

Abstract Submitted  
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**Inclusive measurement of strangeness photo-production and  $N\Delta$  resonance state search on a deuterium target** YUICHI TOYAMA, Graduate school of science, Tohoku University; GP-PU, MASASHI KANETA, SHO NAGAO, SATOSHI N. NAKAMURA, Graduate school of science, Tohoku University, NKS2 COLLABORATION — Photo-production of strangeness has been mainly studied by the reaction of charged channels ( e.g.:  $\gamma + p \rightarrow K^+ + \Lambda$ ). However, photo-production of  $K^0$  meson through neutral channel ( $\gamma + n \rightarrow K^0 + \Lambda$ ) is not sufficiently studied due to experimental difficulties. The most reasonable way to study the reaction is to use a deuteron target as a quasi free neutron target since a lone neutron target is impractical. The cross section measurement would be good benchmark for isobar models. Thus, we have been investigated strangeness photo-production using a deuterium target with Neutral Kaon Spectrometer2 (NKS2) at the Research Center for Electron Photon Science (ELPH), Tohoku University, Japan. NKS2 is a magnetic spectrometer with a large solid angle (25% of total) and multi charged particle detection capability. In the experiment, a few MHz tagged photon beam at energies ranging from 0.8 to 1.1 GeV was bombarded to the liquid deuterium target (520 mg/cm<sup>2</sup>). Mass of  $K^0$  and  $\Lambda$  were used as sources of momentum calibration of NKS2 in the analysis. In the presentation, I will report recent result about  $N\Delta$  dibaryon candidate via the  $\gamma + d \rightarrow d + \pi^+ + \pi^-$  reaction, and the cross-section of  $\Lambda$  and  $K^0$  photo-production.

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