Abstract Submitted
for the DNP07 Meeting of
The American Physical Society

Current status of a partial wave analysis of the $\gamma p \to K^+\Lambda$ reaction using data from CLAS at Jefferson Lab MICHAEL MCCRACKEN, Carnegie Mellon University, CLAS COLLABORATION/JEFFERSON LABORATORY COLLABORATION — Couplings of N^* states to two-body final state have been predicted using relativized quark-model calculations. Though these predictions give couplings to the $K^+\Lambda$ final state that are small relative to the couplings of other final states, the $K^+\Lambda$ channel is an interesting application of partial wave analysis techniques because it couples only to the iso-spin $\frac{1}{2}$ N^* states and the self-analyzing Λ decay to $p\pi^-$ allows study of the Λ polarization. We have isolated some 1.6×10^6 $\gamma p \to K^+\Lambda$ signal events in the CLAS g11a dataset. The signal is remarkably clean with less than 2% background to total ratio across 95% of the observed W range ($1.63GeV < W < 2.84GeV$). I will present preliminary differential cross-section and recoil polarization results from this channel which are consistent with both previous CLAS measurements and world data. I will also present the status of the partial wave analysis of the $K^+\Lambda$ channel. We fit using information from the g11a run ($\frac{d\sigma}{dt}$, Λ recoil polarization) as well as double polarization observables from the CLAS g1c run to constrain possible physics models. These polarization observables are a particularly powerful constraint on non-resonant (t-channel) processes.

Michael McCracken
Carnegie Mellon University

Date submitted: 02 Jul 2007 Electronic form version 1.4