BGOOD PHOTOPRODUCTION EXPERIMENT: RECENT RESULTS ON UNCONVENTIONAL BARYON STRUCTURE STUDY IN THE LIGHT QUARK SECTOR

M. Romaniuk[1,2]
(for BGOOD collaboration)

[1] *Institute for Nuclear Research, National Academy of Sciences of Ukraine, Kyiv, Ukraine*
[2] *INFN Roma "Tor Vergata", Rome, Italy*

Unconventional baryonic and mesonic states represent a topical issue in contemporary hadron physics. New results from the charm-quark sector indicate the existence of multi-quark objects beyond the quark-antiquark and 3-quark configurations (mesons and baryons). The investigations were mostly focused on the sector of *c* and *b* quarks, but in order to understand whether the newly discovered structures represent a general feature of structure formation from the basic building blocks of matter, quarks and gluons, also the light uds-quark sector is now attracting increasing attention. This is the focus of the BGOOD experiment [1] at the ELSA electron accelerator. The photoproduction experiment accesses forward meson angles and low momentum exchange kinematics in the uds sector, which may be sensitive to molecular-like hadron structure.

The differential cross section for $\gamma p \rightarrow K^+\Lambda(1520)$ was measured for $\cos\theta^K_{CM} > 0.9$ from threshold to a centre-of-mass energy of 2090 MeV at the BGOOD experiment [2]. The resolution in both W and $\cos\theta^K_{CM}$ enable a precise characterization in this kinematic regime for the first time. The data are consistent with the previous data of LEPS [3] and effective Lagrangian models [4-5]. The improved statistical precision will help constrain parameters in future phenomenological models, which can lead to an improved understanding of t-channel K^*, *u*-channel Λ and *s*-channel N^* contributions to the reaction mechanism.

In the strangeness sector, where meson–baryon dynamics may play prominent roles, forward angle differential cross section measurements from threshold for $K^+\Lambda$, $K^+\Sigma^0$, $K^+\Sigma(1385)$, $K^+\Lambda(1405)$ and $K^+\Lambda(1520)$ indicate an equivalence to the P_C states observed at the $D\Sigma_C$, $D\Sigma^*{}_C$ and $D^*\ \Sigma_C$ thresholds [6].

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