

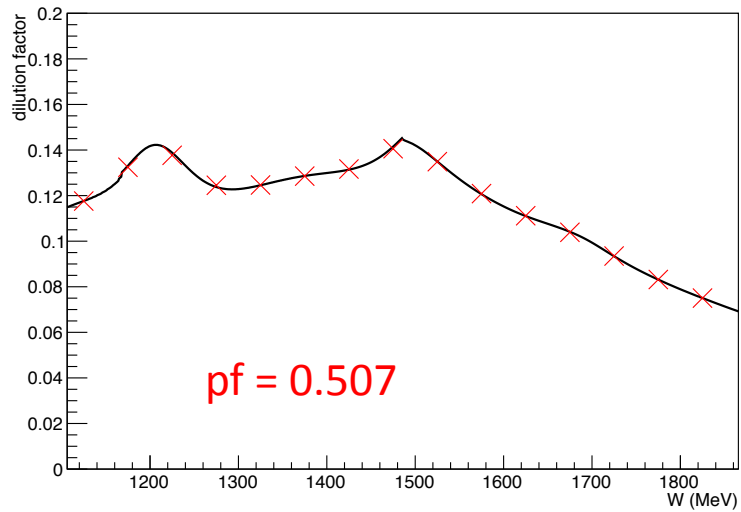
Very Preliminary Results for g_1, g_2

M. Cummings

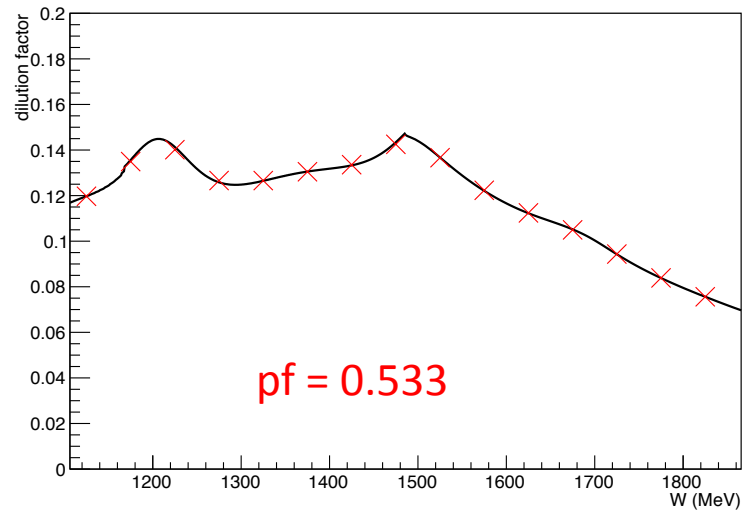
11/11/15

Preliminary Dilution Factor (provided by Toby)

