

Photoproduction of $\pi^0\pi^+$ on the deuteron at $E_\gamma = 0.7 - 1.5 \text{ GeV}$

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The differential cross-sections of $\pi^0\pi^+$ photoproduction on the quasi-free proton have been measured at energy $E_\gamma = 0.7 - 1.5 \text{ GeV}$. The data has been obtained by the GRAAL collaboration [1] with the use of a liquid deuterium target and a tagged γ -ray beam produced by backward Compton scattering of laser photons. The $\approx 4\pi$ detector of the GRAAL setup has $\approx 100\%$ detection efficiency for π^+ and γ and $\approx 60\%$ for neutrons [2] which agrees with the G3 simulation and allows us to obtain a reliable result.

The distributions of $\pi^+\pi^0$, π^+n and π^0n invariant masses have been analysed for different E_γ ranges. The obtained result indicates contribution of the $D_{13}(1520)$ and $F_{15}(1680)$ resonances with subsequent decay into $\pi^+P_{33}(1232)$ that is in agreement with Mainz result [3] obtained earlier at the lower energies.

References

- [1] A.Lleres et al. // Eur. Phys. J. A 33 (2007) 169-184;
- [2] A.Mushkarenkov et al. // Nucl. Inst. and Meth. A 562 (2006) 85-91;
- [3] J.Ahrens et al. // Phys. Lett. B 551 (2003) 49;
W.Langgärtner et al. // Phys. Rev. Lett. 87 (2001) 052001;
A.Braghieri et al. // Phys. Lett. B 363 (1995) 46.