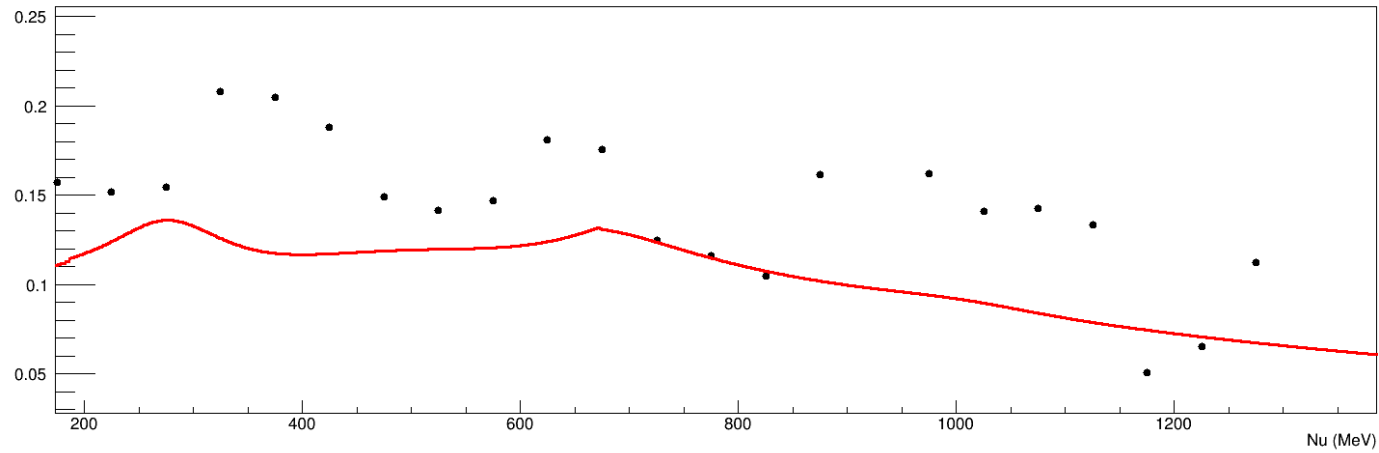# Asymmetries, XS and XS differences
Toby Badman
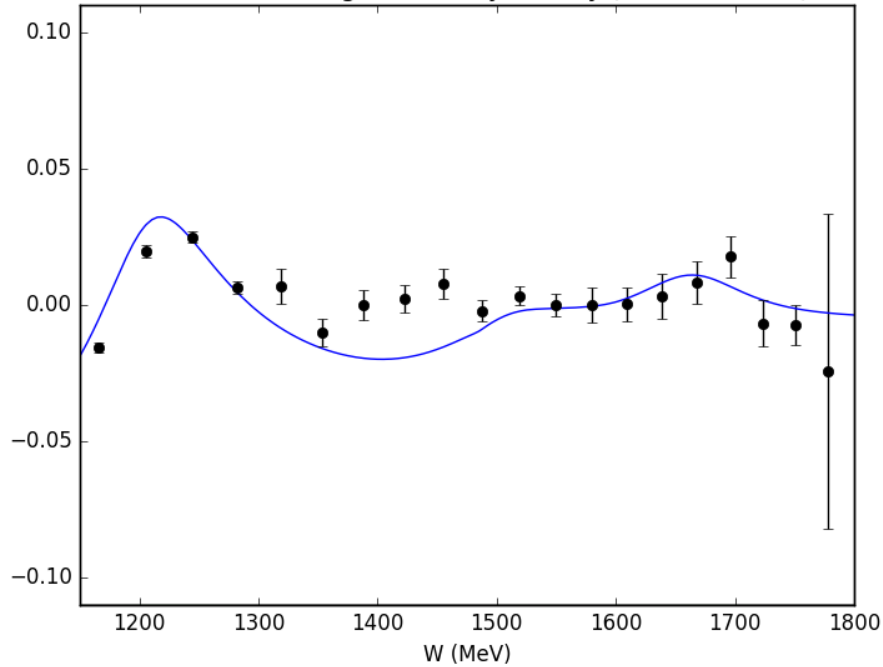
2.254 GeV 5T Longitudinal Dilution
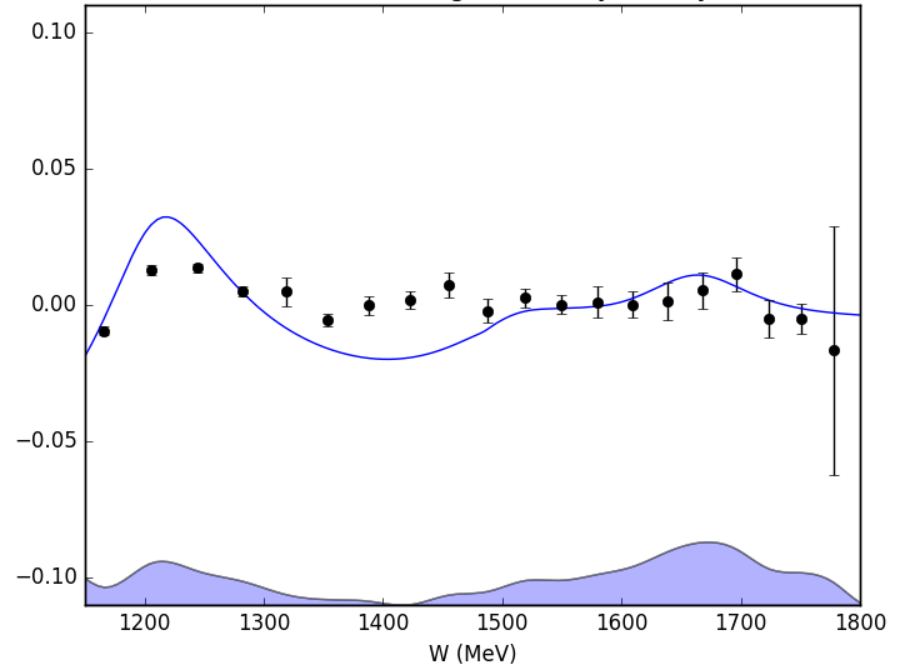
Nu (MeV)

