Contribution ID: **69** Type: **Poster**

^7Li Photodisintegration with Circularly Polarized Photons

Monday 12 December 2022 14:00 (1 hour)

The study of photodisintegration of ^7Li is of importance to Nuclear Physics, Particle Physics and Astrophysics. Primordial abundances of light elements such as D, ^3He, ^4He and ^7Li are predicted by Big Bang theory of early universe and is of great interest to cosmologists. Lithium, being fragile gets destroyed easily at relatively low temperatures. WMAP measurements have inferred that ^7Li abundance is two to three times more than that inferred by the low metallicity halo stars [1]. In the recent years based on lithium isotopoes series of experimental measurements are being carried out using High Intensity Gamma Ray Source (HIGS) at Duke Free Electron Laser Laboratory. Experiments [2]- [3] were carried out , to measure the differential cross section of the photoneutron reaction channel in photodisintegration of ^7Li, where the progeny nuclei is in the ground state as well as in excited states . Theoretical study on photodisintegration of deuteron was carried out using a model independent formalism [4] - [7] and in these studies, it was shown clearly that there could be 3 different $E1_\nu$ amplitudes leading to final relative n-p state . Subsequently, evidence for the existence of these three amplitudes was found in experimental studies [6] at slightly higher energies in different context.

Using the same approach, model independent formalism was developed for photodisintegration of ^7Li [8] and an analysis was carried out to study the differential cross section with linearly polarized photons. Extending this study we propose to discuss the reaction channel $^7Li + \gamma \rightarrow {}^6Li + n$ with initially circularly polarized photons.

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Session

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