

Meson Spectroscopy in Coherent Production off ^4He with CLAS

January 8, 2015

Abstract

The meson spectroscopy studies require disentanglement of states with different quantum numbers that decay to the same final states, as well as separation of production of meson-baryon and pure mesonic states that end up having the same final state particles. For the former, Partial Wave Analysis (PWA) is employed, while the latter is typically resolved with cuts through the experimental data. The spectroscopy using a coherent scattering off ^4He uniquely addresses both issues. Such process when recoil nucleus stays intact, eliminates background from baryon resonances, and the production on the spin and iso-spin zero target significantly simplifies PWA. At Jefferson Lab, we conducted the first experiment for meson spectroscopy using the coherent, quasi-real photoproduction on ^4He . Experiment took place in the experimental Hall-B, in 2009, using a 6 GeV electron beam and the CLAS detector. A new Radial Time Projection Chamber (RTPC) with high pressure gaseous target have been used to detect low-energy recoil ^4He nuclei. In this talk, status of the analysis and the first look on coherently produced mesonic final states will be presented.