η' photoproduction off the proton

Martin Kotulla
for the CBELSA/TAPS Collaborations

Department for Physics and Astronomy, University of Basel

The invariant mass region around 2 GeV where many resonances are predicted is still not very well explored, because the density and width of the resonances is very big. The finding and investigation of selective channels which couple only to a very small number of resonances is very desirable. In that sense, the photoproduction of η' mesons off the proton is a promising tool, since at threshold only a few partial waves contribute. So far, the current data status is very poor and contradicting itself, when describing the angular cross section either with an interference of an $S_{11}(1900)$ and an $P_{11}(1990)$ resonance [1] or by a ρ and ω t-channel exchange [2].
Furthermore, η' photoproduction at threshold on the deuteron can be exploited to study η'-N interaction similarly as it has been done in case of the η meson.
Both channels η' photoproduction on the proton as well as on the deuteron have been measured using the Crystal Barrel and TAPS detectors at the ELSA accelerator. We will discuss preliminary results.

[1] R. Ploetzke et al., PLB 444 (1998) 555-562

[2] J. Barth et al., NPA 691 (2001) 374c-380c

E-mail: Martin.Kotulla@unibas.ch