Applied calculated dilution

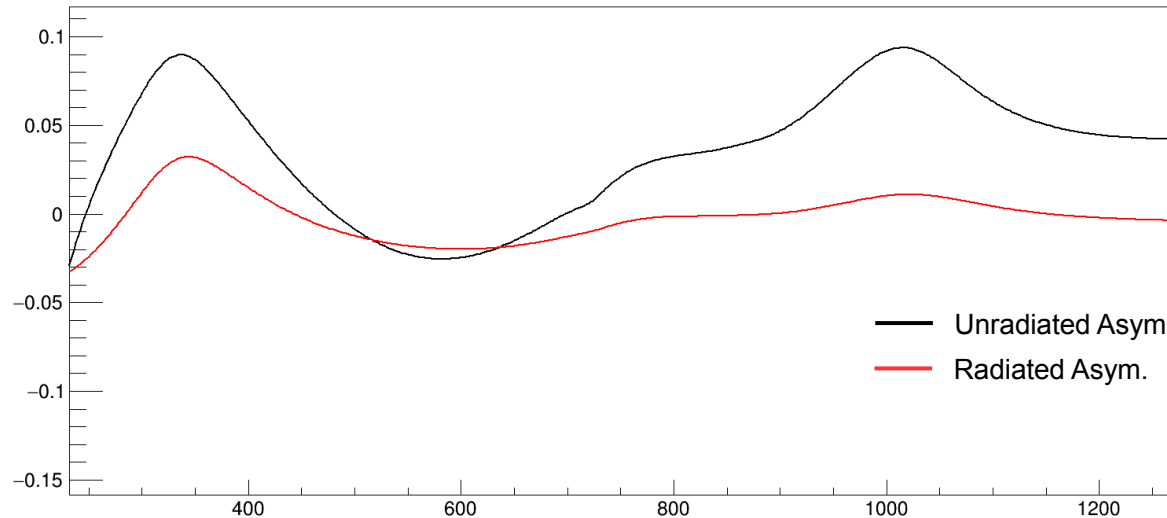2.254GeV 5T Longitudinal Asymmetry (model dilution)

W (MeV)

2.254GeV 5T Longitudinal Asymmetry

W (MeV)

Note: asymmetries are not radiatively corrected here.

