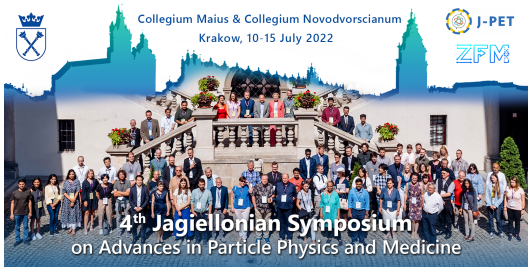

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Polarisation observables Sigma, T, P and H in pi0 and eta photoproduction off quasifree nucleons

Tuesday, 12 July 2022 17:30 (20 minutes)

The excitation spectrum of the nucleon is an important testing ground for quantum chromodynamics in the regime where it cannot be treated perturbatively. During the last two decades much progress has been made on the theory side, e.g. lattice gauge methods and in experiments, particularly using energy tagged photon beams at electron accelerators, which has now reached a state where not only differential cross sections but also asymmetries measured with polarised photons
and polarised targets allow for detailed partial wave analyses. This provides much more stringent information about the involved reaction multipoles and thus the contributing nucleon resonances. The present experiment was done at the ELSA accelerator in Bonn with the Crystal Ball/TAPS detector setup. The incident electron beam of 3.2 GeV impinged on a diamond radiator where it produced coherent bremsstrahlung photons with linear polarisation, which again impinged
on a transversely polarised, deuterated butanol target. This allows the simultaneous measurement of the polarisation observables Σ, T, P and H. Analysed were the final states Nπ0 and Nη with the almost 4π covering electromagnetic calorimeter Crystal Ball/TAPS.
One of the main motivations of this experiment was a more detailed investigation of the not yet understood narrow structure in the excitation function of the γn⟶nη reaction at approximately 1 GeV.
Preliminary results will be discussed.

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