Contribution ID: **37** Type: **not specified**

Strangeness photoproduction at the BGO-OD experiment

Thursday 13 June 2019 10:10 (35 minutes)

Hadron spectroscopy has for many years been used to explore the excitation spectrum of the nucleon and the relevant degrees of freedom of the constituents. Despite the wealth of data there remain many "missing resonances" which are predicted by both quark models and Lattice QCD calculations, but are not observed experimentally.

Since the conception of the quark model, there have been descriptions of baryons and mesons of more than three and two constituent quarks respectively, giving rise to multi-quark entities often referred to as penta- and tetraquarks. These could manifest as single colour bound objects, or evolve from meson-baryon and meson-meson interactions, opening a possibility of molecular systems and meson re-scattering effects near production thresholds. Indeed, models including meson-baryon interactions have had improved success in describing both strange and non-strange resonance spectra. Similar models have also been used to describe the pentaquark baryon candidates and the XYZ mesons in the "heavy" charmed quark sector. Intriguingly, there are early indications that similar configurations may manifest in the "light" strange quark sector.

To study such effects experimentally, access to a low momentum exchange region is crucial. The BGO-OD experiment at ELSA, comprised of a forward spectrometer and central calorimeter, is uniquely suited for the study of strangeness photoproduction in this region of forward meson angles. First key results at low t include line shapes and differential cross sections for $\gamma p \rightarrow K^+\Lambda(1405) \rightarrow K^+\Sigma^0\pi^0$, and observation of a cusp-like structure in $\gamma p \rightarrow K^+\Sigma^0$ cross section at the $\Lambda(1405)$ threshold.

Author: JUDE, Thomas (The University of Bonn)

Presenter: JUDE, Thomas (The University of Bonn)

Session Classification: Plenary Session 1

Track Classification: Baryon spectrum through meson photoproduction