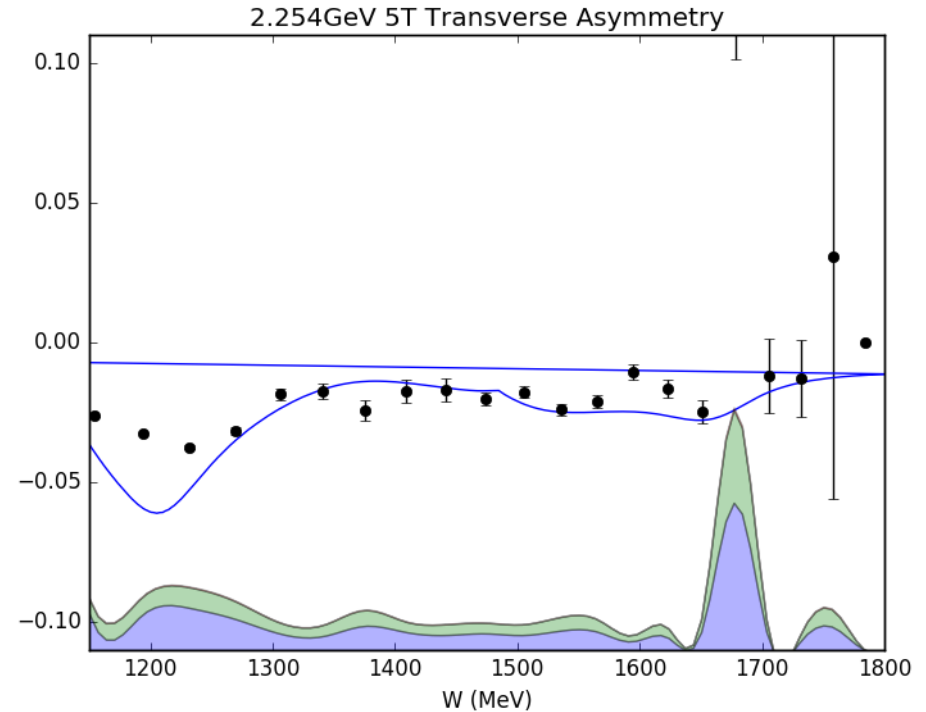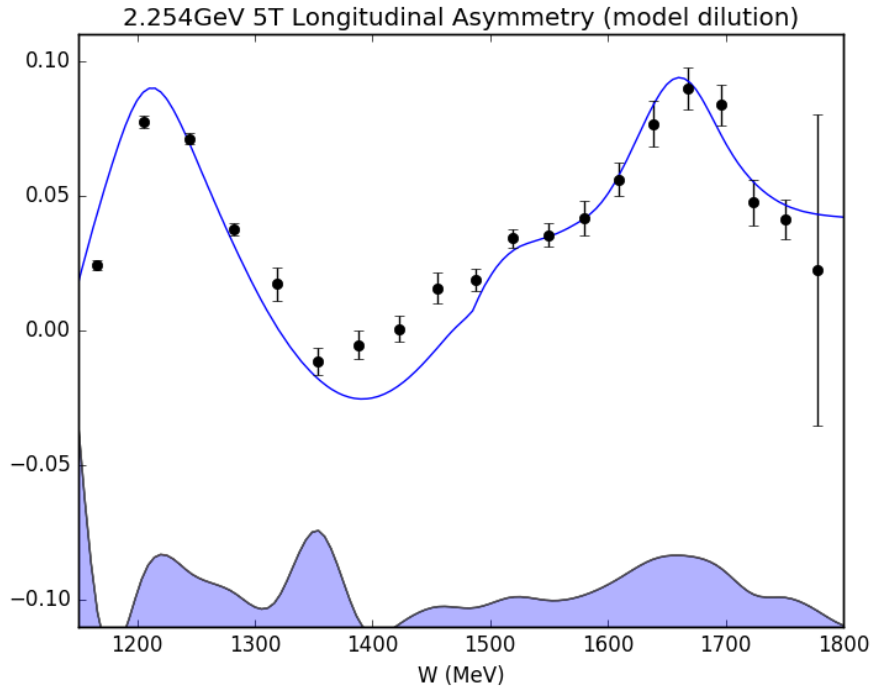# Radiative Correction

