Vector ed-Elastic Analysis Update

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BLAST Collaboration Meeting

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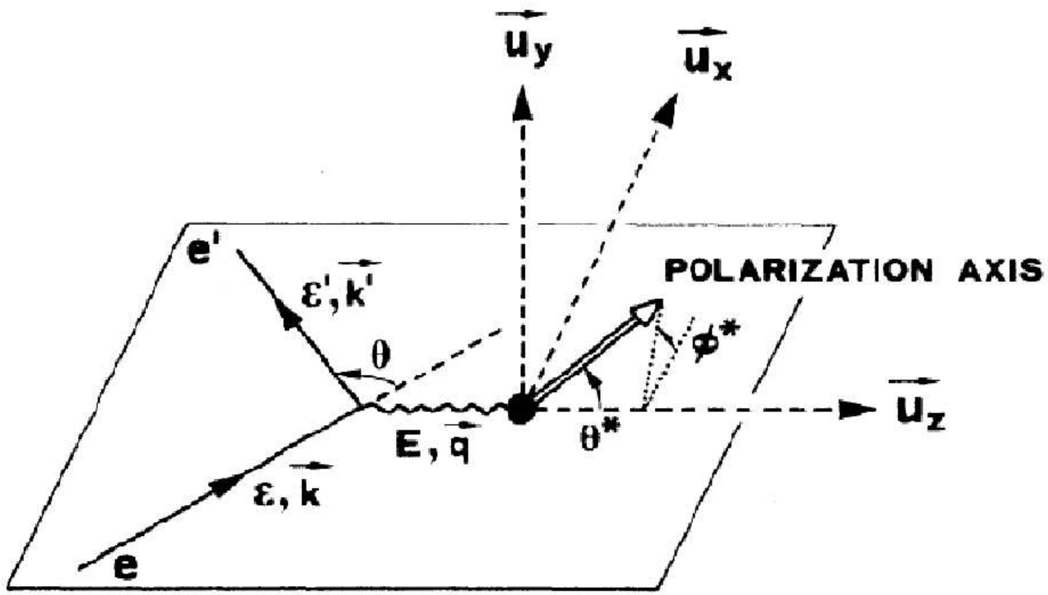
$A_V^{ed}, T_{10}^e, T_{11}^e \rightarrow f(\theta^*, \phi^*)$

