

# Parity quality beam and linear regression summary for the G0 forward angle measurement

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The G0 experiment measures parity violating elastic e-p scattering asymmetries to probe the strange quark content of the nucleon. The goal is to measure the asymmetries with an overall uncertainty of 5% of the measured asymmetries which will be of order  $10^{-5}$  to  $10^{-6}$ . In order to achieve the above precision, systematic errors which can induce false asymmetries must be controlled. One such systematic error is helicity correlated changes in beam parameters, which, coupled with the sensitivity of the G0 spectrometer to such beam variations, can induce false asymmetries. Beam parameters monitored for helicity correlation are beam current, beam position, beam angle, and beam energy. A feedback loop was successfully used to reduce the helicity correlation in beam current and beam position. The sensitivity of the G0 spectrometer to fluctuations in beam parameters has also been measured, and the false asymmetries have been determined to be of order  $10^{-8}$ . This contribution will address the sensitivity of the G0 spectrometer to changes in beam conditions, the performance of the feedback loops as well as the resulting parity quality of the G0 beam, and the resulting false asymmetry.