Abstract Submitted
for the APR06 Meeting of
The American Physical Society

Investigation of Limitations on the Photon Tagging Technique at High Energies.[1] MARIANNA GABRIELYAN, University of Kentucky, PRIMEX COLLABORATION — The Hall B Jefferson Lab *PrimEx* Collaboration is using tagged photons to perform a 1.5% level measurement of the absolute cross section for the photoproduction of neutral pions in the Coulomb field of a nucleus. In view of the high precision necessary for this experiment, we are investigating the extent of possible limitations on the tagging technique for photon energies of about 5 GeV. These effects arise from two sources–radiative Møller scattering in the bremsstrahlung radiator, and incoherent bremsstrahlung, where the recoiling nucleus is left in an excited state or undergoes nucleon knockout. Both of these processes limit the correlation between the energy of the bremsstrahlung photon and the post-bremsstrahlung electron. These studies use the *PrimEx* Hall B pair spectrometer, which consists of a pair converter, a dipole magnet, and a segmented array of plastic scintillator telescopes to detect the electron-positron pair. This enables a comparison between the bremsstrahlung photon energy as determined by the pair spectrometer, and that given by the photon tagger. We will present results from the Fall 2004 *PrimEx* run and compare to GEANT simulations of the setup.

[1]This work is supported by NSF Grant No. PHY-0079840 and DOE Grant Number DE-FG02-99ER41101.

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Date submitted: 13 Jan 2006 Electronic form version 1.4