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Photoproduction of Pentaquark on Deuteron Target TAKAYUKI NAKAMURA, Tokyo Institute of Technology, MAKOTO OKA, Tokyo Institute of Technology — In 2002, discovery of a five quark state (Θ^+) was reported by LEPS (Laser Electron Photon at SPring-8) Collabolation in Japan. At present, a lot of detailed researches are being done from both sides of theory and experiment all over the world. We study production of Θ^+ with $J = 1/2, 3/2$ in $\gamma + D \to \Lambda + \Theta^+$ reaction. This production process is the lowest energy reaction among two-body to two-body processes. We calculate the differential cross section and the total cross section of the $\gamma + D \to \Lambda + \Theta^+$ near the threshold energy. We assume that Θ^+ has the mass $m_\Theta = 1540$MeV and the width $\Gamma = 10$MeV. The cases of both negative and positive parities are considered, because the parity has not been determined from experiments. The cross sections are estimated in three cases, (1) for unpolarized photon and deuteron, (2) polarized photon and deuteron and (3) polarized photon and deuteron with the helicity of Λ particle specified.

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