Dilution Factor for Material 17

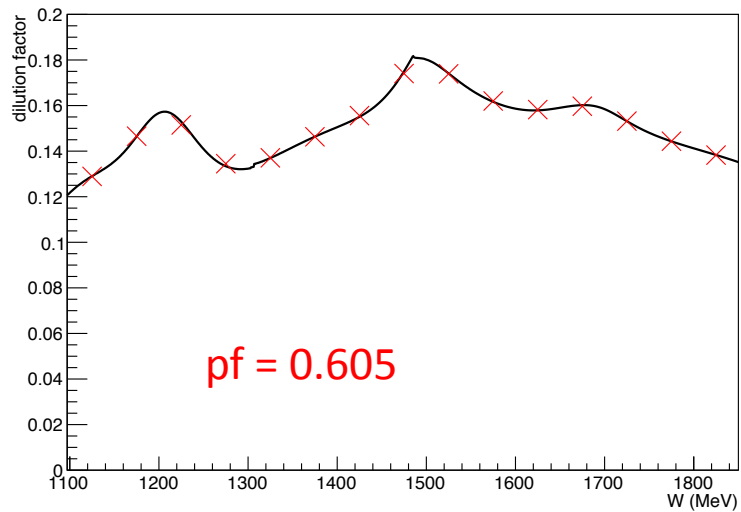


Dilution Factor for Material 18

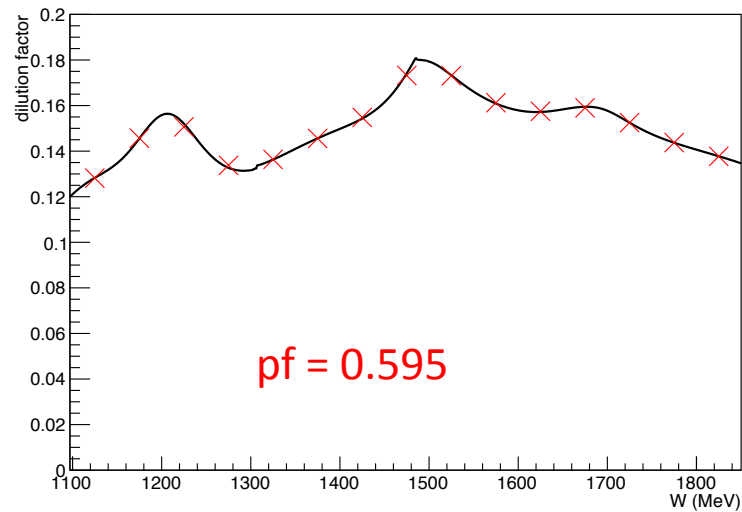


Longitudinal

Dilution Factor for Material 19



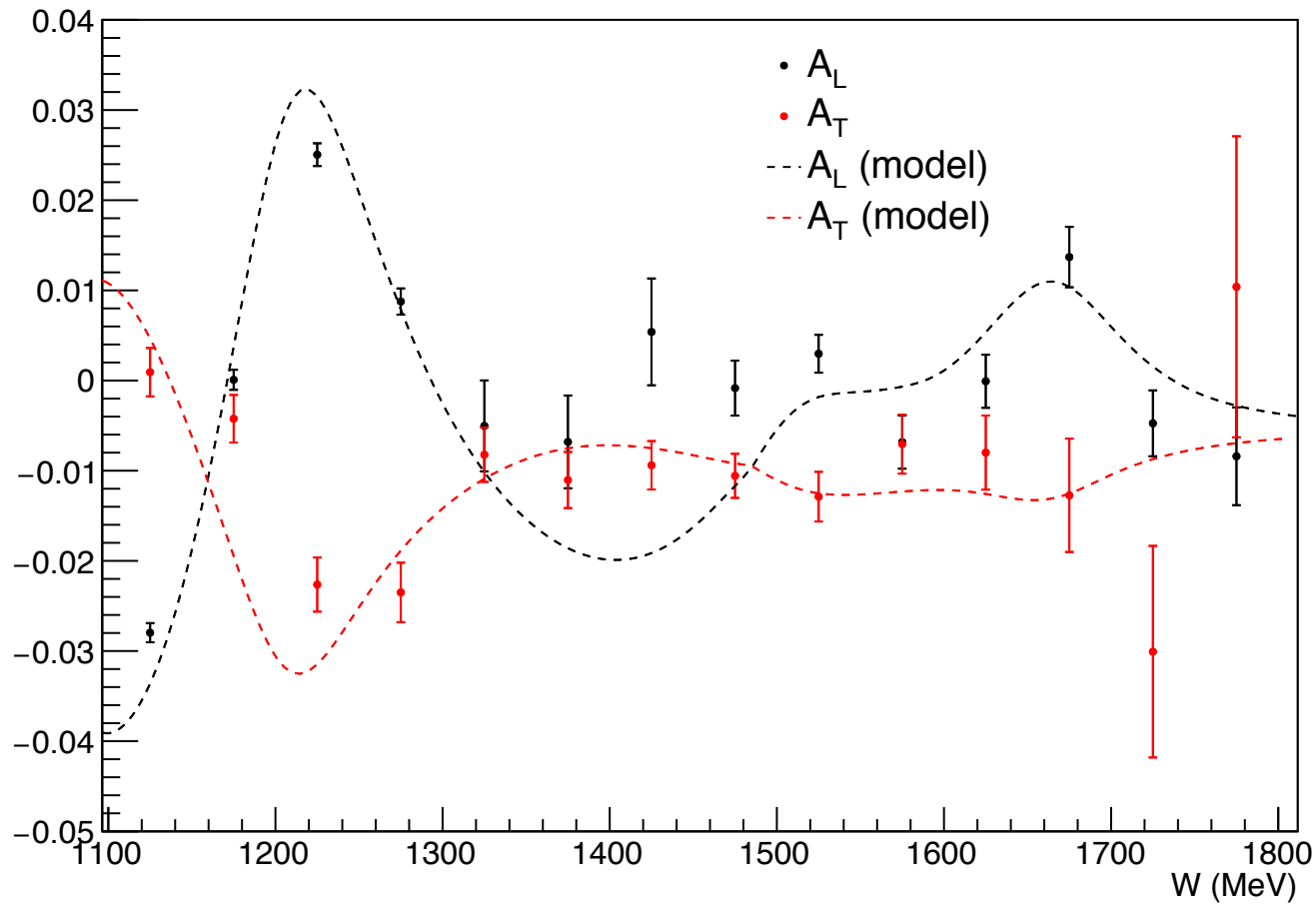
Dilution Factor for Material 20



Transverse

Updated Asymmetry, with Dilution

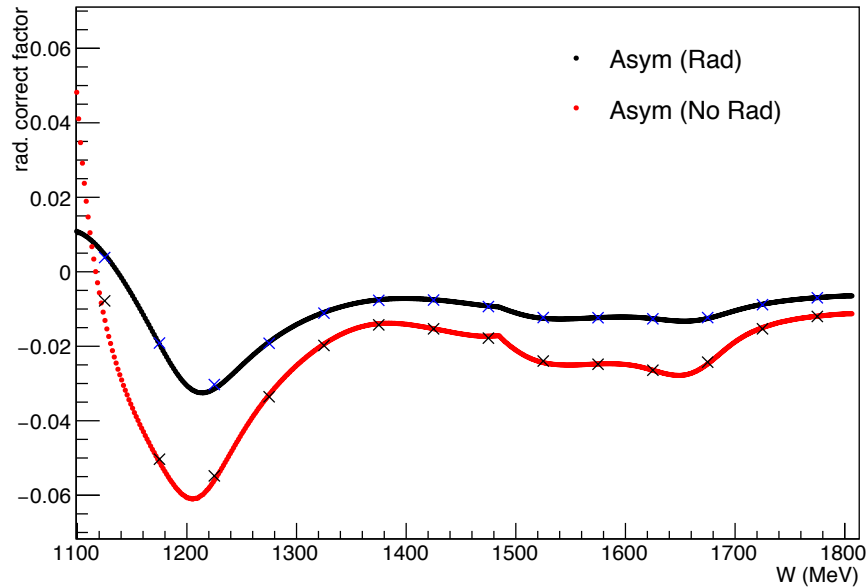
Physics Asymmetries, $E = 2.2$ GeV, 5T Target Field



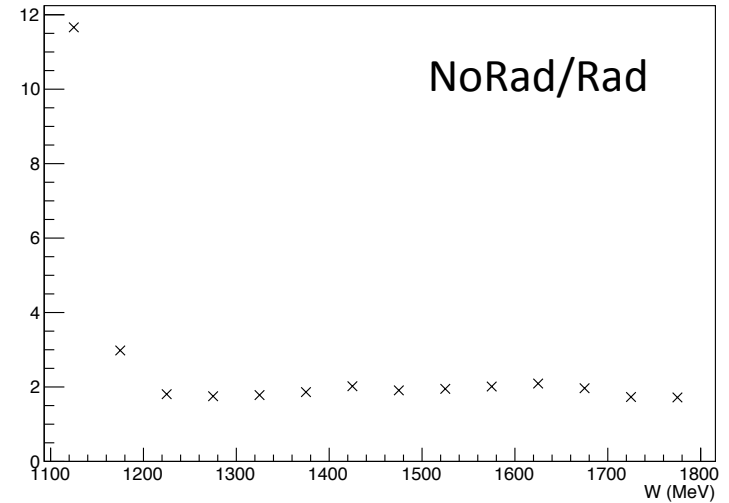
Preliminary Radiative Corrections

(Provided by Ryan)

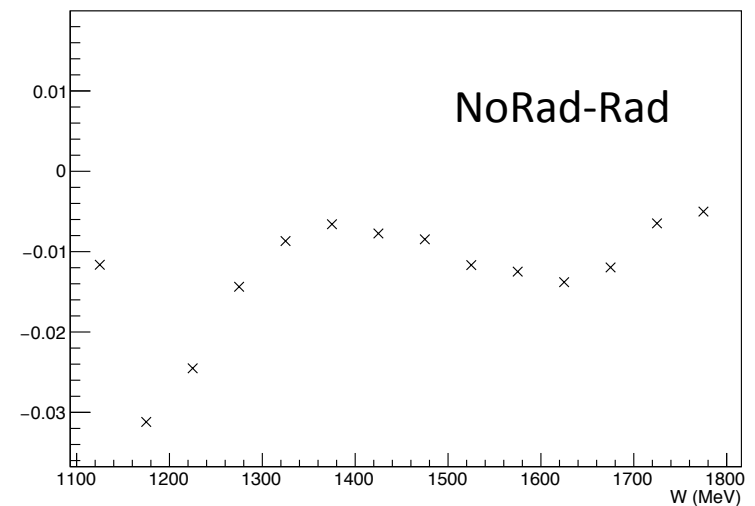
Model Asymmetries (Transverse)



