Neutral Kaon Spectrometer, and tagged photon facility at the Laboratory of Nuclear Science, Tohoku University. The aim is to investigate the pion photoproduction process on the nucleus in the second and third resonance regions. The quasi-free process on bound proton and neutron inside deuteron and also non-quasi-free contributions were derived individually. The study on the proton follows our previous research with $E_\gamma$from 0.8 to 1.1 GeV.The excitation function of γd$\rightarrow$ π^-pp will be reported with an energy bin of 6 MeV. This will be an improvement on the world data with the energy resolution of 10 MeV. A new method of the tagged photon energy calibration using the kinematically complete measurement of d(γ, π^-pp) will be introduced. The $\pi^+\pi^-$ photoproduction on bound proton in deuteron will be reported. The cross sections for γd$\rightarrow$ $\pi^+\pi^-$np reaction with intermediate double delta channel were derived. This reaction is one of the important non-quasi-free processes, and is expected to be relevant to the ABC effect.

Yuncheng Han
Lanzhou University & Tohoku Univeristy

Date submitted: 08 Jun 2009 Electronic form version 1.4