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An upgraded strangeness photo-production experiment near the threshold region at LNS-Tohoku. MASASHI KANETA, Department of Physics, Tohoku University, NKS2 COLLABORATION — We have studied strangeness photo-production by neutral kaon from the γ+d reactions near the threshold region at Laboratory Nuclear Science (LNS), Tohoku Univ. The goal of our study is to investigate strangeness production mechanism by electro-magnetic interaction, which has not fully understood yet. So far the charged kaon production channel, $\gamma + p \to K^+ + \Lambda(\Sigma)$ has been extensively studied and reliable experimental inputs were obtained. However, there exist no reliable data for the neutral kaon channel $\gamma + n \to K^0_S + \Lambda$. In order to have reliable data for the neutral kaon photo-production data, we focused on the $\gamma + n \to K^0_S + \Lambda$ channel using a deuteron target. In 2003 to 2004, we have taken data by Neutral Kaon Spectrometer (NKS) at LNS-Tohoku (see Kyo Tsukada's talk in detail). We are now constructing a new spectrometer (NKS2) to upgrade experiments of neutral kaon photo-production. The new spectrometer NKS2 covers larger acceptance as compared with NKS especially at forward angles. The estimated acceptance of NKS2 are twice (ten times) for K^0_S (Λ) than that of NKS. With this advantage, we expect simultaneous measurements of K^0_S and Λ. Additionally, we plan a Lambda polarization measurement and many strangeness production channels in $\gamma + n$ and $\gamma + p$. In this talk, we show the current status of the experiment, and explain our goal in detail.

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