

Very Preliminary Asymmetry

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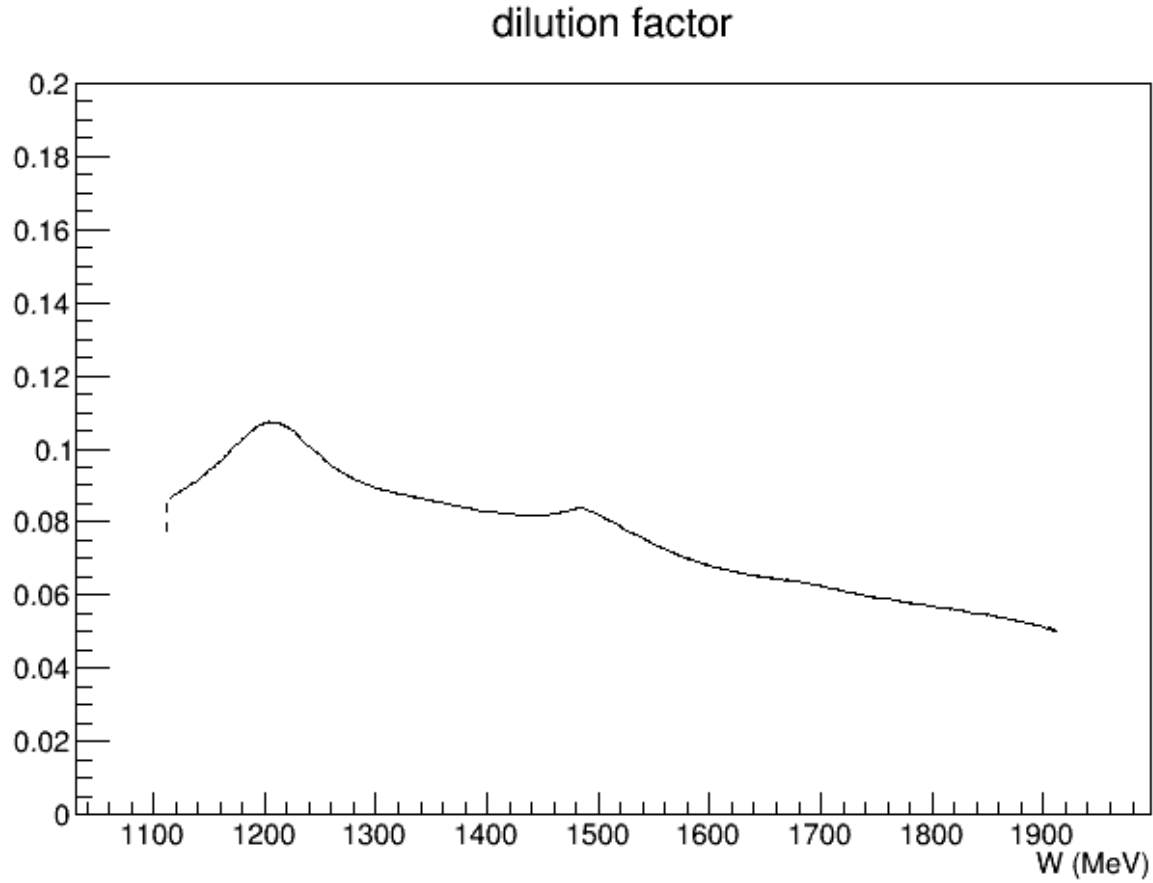
12/23/2015

