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Meson Spectroscopy at CLAS and CLAS12

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Hadron spectroscopy is a valuable tool to experimentally investigate the low-energy, non-perturbative QCD regime, corresponding to the dominant manifestation of the strong force in Nature, in terms of hadrons that constitute the bulk of the visible mass of the Universe. In particular, the measurement of the mesons spectrum, searching for exotic states not compatible with the Quark Model, would provide access to the gluonic degrees of freedom that bind particles together.

A broad program to study meson spectroscopy in the light quark sector started at Jefferson Laboratory during the previous 6-GeV period. The CLAS experiment in Hall B used a Bremsstrahlung tagged photon beam impinging on a proton target to provide the first measurement of many photoproduction reactions. Currently, in the 12-GeV era, the MesonEx experiment continues this physics effort, exploiting the larger beam energy and intensity. MesonEx employs low- Q^2 electron scattering as a technique to produce an intense and highly energetic quasi-real photon beam. In the experiment, the low-angle scattered electron is measured in a dedicated detector, the Forward Tagger, in coincidence with final state hadrons measured in the CLAS12 spectrometer.

In this talk, after discussing some selected results from the CLAS program, I'll present the ongoing MesonEx experiment, showing some preliminary results.

Collaboration

CLAS

Primary author: CELENTANO, Andrea (INFN Genova)**Presenter:** CELENTANO, Andrea (INFN Genova)**Session Classification:** Plenary Session