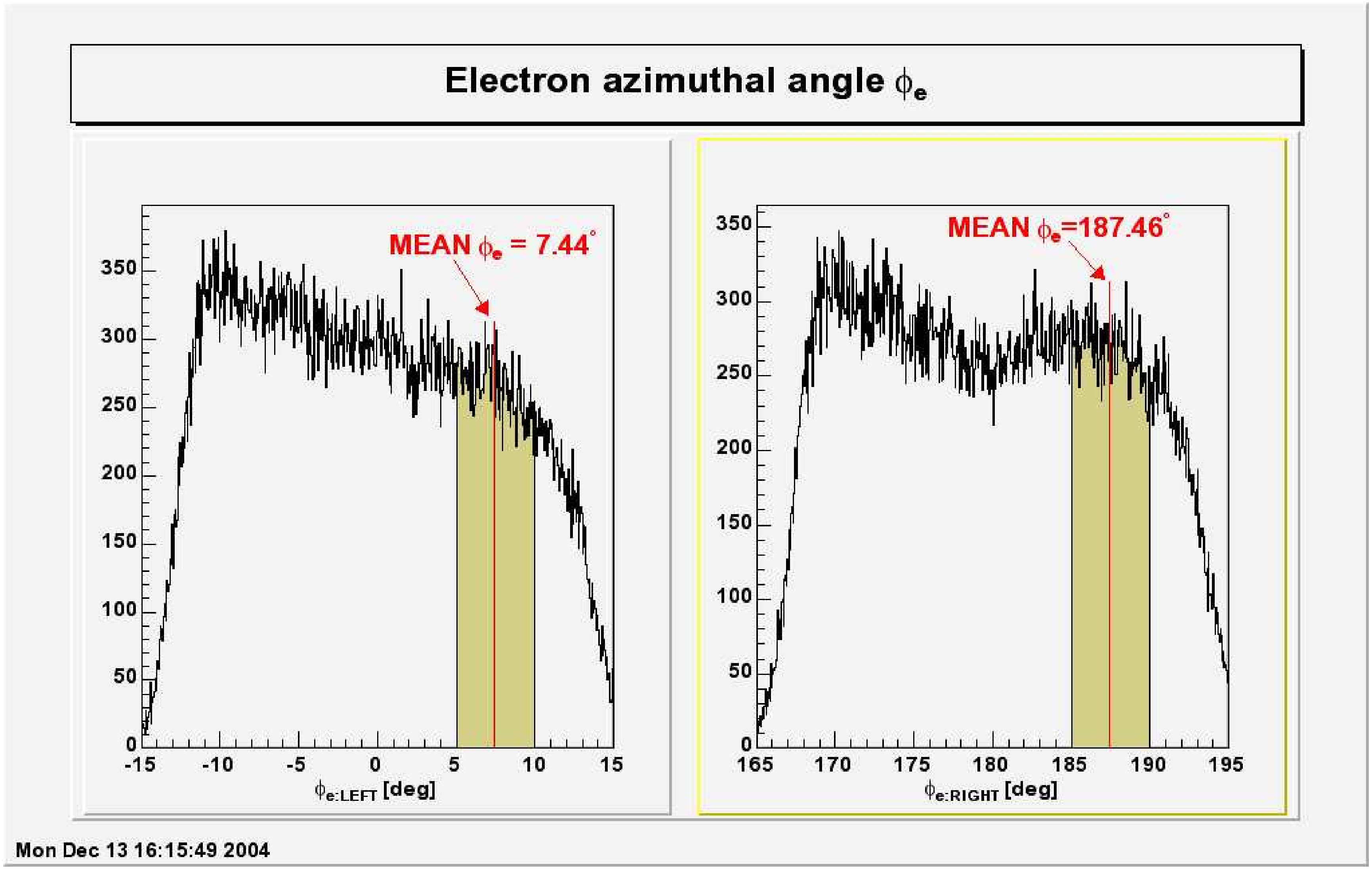
$$\mathbf{A_V^{ed}} \equiv \frac{\mathbf{\Delta}}{\mathbf{\Sigma}} = \sqrt{3}\,[\,\frac{1}{\sqrt{2}} cos\theta^*\ T_{10}^e(Q^2) \quad - \quad sin\theta^* cos\phi^*\ T_{11}^e(Q^2)\,]$$

$$T_{10}^e = \sqrt{\frac{2}{3}}\left[\frac{sin\theta_R^* cos\phi_R^* A_L - sin\theta_L^* cos\phi_L^* A_R}{cos\phi_R^* sin\theta_L^* cos\phi_L^* - cos\theta_L^* sin\theta_R^* cos\phi_R^*}\right]$$