Outline

- Calibration results
- Uncertainty estimation
- Physics results

Preliminary Dilution Factor

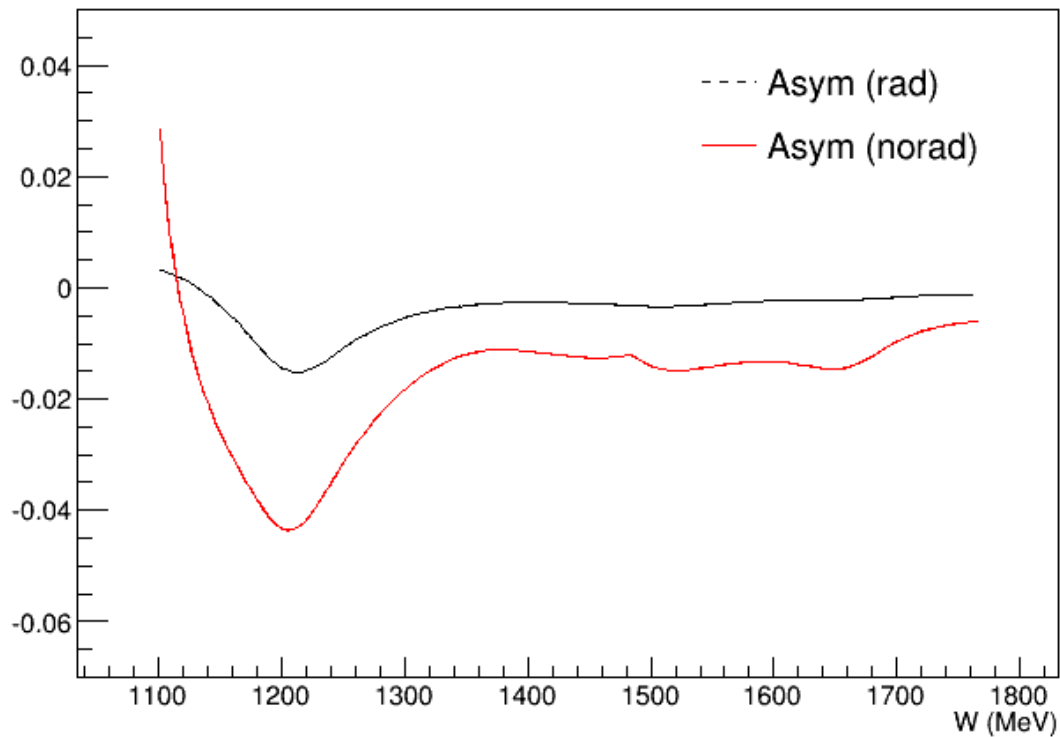
(Provided by Toby)



Preliminary Radiative Corrections

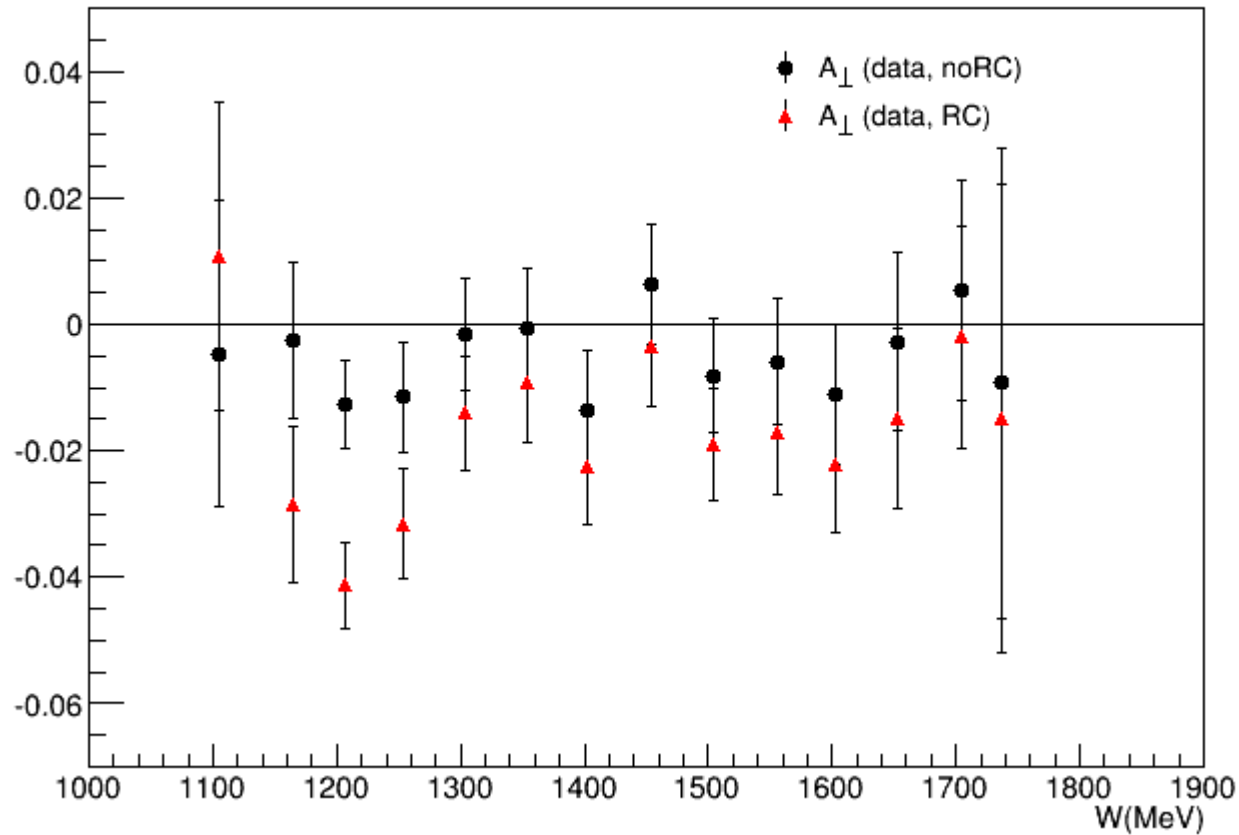
(Provided by Ryan)

