

KLF for Hadron Spectroscopy

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Abstract:

We propose to create a secondary beam of neutral kaons in Hall D at Jefferson Lab to be used with the GlueX experimental setup for strange hadron spectroscopy. The superior CEBAF electron beam will enable a flux, which exceeds the flux of that previously attained at SLAC by three orders of magnitude. It will allow a broad range of measurements that will correspondingly improve the statistics of earlier data obtained on a hydrogen target likewise by three orders of magnitude. The use of a deuteron target will provide first measurements ever with neutral kaons on neutrons. The experiment will measure both differential cross sections and self-analyzed polarizations of the produced Λ , Σ , Ξ , and Ω hyperons below 2.5 GeV. The proposed facility will have a defining impact in the strange meson sector through measurements of the final state $K\pi$ system up to 2 GeV invariant mass.