Scaling Factor (Transverse)



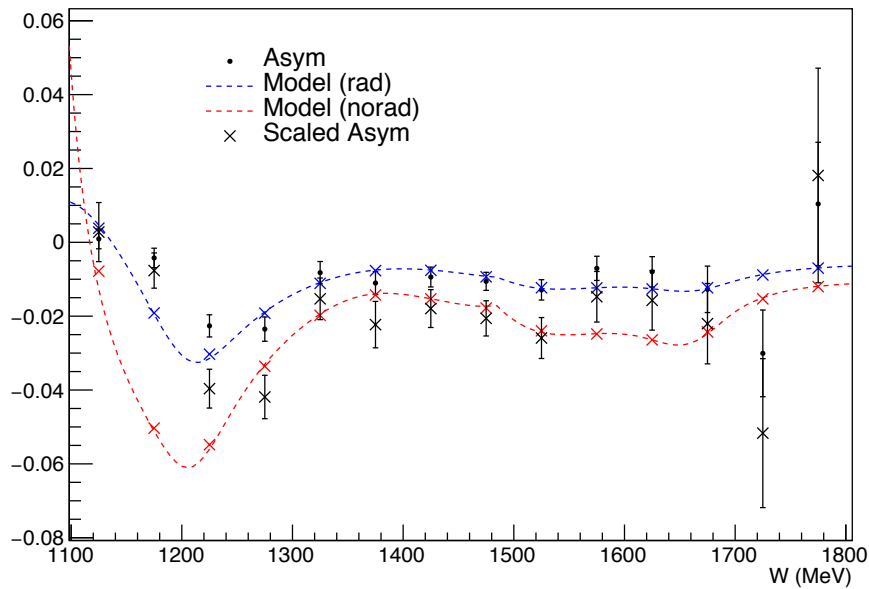
Scaling Factor (Transverse)



Asymmetry calculated using
MAID (polarized XS) and Bosted
Model (unpolarized XS)

Radiative Corrections

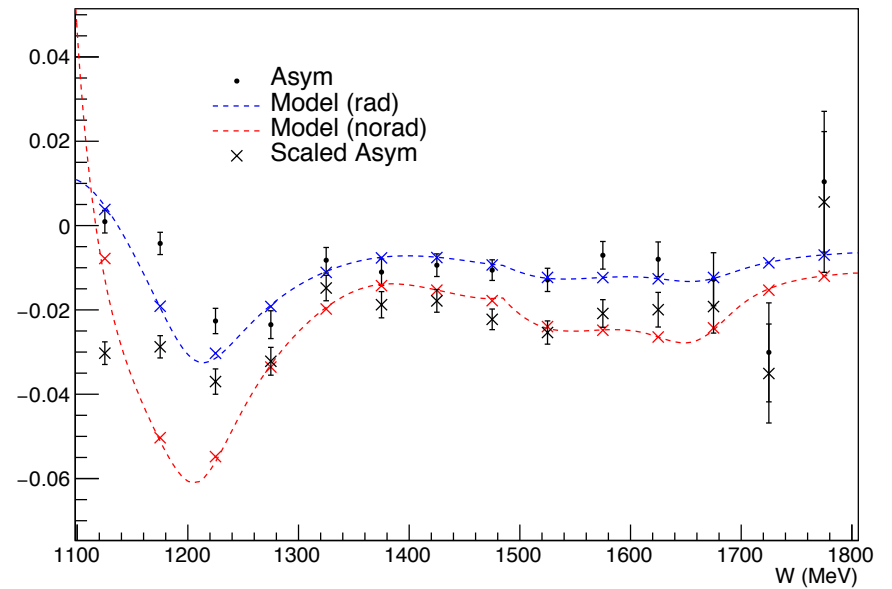
Radiative Correction Scaling for A_T



Using Ratio Method:

$$A_{\text{corrected}} = A_{\text{measured}} (\text{NoRad}/\text{Rad})$$

Radiative Correction Scaling for A_T

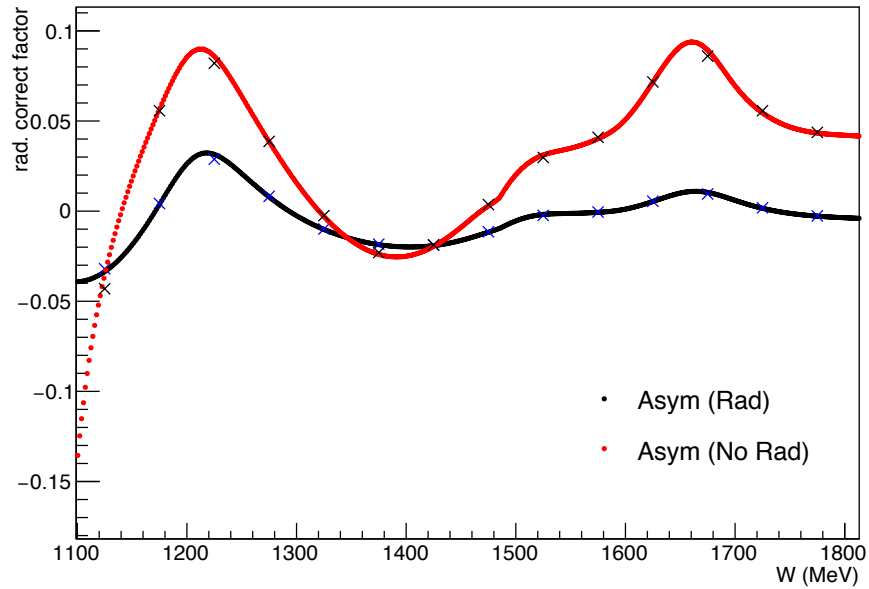


Using Difference Method:

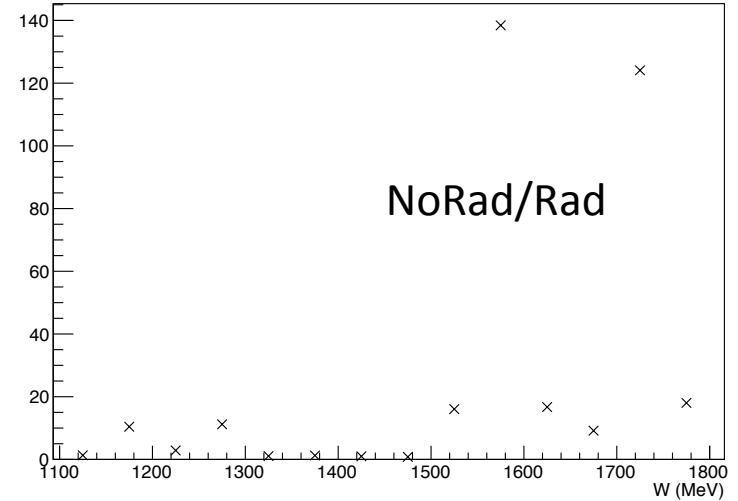
$$A_{\text{corrected}} = A_{\text{measured}} + (\text{NoRad}-\text{Rad})$$

