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The BGOOD experiment at ELSA - exotic structures in the light quark sector?

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The discoveries of the pentaquark states and XYZ mesons in the charmed quark sector initiated a new epoch in hadron physics, where exotic multi-quark states beyond the conventional valence three quark and quark-antiquark systems has been unambiguously observed. Similar structure may be evidenced in the light, uds sector in meson photoproduction, where access to a low momentum exchange and forward meson production region is crucial to study this phenomena. The BGOOD photoproduction experiment is uniquely designed to explore this kinematic region, being comprised of a central calorimeter complemented by a magnetic spectrometer in forward directions.

Highlighted results indicate a peak-like structure in the $\gamma n \rightarrow K^0\Sigma^0$ cross section at a centre-of-mass energy of 2 GeV consistent with a meson-baryon interaction model which predicted the charmed P_C states. The same $K^*\Sigma$ molecular nature of this proposed $N^*(2030)$ is also supported in a measurement of $\gamma p \rightarrow K^+\Lambda(1405) \rightarrow K^+\pi^0\Sigma^0$, where it is predicted to drive a triangle singularity mechanism.

In the non-strange sector, coherent meson photoproduction off the deuteron enables access to proposed dibaryon states, including the recently discovered $d^*(2380)$. Data will be presented which support experimental claims of higher mass isoscalar and isovector dibaryons.

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Parallel Session

Hadron Spectroscopy

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