$A_{V}^{ed}, T_{10}^{e}, T_{11}^{e} \rightarrow f(\theta^{*}, \phi^{*})$

$A_{V}^{ed} \equiv \frac{\Delta}{\Sigma} = \sqrt{3} \left[ \frac{1}{\sqrt{2}} \cos \theta^{*} T_{10}^{e}(Q^{2}) - \sin \theta^{*} \cos \phi^{*} T_{11}^{e}(Q^{2}) \right]$

$T_{10}^{e} = \sqrt{\frac{2}{3}} \left[ \frac{\sin \theta^{*} \cos \phi^{*} A_{L} - \sin \theta^{*} \cos \phi^{*} A_{R}}{\cos \phi^{*} \sin \theta^{*} \cos \phi^{*} \cos \theta^{*} \sin \theta^{*} \cos \phi^{*}} \right]$

$T_{11}^{e} = \frac{\sqrt{3}}{3} \left[ \frac{\cos \theta^{*} A_{L} - \cos \theta^{*} A_{R}}{\cos \theta^{*} \sin \theta^{*} \cos \phi^{*} - \cos \theta^{*} \sin \theta^{*} \cos \phi^{*}} \right]$
Elastic Events Sliced in $\phi_e$

\[ \text{MEAN } \phi_e = 7.44^\circ \]

\[ \text{MEAN } \phi_e = 187.46^\circ \]

Mon Dec 13 16:15:49 2004
dependence of $A_{V}^{ed}$
Vector Analyzing Powers

$d(e,e'd)$ Vector Analyzing Powers $T_{10}^e$ and $T_{11}^e$

Beam-Gated Charge: 479 kC
BLK: Monte Carlo
Curve: Abbott Parameterization I
\( G_M \) from \( T_{11}^e \)

\[
G_M = \frac{S \cdot T_{11}^e \cdot \sqrt{3}}{2 \tan \frac{\theta_e}{2} (G_C + \frac{\tau}{3} G_Q) \sqrt{\tau (1+\tau)}}
\]

- \( S = A(Q^2) + B(Q^2) \tan^2 \frac{\theta_e}{2} \)
- \( \tau = \frac{Q^2}{4M_d^2} \)
\[ G_M \text{ from } T_{11}^e \]

\[ G_M = \frac{S \cdot T_{11}^e \cdot \sqrt{3}}{2 \tan{\frac{\theta_e}{2}} (G_C + \frac{\tau}{3} G_Q) \sqrt{\tau(1+\tau)}} \]

- \( S = A(Q^2) + B(Q^2)\tan^2{\frac{\theta_e}{2}} \)

- \( \tau = \frac{Q^2}{4M_d^2} \)

Need \( A, B, G_C, \) and \( G_Q \) at my two \( Q^2 \) points!
Fitting the World Data

d(e,e'd) Fitted World Data for A, B, G_C, and G_Q

  - Blue Curve = 2nd Order Polynomial Fit
  - Red = Points from Fit

  - Last 3 yrs: Abbott et al., PR, 64 (1996) 669
  - Blue Curve = 2nd Order Polynomial Fit
  - Red = Points from Fit

- G_Q(q^2): Comp. by Abbott et al., EPJ A, 7 (2000), 421
  - Blue Curve = 2nd Order Polynomial Fit
  - Red = Points from Fit

- G_{1/2}(q^2): Comp. by Abbott et al., EPJ A, 7 (2000), 421
  - Blue Curve = 2nd Order Polynomial Fit
  - Red = Points from Fit
Preliminary Data on $G_M$

$d(e,e'd)d$ Magnetic Dipole Form Factor $G_M$

Beam-Gated Charge: 479 kC
Curve: Abbott Parameterization

Preliminary

$G_M$

$Q^2[GeV/c]^2$

0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8

0.05
0.1
0.15
0.2
0.25
0.3
0.35
Tasks in the Near Term

- Invoke Chi’s cut library and the latest dataset
- Include *theoretical* curves for $T_{ij}$ from Arenhövel
- Address systematic errors
\( \sigma_{G_M} \) in more detail

\[
Q^2 = 0.159 \text{ GeV}^2 \quad G_M = 0.403325 \pm 0.0490651
\]

\[
\left( \frac{\partial G_M}{\partial S} \right)^2 \cdot \sigma_s^2 = 6.34441 e - 06
\]

\[
\left( \frac{\partial G_M}{\partial T_{11}} \right)^2 \cdot \sigma_{T_{11}}^2 = 0.00240032
\]

\[
\left( \frac{\partial G_M}{\partial G_C} \right)^2 \cdot \sigma_{G_C}^2 = 6.23812 e - 07
\]

\[
\left( \frac{\partial G_M}{\partial G_Q} \right)^2 \cdot \sigma_{G_Q}^2 = 9.3113 e - 08
\]

\[
Q^2 = 0.245 \text{ GeV}^2 \quad G_M = 0.202941 \pm 0.0293645
\]

\[
\left( \frac{\partial G_M}{\partial S} \right)^2 \cdot \sigma_s^2 = 1.23749 e - 05
\]

\[
\left( \frac{\partial G_M}{\partial T_{11}} \right)^2 \cdot \sigma_{T_{11}}^2 = 0.000849283
\]

\[
\left( \frac{\partial G_M}{\partial G_C} \right)^2 \cdot \sigma_{G_C}^2 = 5.40502 e - 07
\]

\[
\left( \frac{\partial G_M}{\partial G_Q} \right)^2 \cdot \sigma_{G_Q}^2 = 7.47175 e - 08
\]