

STUDIES OF THE CHARGED DOUBLE PION PHOTOPRODUCTION
OFF PROTONS WITH CLAS

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Charged double pion photoproduction off protons plays an important role in N^* studies with the CLAS detector in Hall-B at JLAB. The processes $\gamma p \rightarrow \pi N$ and $\gamma p \rightarrow \pi\pi N$ are two major contributors in the N^* excitation region, while the two-pion channel has particular sensitivity to the high-lying resonances ($M > 1.6$ GeV), since most of them decay preferably into a final state with two pions.¹

For the first time 1- and 2-fold differential cross sections of the reaction $\gamma p \rightarrow \pi^+\pi^-p$ were measured with CLAS at invariant masses of the final hadronic system from 1.6 to 2.9 GeV. The large CLAS acceptance and the high statistics made it possible to obtain these cross sections in narrow W-bins of 25 MeV.

Detailed experimental information makes it possible to determine all essential contributing mechanisms from the analysis of the charged double pion photoproduction cross sections within a framework of the model.² These data are vital for new baryon state search, particularly to establish the existence of the $3/2^+(1720)$ candidate state. The signals from this state were observed in the earlier analysis of CLAS electroproduction data.³

References

- [1] I.G. Aznauryan, V.D. Burkert. Prog.Part.Nucl.Phys. 67 (2012) 1.
- [2] V.I. Mokeev et al. Phys. Rev. C80 (2009) 045212.
- [3] M. Ripani et al, CLAS collaboration. Phys. Rev. Lett. 91 (2003) 022002.