Model Asymmetries



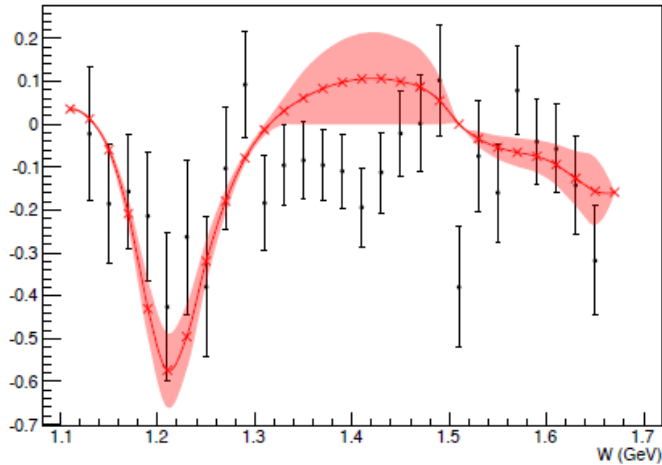
Radiative Corrected Asymmetry

Radiative Correction for Asymmetries

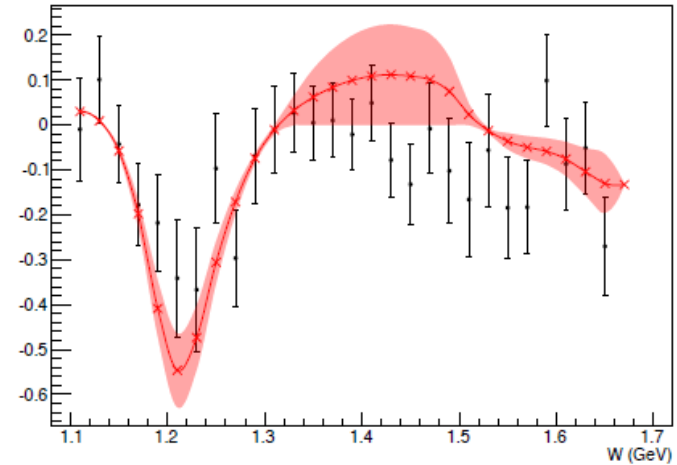


Radiative Correction Uncertainty (Comparison of MAID with Data)

