Contribution ID: **70** Type: **Contributed talk**

The study of unconventional baryon structure in the light quark sector with the BGOOD experiment

Wednesday, 10 July 2024 16:50 (20 minutes)

The existence of exotic multi-quark states beyond the conventional valence three quark and quark-antiquark systems has been unambiguously confirmed in the heavy quark sectors. Such states could manifest as single colour bound objects, or evolve from meson-baryon and meson-meson interactions, creating molecular like systems and re-scattering effects near production thresholds. Equivalent structures may be evidenced in the light, uds sector. The BGOOD photoproduction experiment at ELSA is ideal to study spatially extended, molecular-like structure which may manifest in reaction mechanisms. BGOOD is comprised of a central calorimeter for neutral meson momentum reconstruction and complemented by a magnetic spectrometer in forward directions for charged particle identification.

Our published results in the strangeness sector may suggest a dominant role of meson-baryon dynamics which has an equivalence to the P_C states in the charmed sector. This includes structure in $K^0\Sigma^0$ and $K^+(\Lambda(1405) \rightarrow \pi^0\Sigma^0)$ photoproduction at the K^*Y thresholds having a direct analogue to the $P_C(4457)$ at the $\Sigma_C\bar{D}^*$ threshold.

In the non-strange baryon-baryon sector, coherent meson photoproduction off the deuteron enables access to proposed dibaryon states, including the recently discovered candidate, $d^*(2380)$. Our measured differential cross sections at forward angles challenge conventional descriptions of coherent photoproduction, which should be suppressed due to the large momentum transferred to the deuteron.

Supported by DFG projects 388979758/405882627 and the European Union's Horizon 2020 programme, grant 824093.

session

B. Hadron Spectroscopy

Primary author: JUDE, Thomas (University of Bonn)

Presenter: JUDE, Thomas (University of Bonn)

Session Classification: B. Hadron Spectroscopy