Radiative Corrections

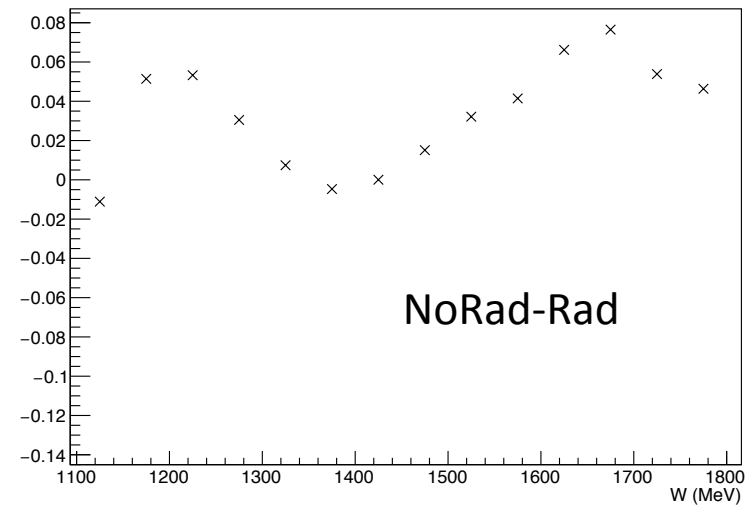
Model Asymmetries (Longitudinal)



Scaling Factor (Longitudinal)

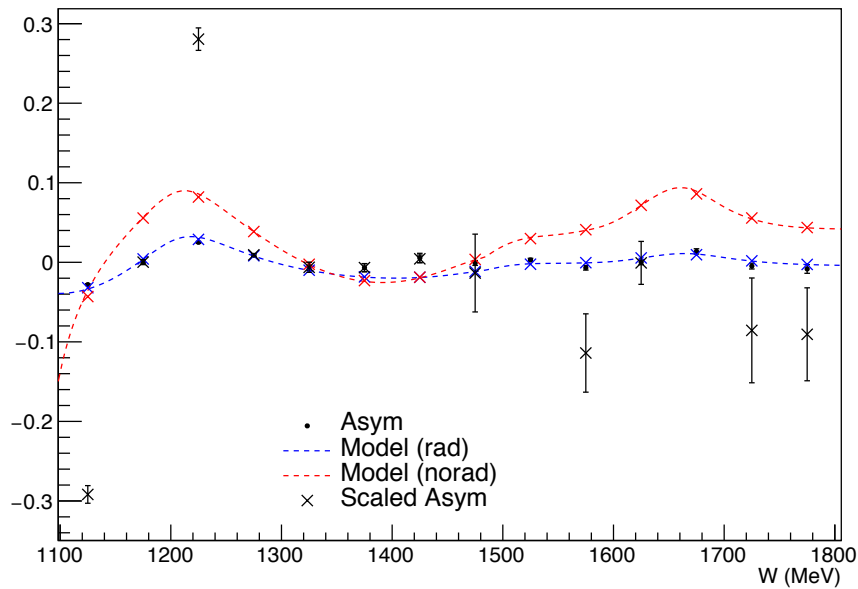


Scaling Factor (Longitudinal)



Radiative Corrections

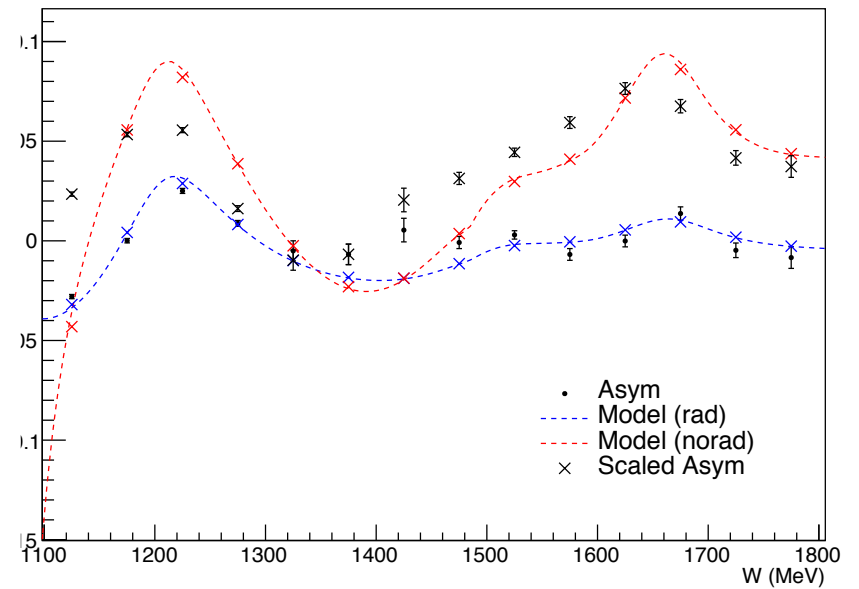
Radiative Correction Scaling for A_L



Using Ratio Method:

$$A_{\text{corrected}} = A_{\text{measured}} (\text{NoRad}/\text{Rad})$$

Radiative Correction Scaling for A_L

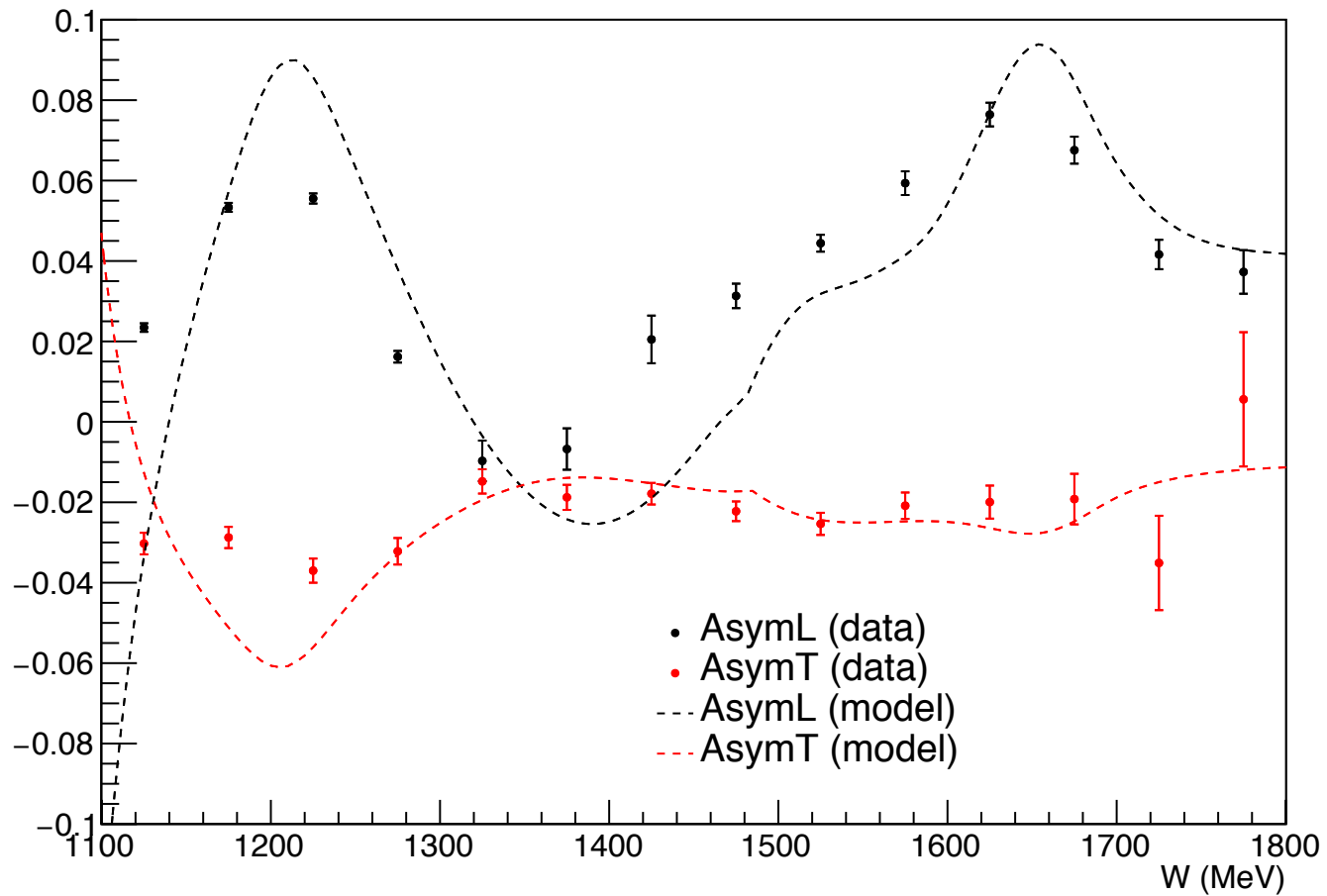


Using Difference Method:

$$A_{\text{corrected}} = A_{\text{measured}} + (\text{NoRad}-\text{Rad})$$

Updated Asymmetry, with RC

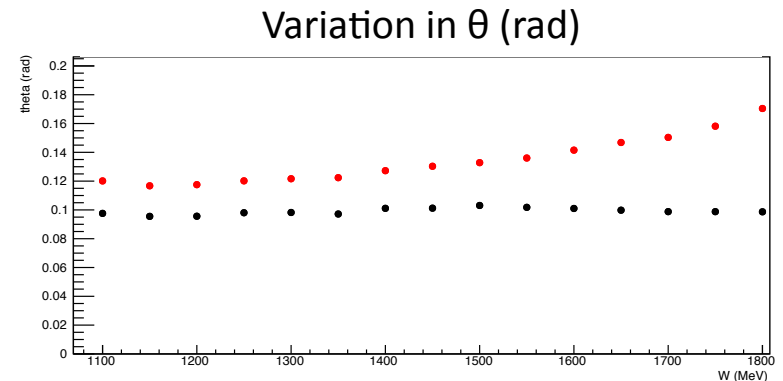
Physics Asymmetries



Method to Calculate g1/g2

Scale Kinematics to Match (using XS):

- AsymL, AsymT from data
- XS_{unpol} from model (Bosted)



We Have: $\Delta\sigma_{\perp,T} = A_{\perp,T} \cdot \sigma_{unpol,T}$

We Need: $\Delta\sigma_{\perp,L}$

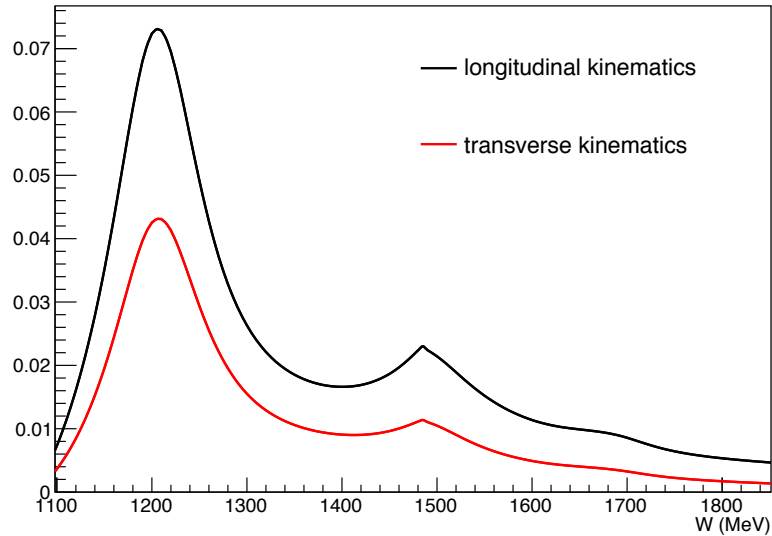
Scaling Factor: $S_{T \rightarrow L} = \frac{\sigma_{unpol,L}}{\sigma_{unpol,T}}$

$$\Delta\sigma_{\perp,L} = A_{\perp,T} \left(\frac{\sigma_{unpol,L}}{\sigma_{unpol,T}} \right) \cdot \sigma_{unpol,L}$$

