

## Study of the $d(\gamma, K^+)\Sigma\pi N$ reaction at LEPS

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The production mechanism of a  $\Sigma\pi$  pair from a deuteron target gives us an essential information on the interaction between  $\Lambda(1405)$  and nucleon. J-PARC E27 group studied the  $d(\pi^+, K^+)X$  reaction, and reported a large mass shift in the hyperon resonance region. Checking the spectrum using the other reaction is helpful to reveal the source of the large shift. We measured the  $d(\gamma, K^+)\Sigma\pi$  reaction using the  $\gamma$  beam with the energy of 1.5 – 2.4 GeV at LEPS, and investigated the shape of the invariant mass spectrum of  $\Sigma\pi$ . We applied a Fermi motion correction technique, and compared the spectrum of  $\Sigma\pi$  from a deuterium target with the one of a hydrogen target data. Our results can be interpreted with the quasi-free reactions, and the large mass shift in the hyperon resonance region which was seen in  $d(\pi^+, K^+)X$  reaction was not observed. The quantitative evaluation against to the large mass shift was performed using a statistical method. The details of the analysis and the results are reported in this contribution.

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