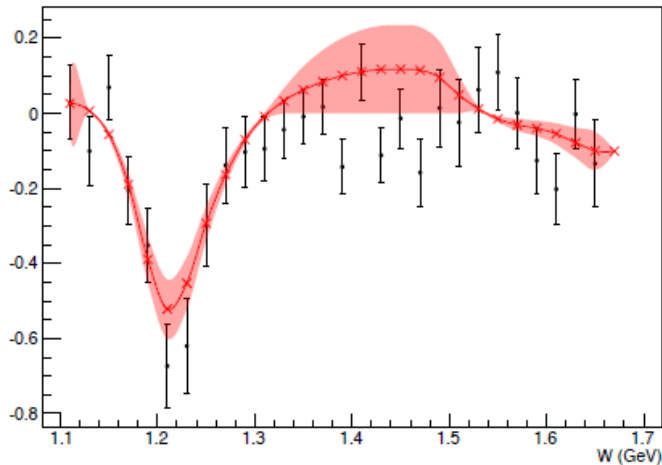
Eg1B Data Compared to MAID ($Q^2 = 0.0496 \text{ GeV}^2$)



Eg1B Data Compared to MAID ($Q^2 = 0.0592 \text{ GeV}^2$)



Eg1B Data Compared to MAID ($Q^2 = 0.0707 \text{ GeV}^2$)



- $W < 1.3$: 15%
- $1.3 < W < 1.52$: 100%
- $W > 1.52$: 50%

Courtesy of Melissa

Systematic Uncertainty

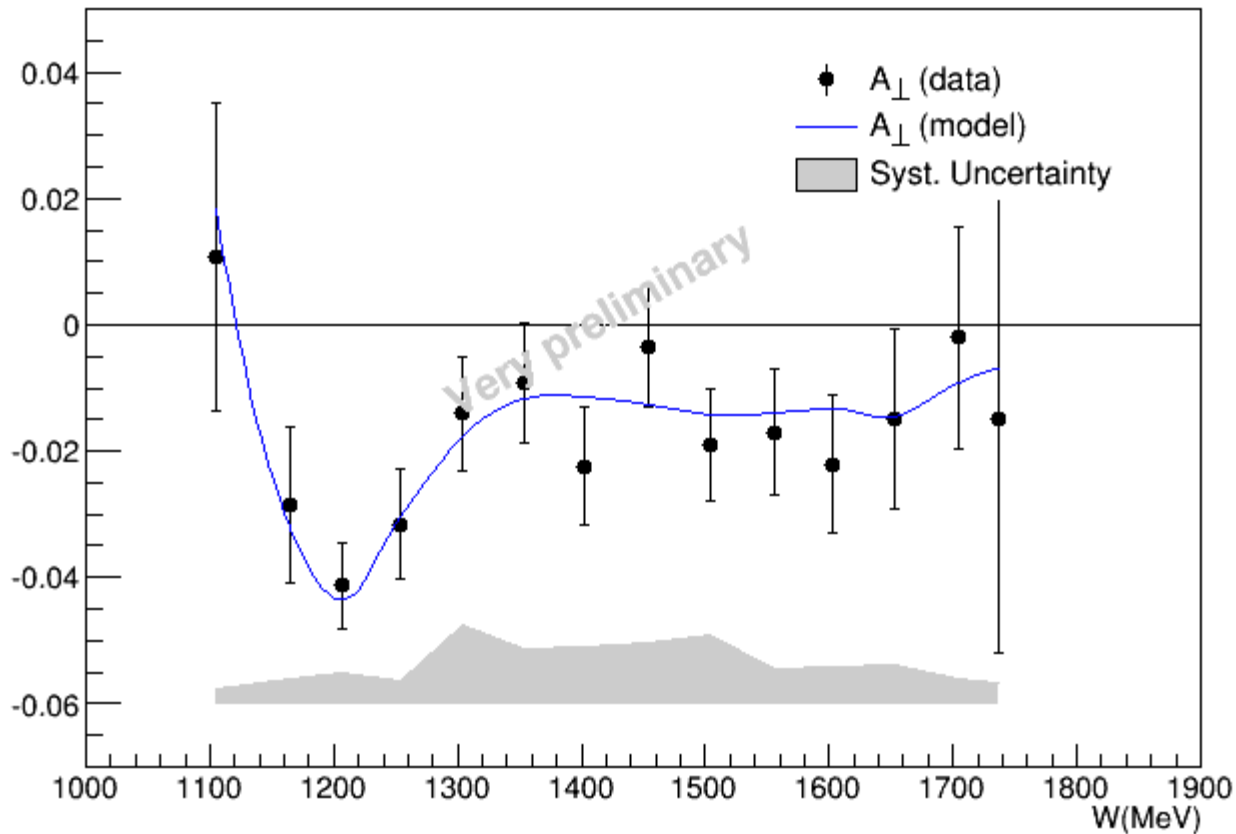
$$A = \left(\frac{1}{fP_bP_t} \right) \frac{Y_+ - Y_-}{Y_+ + Y_-}$$