Asymmetry model (MAID)

For now, polarized radiative correction is taken to be the difference between radiated and unradiated MAID model:

$$A_{cor} = \frac{1}{fP_b P_t} A_{meas} - R$$

Where 'R' is the radiative correction factor.

$$R = A_{rad}(\nu) - A_{unrad}(\nu)$$
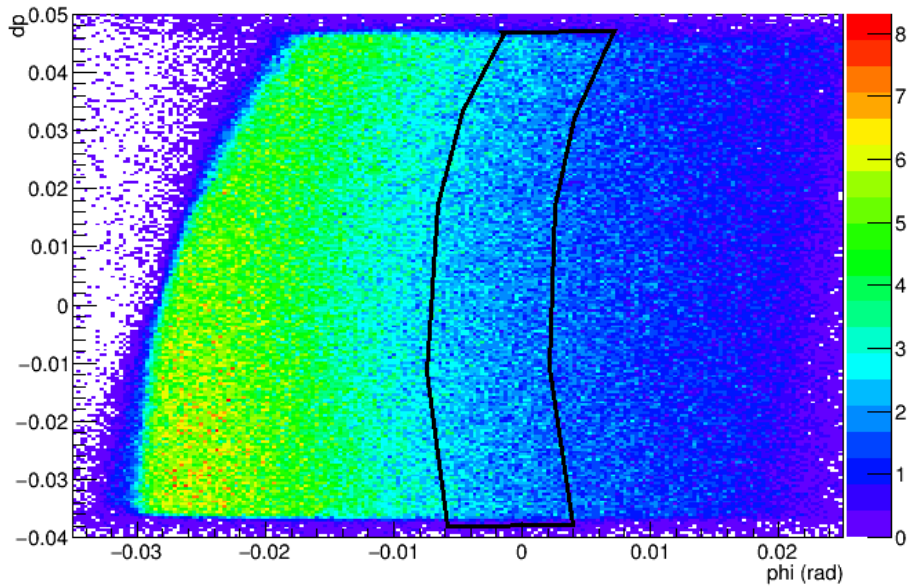
Radiatively corrected Asymmetries

2.254GeV 5T Longitudinal Asymmetry (model dilution)

2.254GeV 5T Transverse Asymmetry

Systematics (preliminary)

Target polarization	1-8%
Bosted model	~10%
PF spread	~45%
Maid Model	~40%
Pol. Rad. Scale method	~10-20%