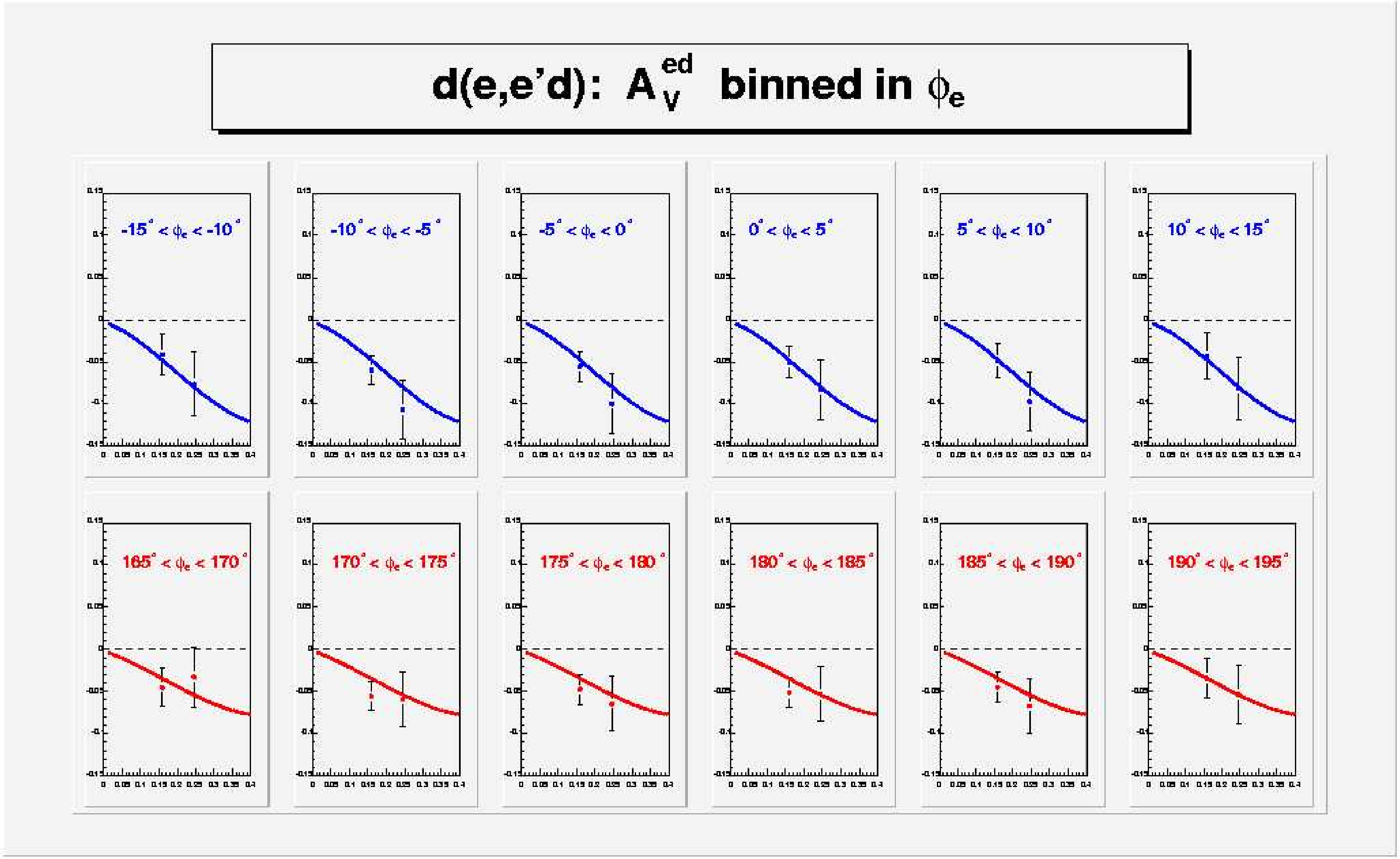
$$T_{11}^e = \frac{\sqrt{3}}{3}\left[\frac{cos\theta_R^* A_L - cos\theta_L^* A_R}{cos\theta_L^* sin\theta_R^* cos\phi_R^* - cos\theta_R^* sin\theta_L^* cos\phi_L^*}\right]$$



