

E02-013 Analysis Update

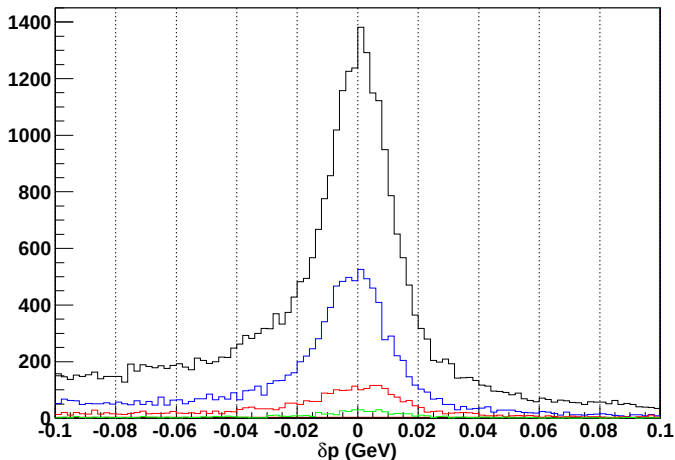
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August 27, 2009

- ▶ Replays moved to tape
- ▶ Optics
 - ▶ Agreement between kinematics with linear transformation
 - ▶ Working on acceptance interpolation
- ▶ G_E^n
 - ▶ Calculated for all three kinematics
 - ▶ Calculated corrections with present MC

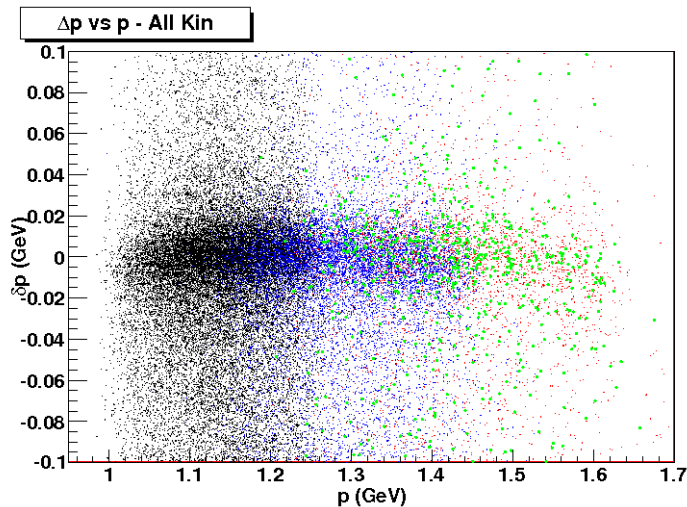
Agreement between kinematics using linear transformation

Δp



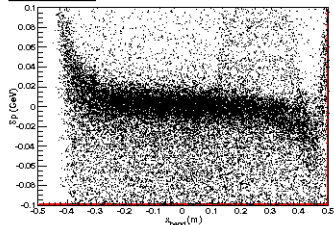
$a = -0.161$ (was -0.09 before)

Second order correction on p would be needed for better agreement

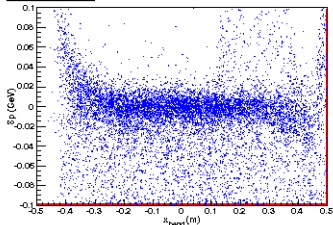


Working on getting (x,y) acceptance grid coefficients worked out

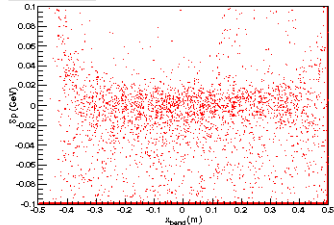
Δp vs x - Kin 4



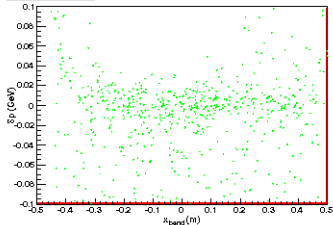
Δp vs x - Kin 2



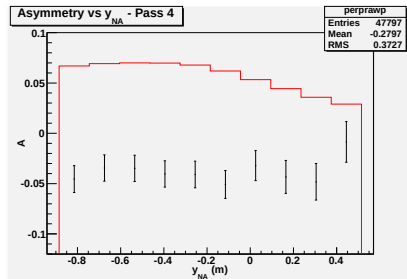
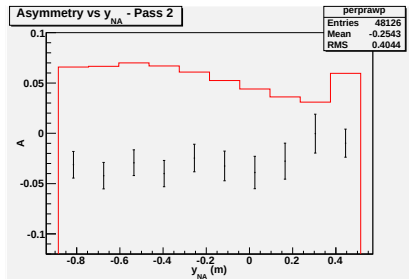
Δp vs x - Kin 3



