

Summary of experiment 99005, Meson Spectroscopy in Few-Body Decays:

A great deal is known about the spectrum of low lying mesons, as one can easily see from an inspection of the PDG compilation. Numerous mass multiplets have been mapped out and coupling strengths to many final states are known. However surprisingly little order emerges from ones examination of mesons above about 1.5 GeV in mass. It is likely that our poor understanding of the known spectra is due at least in part to a lack of knowledge about gluonic configurations.

Photoproduction reactions have provided little spectroscopic information in the past, primarily due to the low intensity of the available beams. The CLAS spectrometer will allow us to make a detailed study of three-meson final states, which is expected to identify mesons with exotic structure (e.g. $q\bar{q}g$ hybrids) and those with dominantly $s\bar{s}$ configurations. It is particularly important to determine the strangeonium spectrum in the vicinity of 2 GeV because they are expected to mix with the low lying glueball states.

Photoproduction of mesons decaying to three-meson final states will be measured. These measurements will sample the $\rho\pi$, $\eta\phi$, and K^*K meson decay channels. The data will be used to identify new mesons with masses up to 2 GeV. Spectroscopic information on exotic mesons and strangonium states will be extracted from a partial-wave analysis of the data.