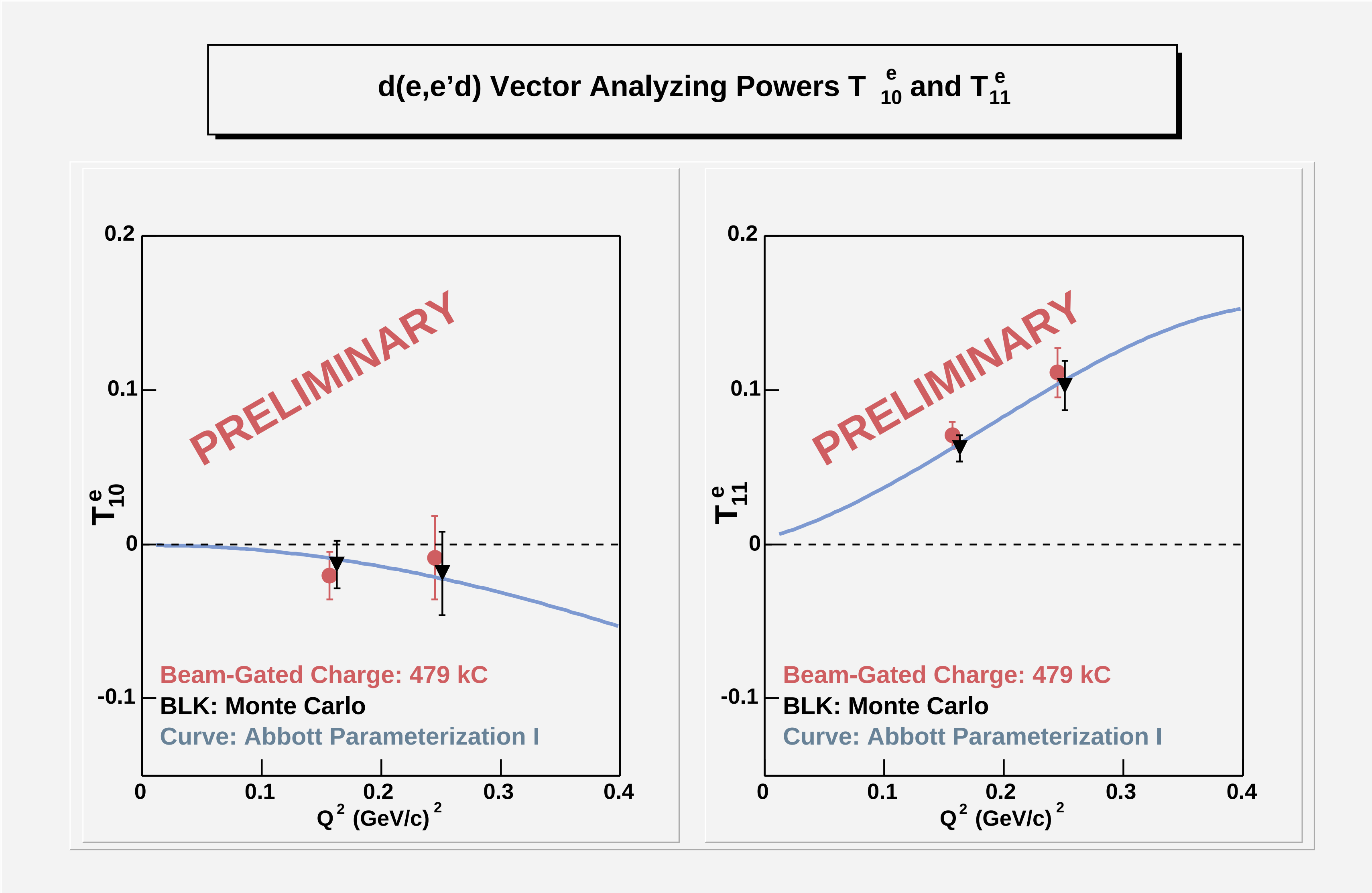
Elastic Events Sliced in ϕ_e



ϕ_e dependence of A_V^{ed}



Vector Analyzing Powers



G_M from T_{11}^e

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

- $S = A(Q^2) + B(Q^2) tan^2\frac{\theta_e}{2}$