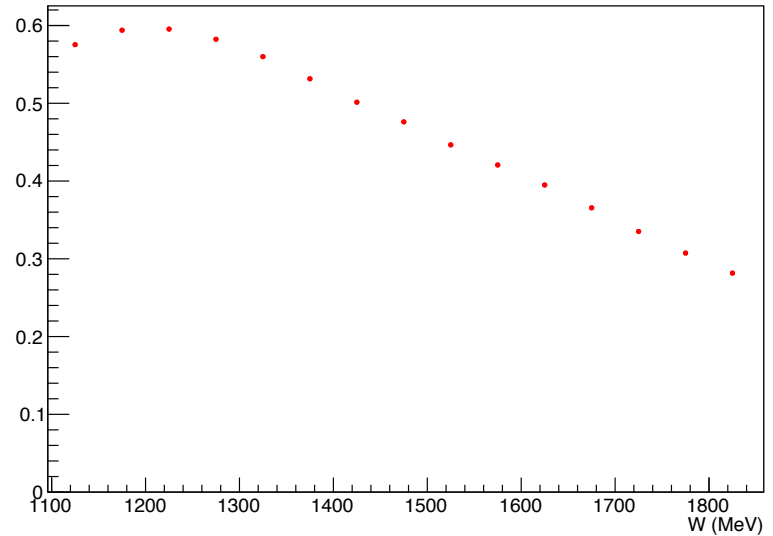
Similarly, can scale from L->T kinematics

Method to Calculate g_1/g_2 (T->L)

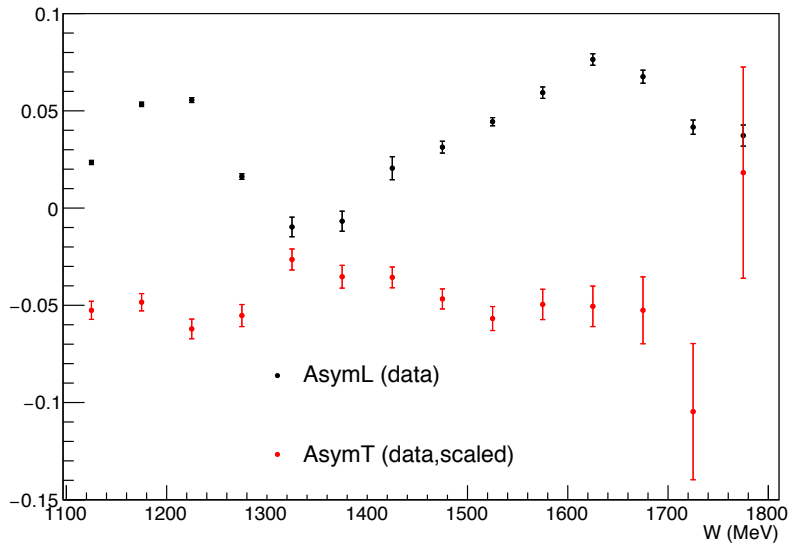
Unpolarized XS (Bosted Model)



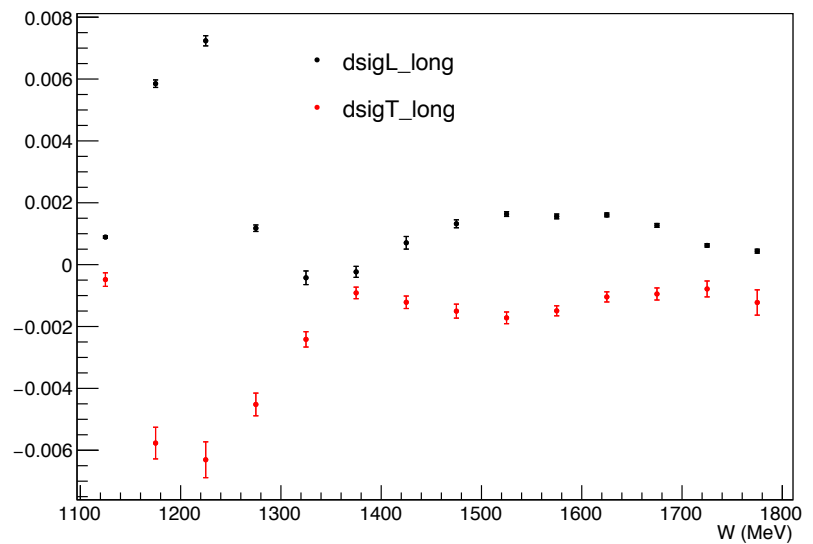
XS Scaling Factor (Transverse -> Longitudinal Kinematics)