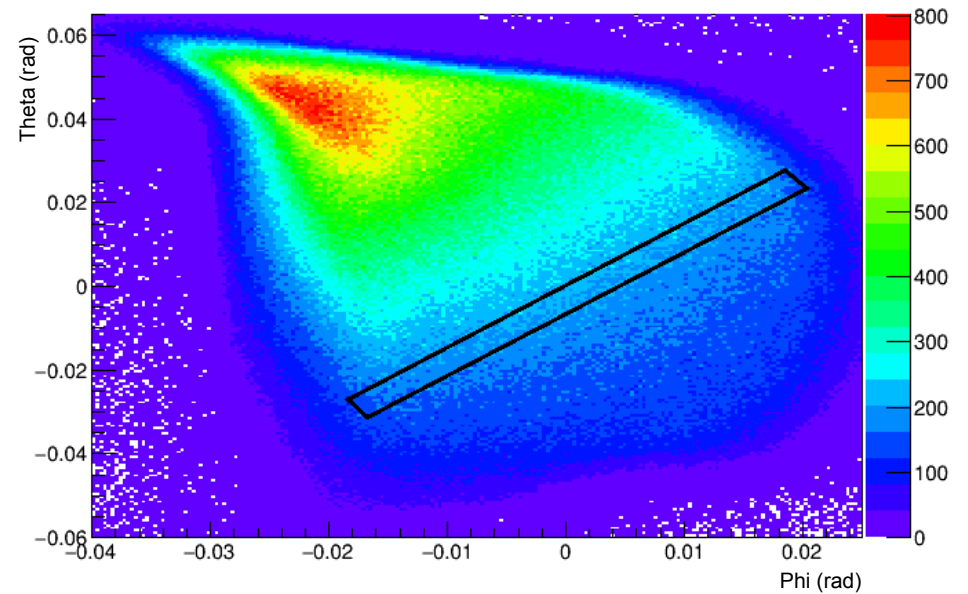Contained in dilution systematic (green band)

Radcor systematics (blue band)