Δp vs x - Kin 3



Asymmetry vs Neutron Arm y



- ▶ MC says only 5% change in A between y cuts
- ▶ Background at low y in data, not in MC
- ▶ Still looks like some residual low asymmetry background?
- ▶ Overall asymmetry change present

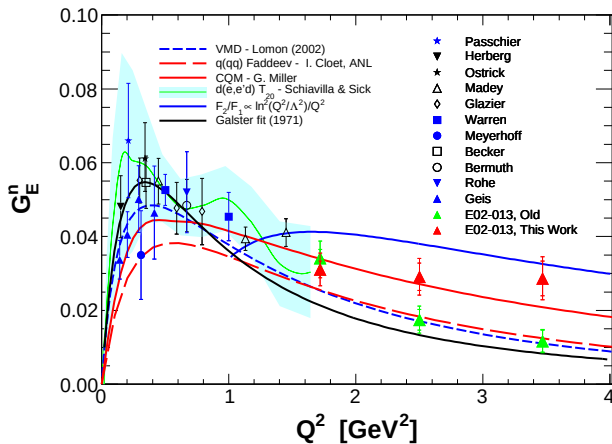
- ▶ Ran code over latest replays
- ▶ Improvements over released preliminary results:
 - ▶ Beam trips cut out
 - ▶ ToF RF corrections implemented, v_z dependence removed
 - ▶ 2 bars (of ~ 20) must be dead on each plane for blind event

Q^2	Old Stat	New Stat
1.7 GeV ²	156061	144812
2.5 GeV ²	39144	35433
3.5 GeV ²	15325	15467

- ▶ Background, dilutions approximately the same
- ▶ Raw Aymmetries and G_E^n :

Q^2	Old A	New A
1.7 GeV ²	-0.058 ± 0.003	-0.055 ± 0.003
2.5 GeV ²	-0.038 ± 0.005	-0.051 ± 0.005
3.5 GeV ²	-0.026 ± 0.008	-0.051 ± 0.008

Q^2	Old G_E^n	New G_E^n
1.7 GeV ²	0.034 ± 0.005	$0.031 \pm 0.002 \pm 0.004$
2.5 GeV ²	0.017 ± 0.003	$0.029 \pm 0.004 \pm 0.003$
3.5 GeV ²	0.012 ± 0.003	$0.029 \pm 0.005 \pm 0.004$



$$A = [A_{\text{meas}} - A_{\text{inelas}} (1 - D_{\text{inelas}})] \frac{1}{D_{\text{inelas}}}$$

$$D_{\text{inelas}} = \frac{N_{\text{QE}}}{N_{\text{QE}} + N_{\text{inelas}}}$$

Q^2	A_{meas}	A_{inelas}	D_{inelas}	$\Delta A/A$
1.7 GeV ²	-0.238	-0.099	0.990	0.006
2.5 GeV ²	-0.244	-0.158	0.975	0.009
3.5 GeV ²	-0.283	-0.036	0.957	0.039
3.5 GeV ² (wide cuts)	-0.283	-0.0554	0.884	0.106

- ▶ Kin 3 wide cuts are $0.7 < W < 1.15$ GeV, $m_{\text{miss}} < 2.2$ GeV
- ▶ Kin 3 wide cuts give $\sim \times 2$ statistics

- ▶ Finish optics (hopefully matter of hours)
- ▶ Start running MC
- ▶ Evaluate systematic errors with MC for counts, A , charge ID
- ▶ New beam polarization needs to be worked in
- ▶ Instrumental asymmetry corrections
- ▶ New FSI and nuclear models need to be included