Source	Analysis Type	Uncertainty	Relative/ Absolute
Target Polarization	Entire run	Mat 7: 1.4% Mat 8: 0.9%	Relative to P_t
Beam Polarization	Entire run	1.7%	Relative to P_b
Dilution Factor	Entire run	16%	Relative to f
False Asymmetry	Entire run	1.9e-4	Absolute
Radiative Correction	Three segments	15%, 100%, 50%	Relative to ΔRC

Physics Asymmetries

- 1.7 GeV, 2.5T Transverse

Physics Asymmetries



Method to Extract g_1 & g_2

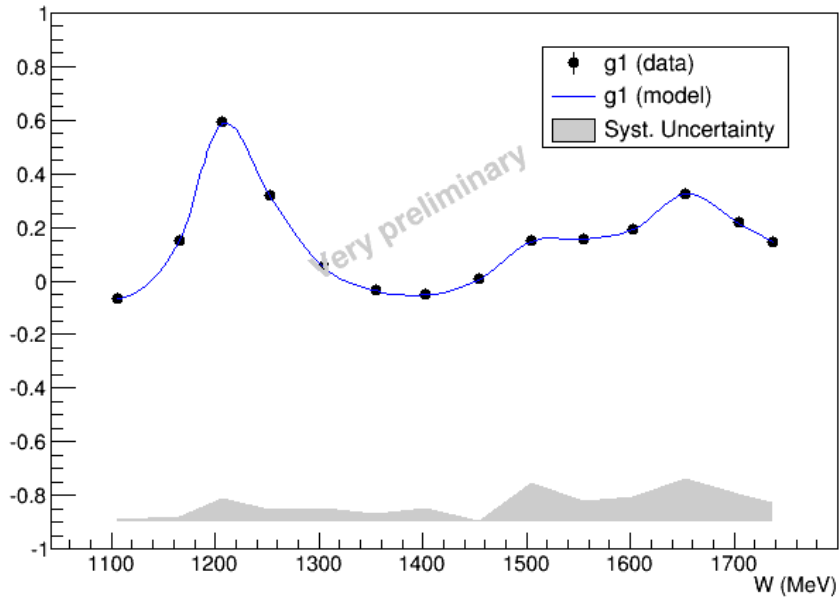
$$\Delta\sigma_{\parallel} \equiv \frac{d^2\sigma^{\Rightarrow}}{d\Omega dE'} - \frac{d^2\sigma^{\Leftarrow}}{d\Omega dE'} = -\frac{4\alpha^2 E'}{MQ^2 E\nu} [(E + E' \cos\theta)g_1(x, Q^2) - 2Mxg_2(x, Q^2)]$$

$$\Delta\sigma_{\perp} \equiv \frac{d^2\sigma^{\rightarrow\uparrow}}{d\Omega dE'} - \frac{d^2\sigma^{\rightarrow\downarrow}}{d\Omega dE'} = -\frac{4\alpha^2 E'^2}{MQ^2 E\nu} \sin\theta [g_1(x, Q^2) + \frac{2E}{\nu}g_2(x, Q^2)]$$

- $\Delta\sigma = A \cdot \sigma_{unpol}$
- A_{\perp} from data
- A_{\parallel} from model (MAID/Bosted)
- σ_{unpol} from model (Bosted)

g_1 & g_2

Structure Functions g_1



Structure Functions g_2