Acceptance Cuts for XS

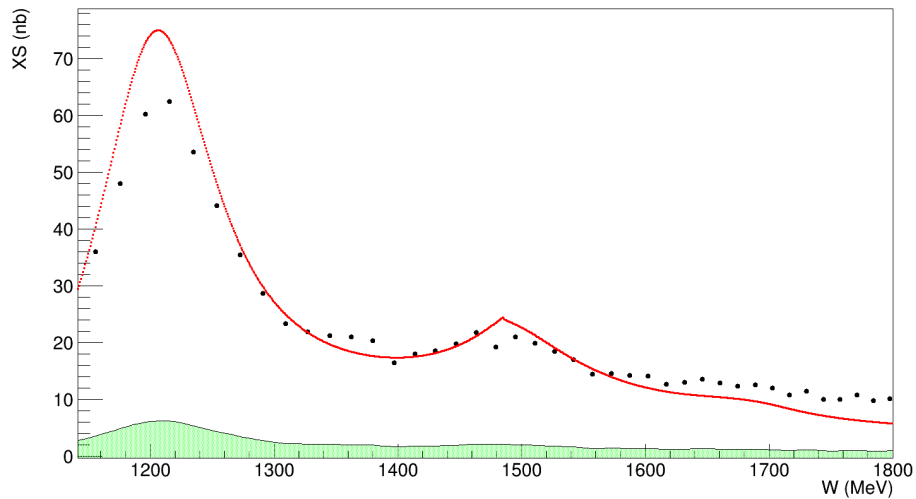### 2.254 GeV 5T Long. dp vs phi

2.254 GeV 5T Trans. th vs. phi
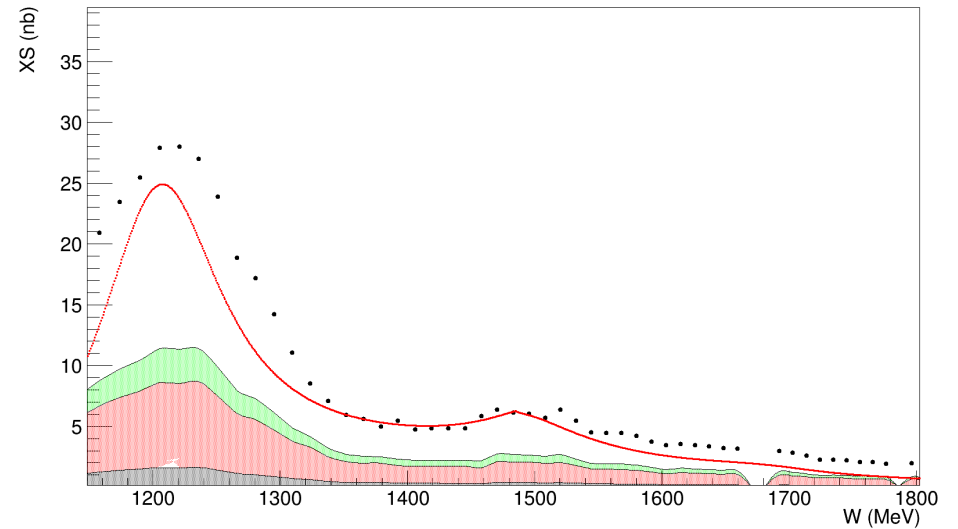

Long. acceptance cut contains a theta cut of:

theta > -0.015 (rad) and theta <-0.005 (rad)
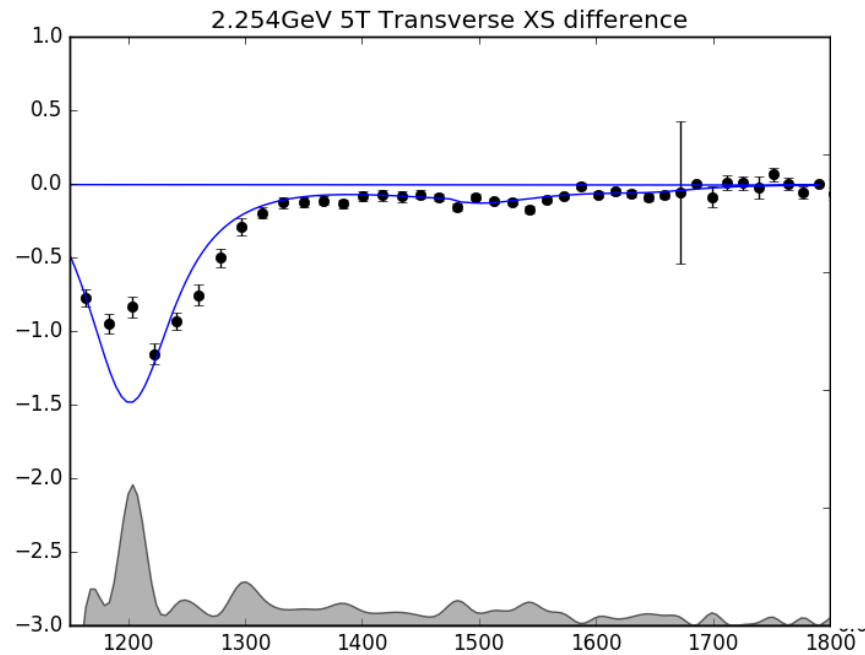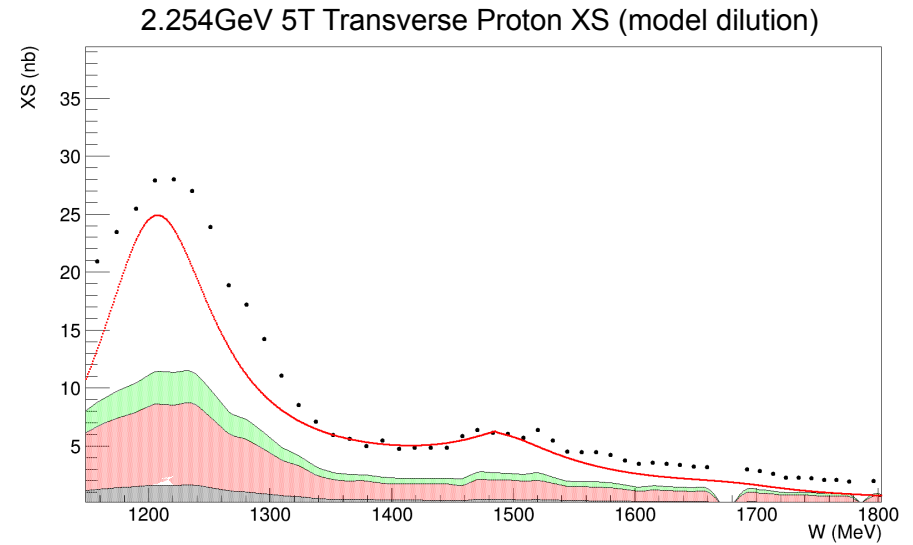
Radiatively corrected XS
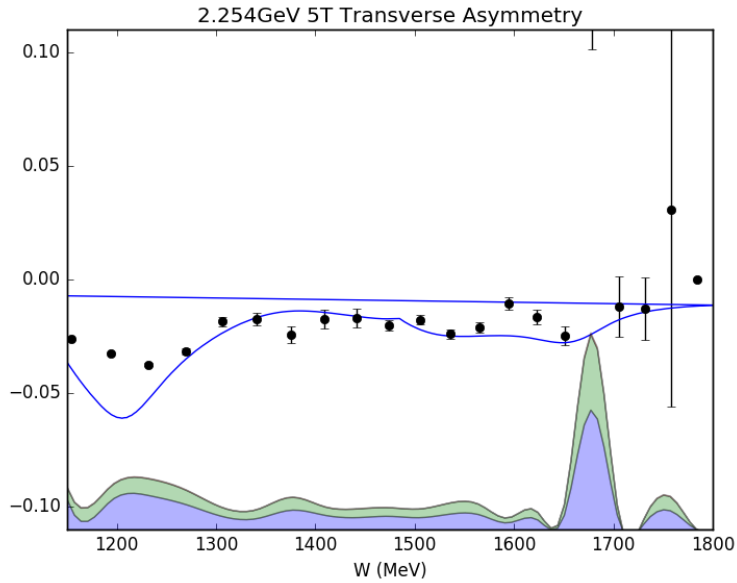