- $\tau = \frac{Q^2}{4M_d^2}$

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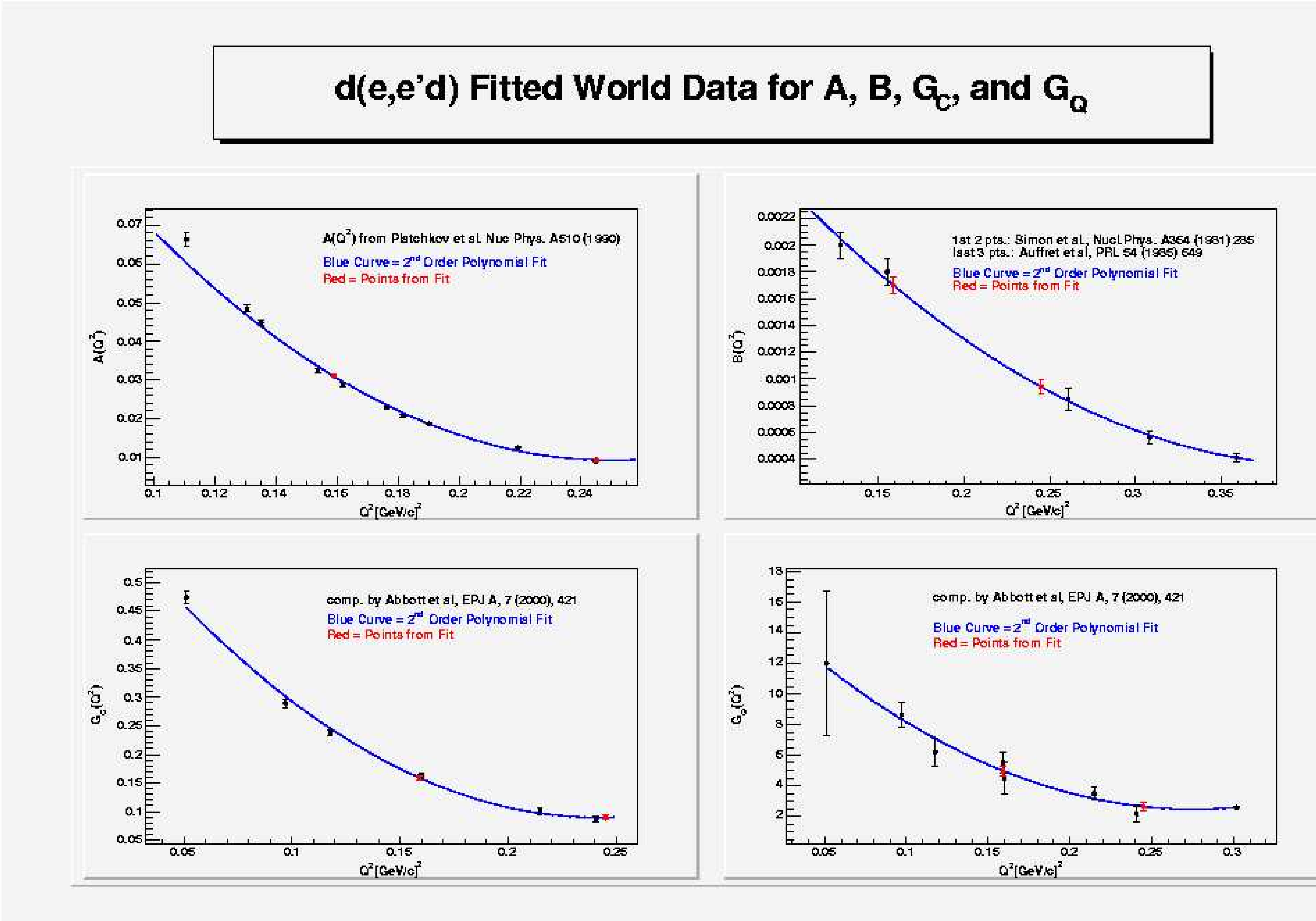
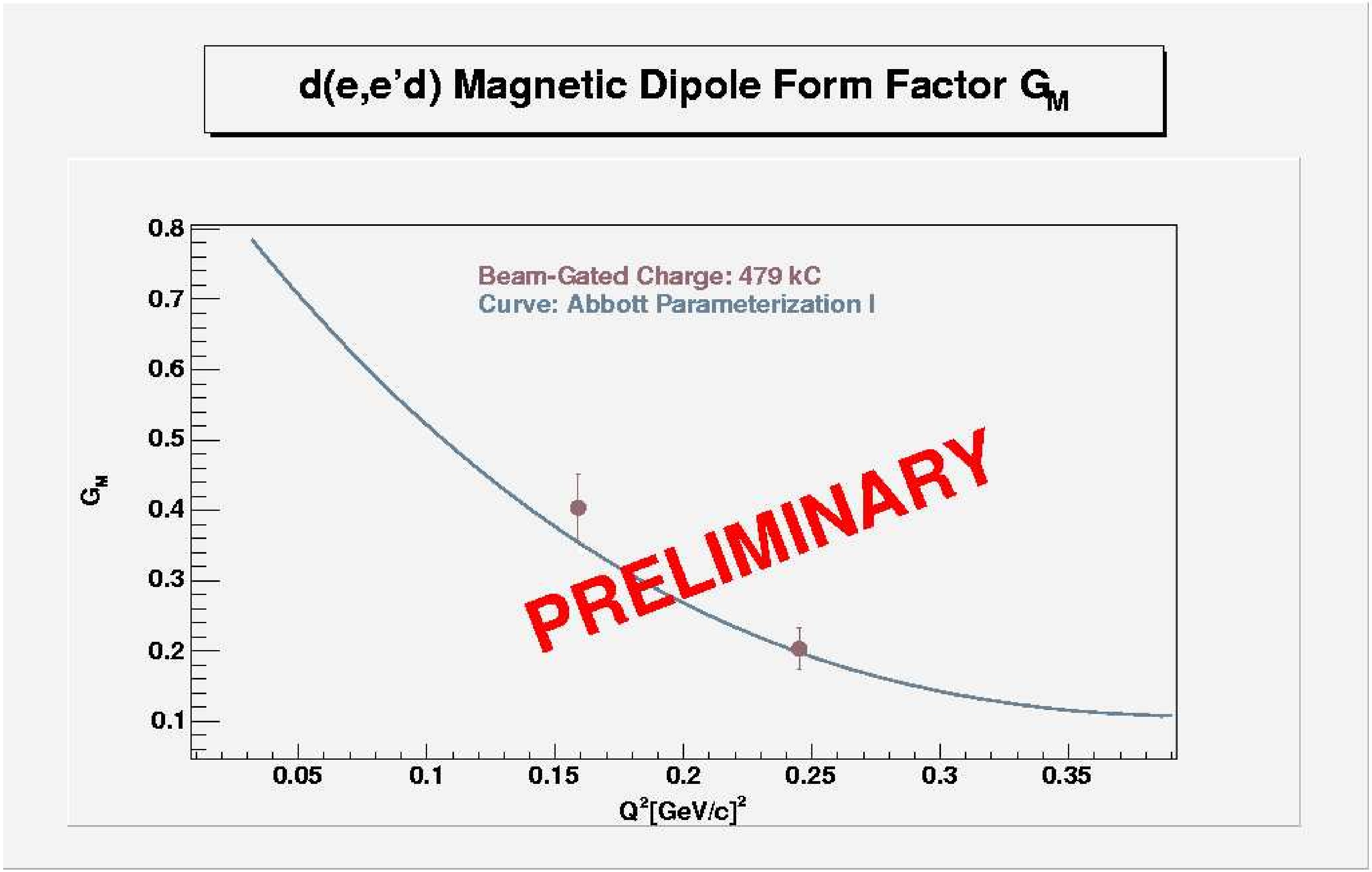
Need A, B, G_C, and G_Q at *my* two Q^2 points!

