

# LHRS Analysis for $d_2^n$

## Radiative Corrections With Cross Section Models

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# Outline

## 1 Radiative Corrections: Systematic Errors

Radiating and Unfolding F1F209

## 2 Summary

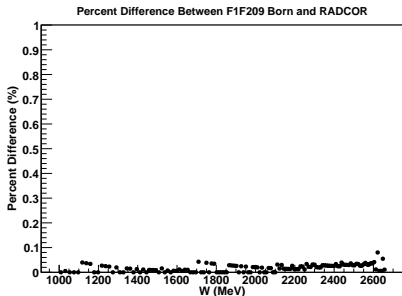
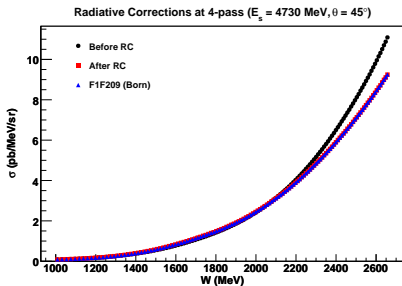
# Radiating and Unfolding (1)

## Method

- To test the F1F209 model, we can radiate and unfold it using RADCOR
  - We do this for our kinematics and E94010 kinematics
  - We want to see **reversibility** of the code and model

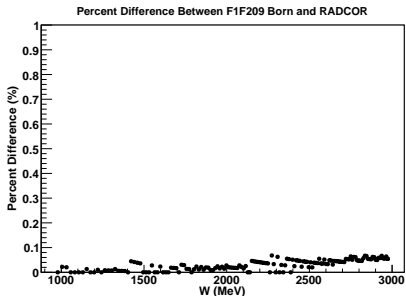
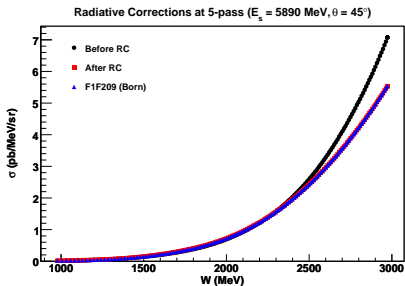
# Radiating and Unfolding (2)

E06-014:  $E_s = 4.73$  GeV



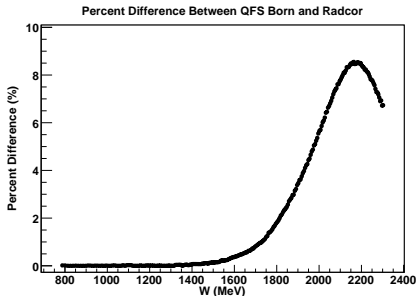
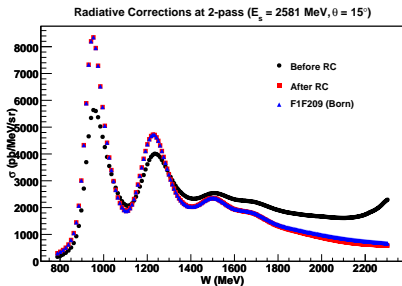
# Radiating and Unfolding (3)

E06-014:  $E_s = 5.89$  GeV



# Radiating and Unfolding (4)

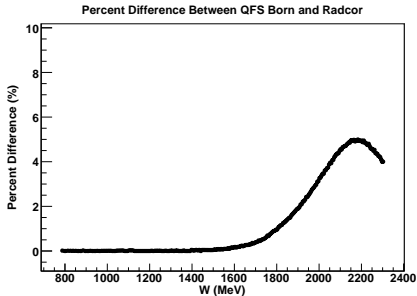
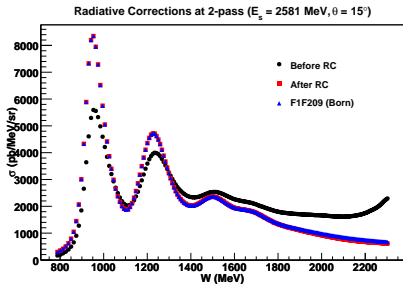
E94-010:  $E_s = 2.58$  GeV



# Radiating and Unfolding (5)

E94-010:  $E_s = 2.58$  GeV, Adding More Spectra

- Adding a spectrum for  $E_s = 1.4, 2.3$  GeV:



# Radiating and Unfolding (6)

## Discussion

- Remember the issue at the beginning: structure in the unfolded QFS model at our kinematics in the DIS region
- We're seeing something similar, but now with E94-010 kinematics
  - Note that QFS was giving cross sections with a lot of structure at low  $E_s$  for our kinematics while F1F209's are **much** softer
- Adding more spectra to E94-010 kinematics eases the disagreement by  $\sim 4\%$   $\Rightarrow$  integration issues; however, utilizing the **Gaus-Kronrod** integration method yields (almost) identical results



## Summary

- We can successfully radiate and unfold F1F209 at our kinematics, but the procedure is problematic at E94-010 kinematics
- Possible integration issues in RADCOR, since the issue is eased slightly by the addition of more input data

# What's Next?

- Take a closer look at integration methods
- Tweaks to the F1F209 model?