2.254 GeV 5T Long. Proton XS (model dilution)


2.254 GeV 5T Trans. Proton XS

Systematics (preliminary)

Bosted model (radcor)	~10%	Radcor systematics (green band)
PF spread (from dilution)	~45%	(red band)
Bosted Model (from dilution)	~10%	(black band)

2.254GeV 5T Trans. XS difference

2.254GeV 5T Long. XS difference

2.254GeV 5T Longitudinal Asymmetry (model dilution)

2.254GeV 5T Longitudinal Proton XS (model dilution)

2.254GeV 5T Longitudinal XS difference (model dilution)
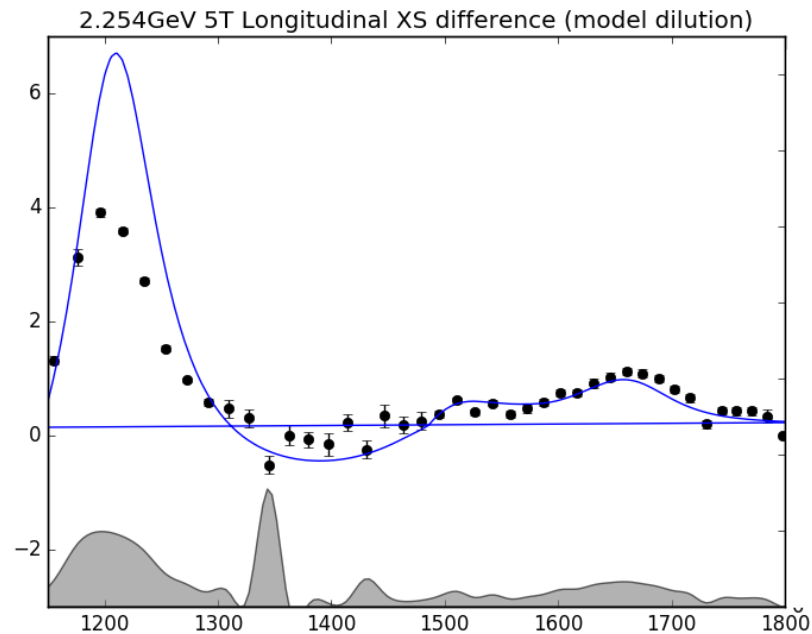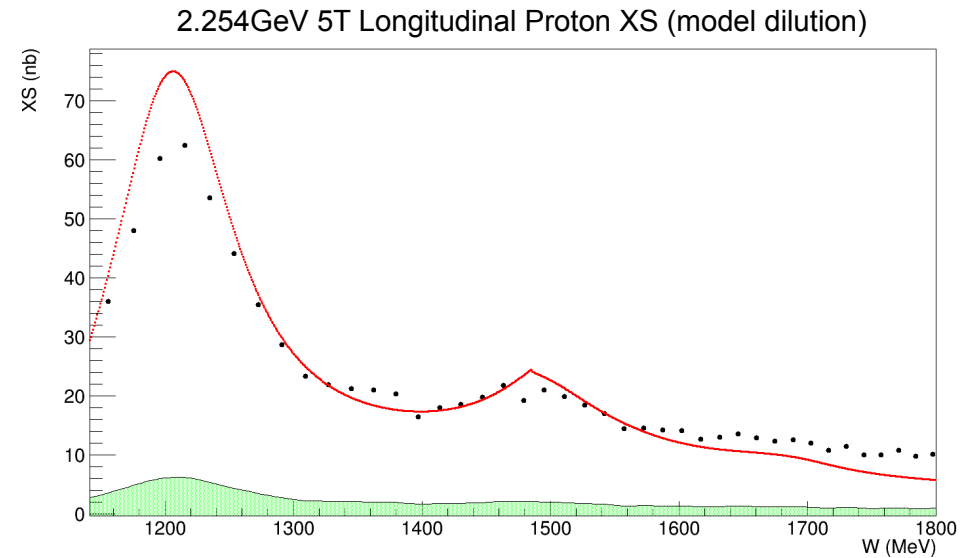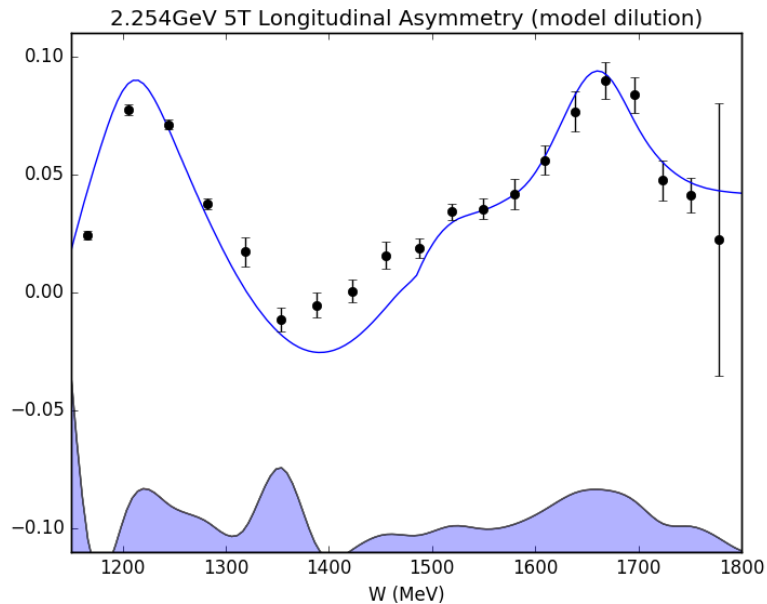
Note: Still working out some issues with the longitudinal dilution, it will likely be included in this XS difference by the end of the week.

To do...

- Still working on including longitudinal dilution in result.

- Estimate acceptance systematic (from different acceptance cuts for XS and asymmetry)

- Also looking at 1.7 GeV data but probably won't be finished by next week.

- Suggestions from meeting.