Fitting the World Data



Preliminary Data on G_M



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

σ_{G_M} in more detail

$Q^2 = 0.159\ GeV^2$ $\qquad$ $G_M = 0.403325 \pm 0.0490651$

$$\left(\frac{\partial G_M}{\partial S}\right)^2 \cdot \sigma_S^2 = 6.34441e-06$$
$$\left(\frac{\partial G_M}{\partial T_{11}^e}\right)^2 \cdot \sigma_{T_{11}^e}^2 = 0.00240032$$
$$\left(\frac{\partial G_M}{\partial G_C}\right)^2 \cdot \sigma_{G_C}^2 = 6.23812e-07$$
$$\left(\frac{\partial G_M}{\partial G_Q}\right)^2 \cdot \sigma_{G_Q}^2 = 9.3113e-08$$

$Q^2 = 0.245\ GeV^2$ $\qquad$ $G_M = 0.202941 \pm 0.0293645$

$$\left(\frac{\partial G_M}{\partial S}\right)^2 \cdot \sigma_S^2 = 1.23749e-05$$
$$\left(\frac{\partial G_M}{\partial T_{11}^e}\right)^2 \cdot \sigma_{T_{11}^e}^2 = 0.000849283$$
$$\left(\frac{\partial G_M}{\partial G_C}\right)^2 \cdot \sigma_{G_C}^2 = 5.40502e-07$$
$$\left(\frac{\partial G_M}{\partial G_Q}\right)^2 \cdot \sigma_{G_Q}^2 = 7.47175e-08$$