Physics Asymmetries, Scaled to Longitudinal Kinematics

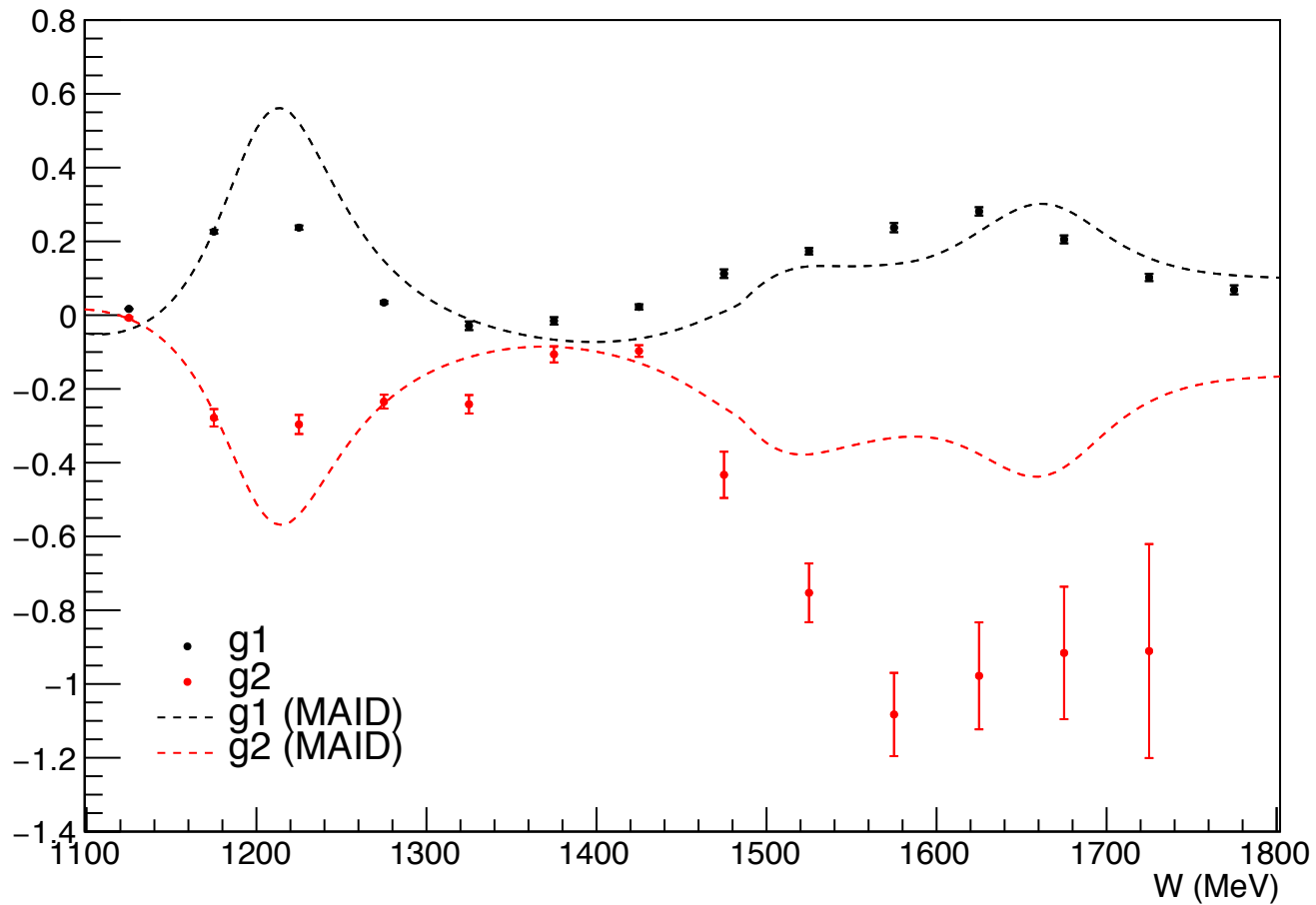


Cross Section Differences, Scaled to Longitudinal Kinematics



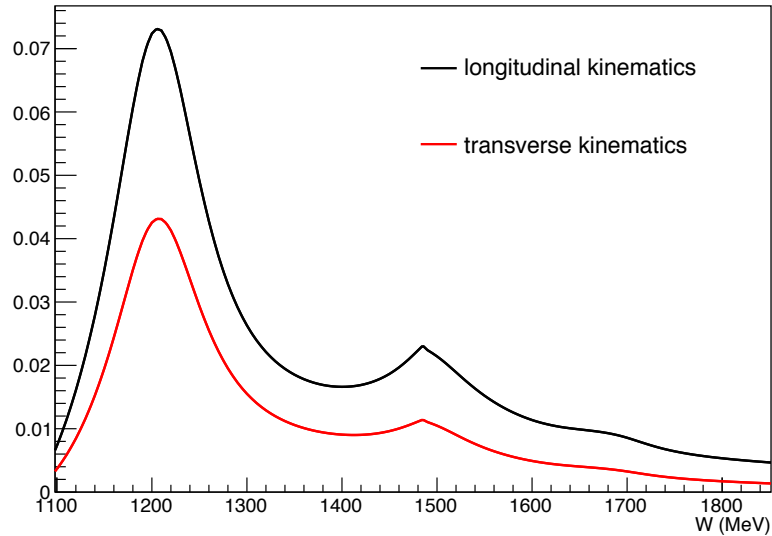
g_1, g_2 – Longitudinal Kinematics

Polarized Structure Functions, Scaled to Longitudinal Kinematics

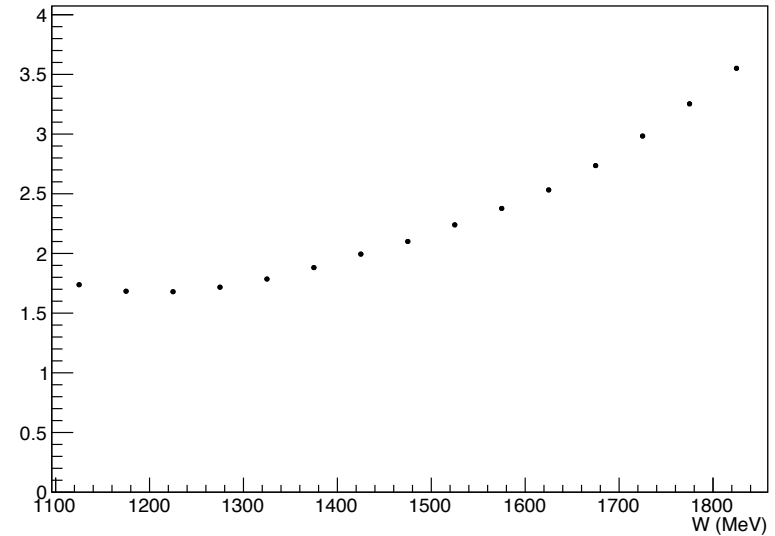


Method to Calculate g_1/g_2 (L->T)

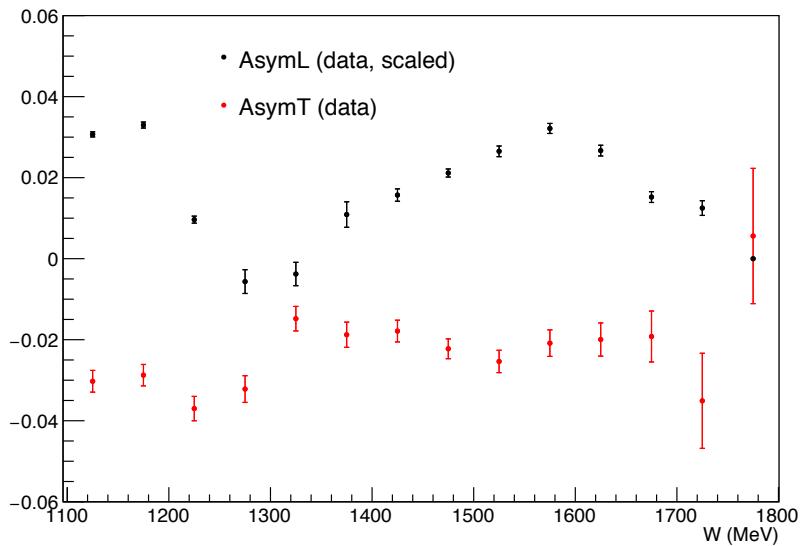
Unpolarized XS (Bosted Model)



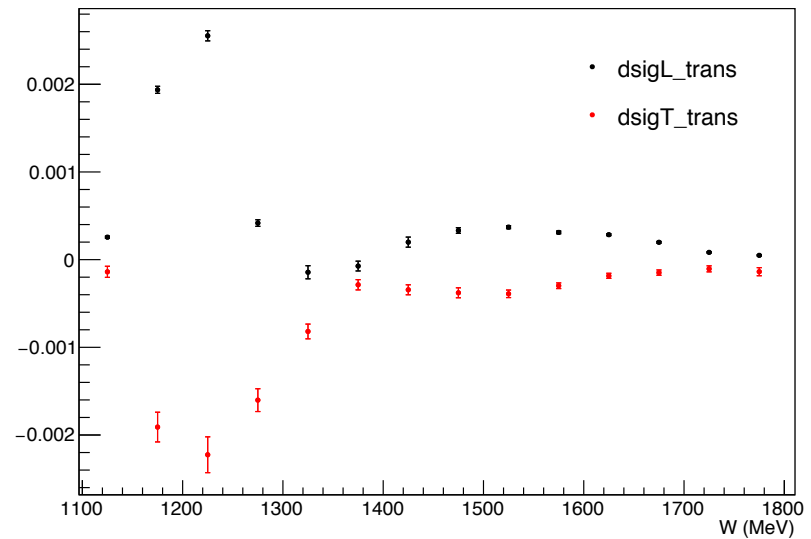
XS Scaling Factor (Longitudinal -> Transverse Kinematics)



