

Recent Results from the CBELSA/TAPS Experiment

Monday, 16 October 2023 14:00 (30 minutes)

The exact dynamics of the quarks and gluons inside the nucleon are a long-standing question in hadron physics. To shed more light on this topic, the excitation spectrum of the nucleons needs to be measured and compared to theoretical models like constituent quark models or lattice QCD calculations. Until now, several predicted resonances - especially at high masses - have not been found by experiments, which is the well-known missing resonances problem.

The search for the missing resonances is a recent research project by several different experiments. One of them is the CBELSA/TAPS experiment, which is located at the ELSA accelerator in Bonn. The CBELSA/TAPS experiment features a detector system with nearly full 4π angular coverage and a high detection efficiency for photons, which makes it the ideal tool for the measurement of final states comprising neutral mesons. One of its special features is the use of linearly or circularly polarized photon beams impinging on a longitudinally or transversely polarized butanol target. This allows for the measurement of single or double polarization observables, which are of major importance in the identification of small resonance contributions.

In this talk, an overview of the recent status in baryon spectroscopy at the CBELSA/TAPS experiment will be given. This includes the measurement

of different polarization observables, as well as a review of the impact of the polarization data on the excitation spectra of the nucleons. In addition, an outlook on the future possibilities for baryon spectroscopy at the ELSA facility will be given.

Parallel Session

Hadron Spectroscopy

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