

# Measurement of the helicity dependence of single $\pi^0$ photoproduction on deuterons.

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## Collaboration

A2 @ MAMI

## Abstract content

The study of the properties of the baryon resonances gives essential constraints on models for nucleon structure. The pion-photoproduction is a powerful tool to excite the nucleon to an intermediate resonant state and, in combination with polarised beam/target polarisation, plays an important role in the investigation of the nucleon resonances. The data for the polarisation observables accessible using a polarised photon beam and/or polarised nucleon targets are scarce in many channels, especially in those involving a neutron target. A systematic measurement is performed at the Mainz facility by the A2@MAMI collaboration. This talk will focus on the experiment performed at the Mainz Microtron, using a circularly polarised photon beam and a longitudinally polarised deuteron target, in conjunction with the large acceptance Crystal Ball/TAPS detection setup. An overview of the status of the experiment will be given, together with the preliminary results of polarised cross section from deuteron and of the double polarization observable E for the single  $\pi^0$  photoproduction reaction from the quasi-free proton and quasi-free neutron.

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