Physics Asymmetries, Scaled to Transverse Kinematics

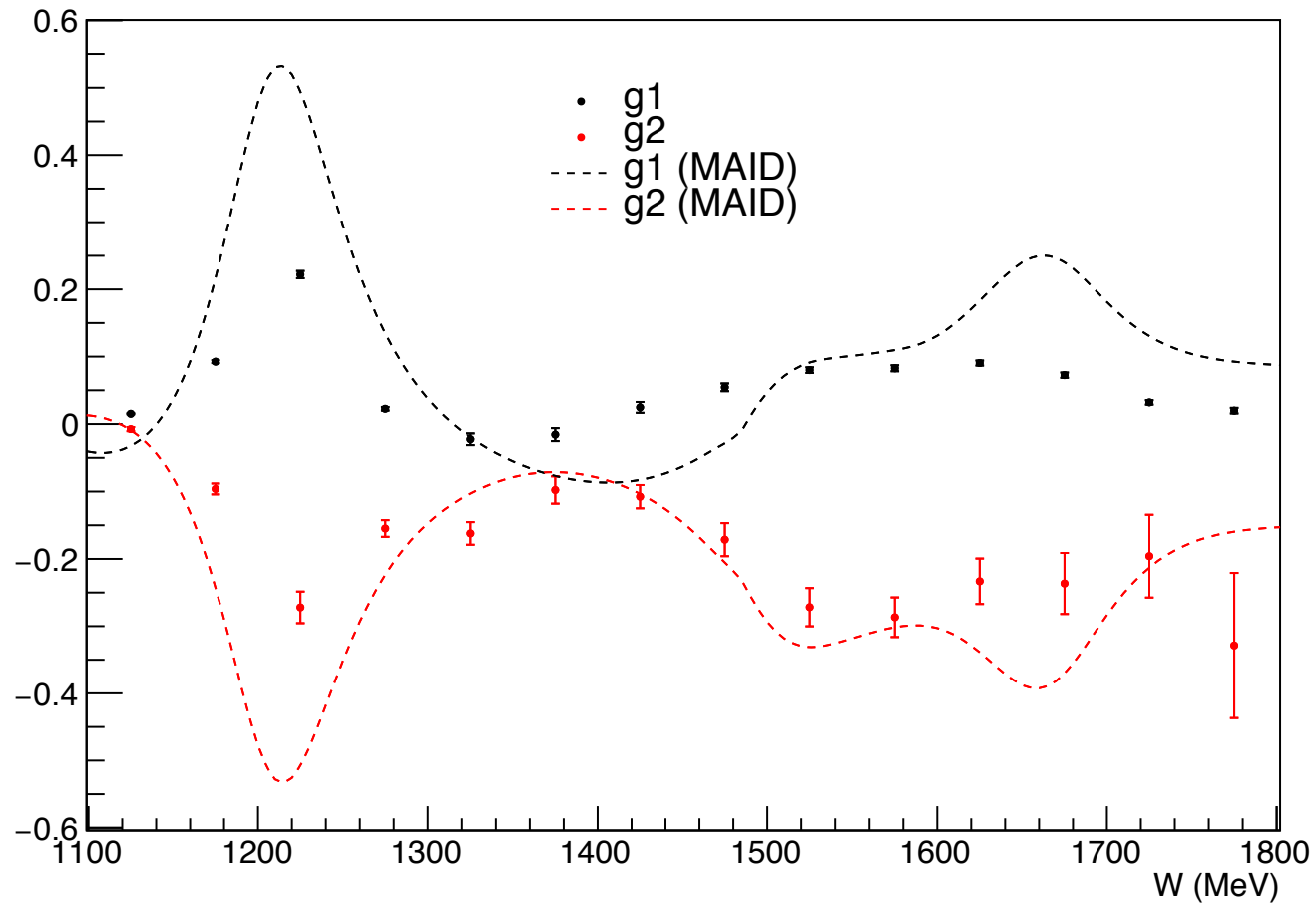


Cross Section Differences, Scaled to Transverse Kinematics



g_1, g_2 – Transverse Kinematics

Polarized Structure Functions, Scaled to Transverse Kinematics

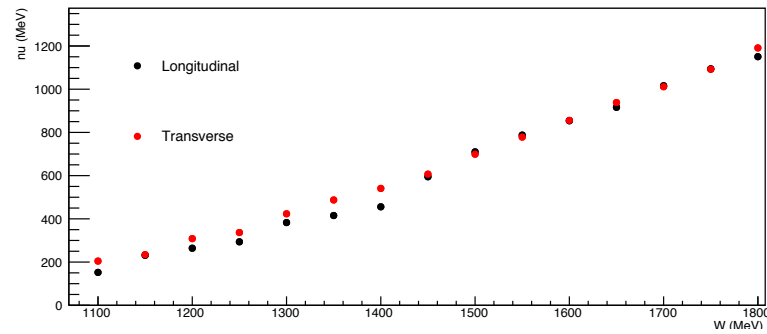


To Do:

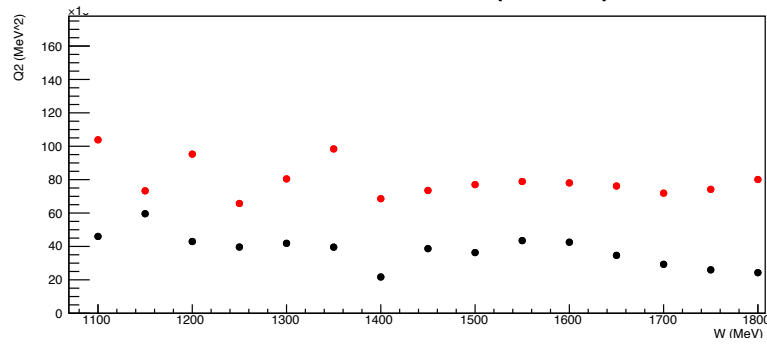
- Update Systematics
- Suggestions from this meeting?

Variation in Kinematics

Variation in ν (MeV)



Variation in Q^2 (MeV²)



Variation in θ (rad)

