

The Physics with Linearly-Polarized Photons in Hall B of Jefferson Lab

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The set of experiments forming the g8 run took place in the summer of 2001 (6/04/01 – 8/13/01) in Hall B of Jefferson Lab. These experiments made use of a beam of linearly-polarized photons produced through coherent bremsstrahlung and represent the first time such a probe has been employed at Jefferson Lab. Among the several new and upgraded Hall-B beamline devices commissioned prior to the production running of g8a were the photon tagger, the coherent bremsstrahlung facility (goniometer + an instrumented collimator), a photon profiler, and the PrimEx dipole + pair spectrometer telescopes. We essentially commissioned a new beamline for photon running in Hall B. The scientific purpose of g8 is to improve the understanding of the underlying symmetry of the quark degrees of freedom in the nucleon, the nature of the parity exchange between the incident photon and the target nucleon, and the mechanism of associated strangeness production in electromagnetic reactions. With the high-quality beam of the tagged and collimated linearly-polarized photons and the nearly complete angular coverage of the Hall-B spectrometer, we seek to extract the differential cross sections and polarization observables for the photoproduction of vector mesons and kaons at photon energies ranging between 1.1 and 2.25 GeV. For the first phase of g8, i.e. g8a, we collected approximately 1.8 billion triggers for $1.75 \leq E_{\gamma} \leq 2.25$ GeV. I shall discuss the commissioning of the beamline, the physics of baryon resonances, and present preliminary results from the g8a run.