

# LHRS Analysis for $d_2^n$

## Radiative Corrections: Current State and Reliability of Tails of Subprocesses

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3/8/12

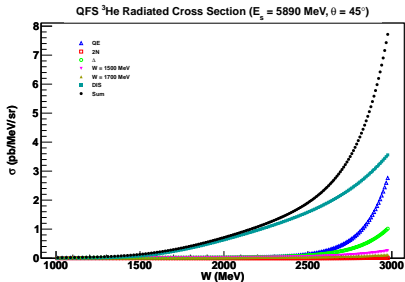
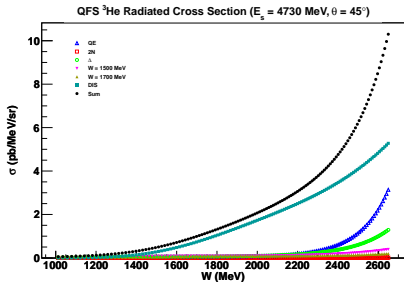
# Outline

- 1 Current Status**  
Procedure and Results
- 2 Radiative Tails of Subprocesses**  
Quasi-Elastic Tail  
 $\Delta$  Tail
- 3 Summary**

# Current Status (1)

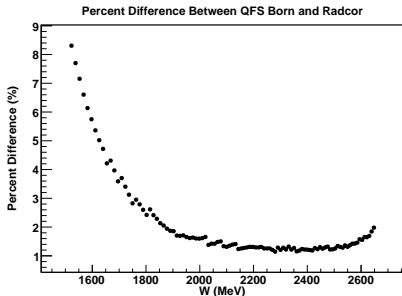
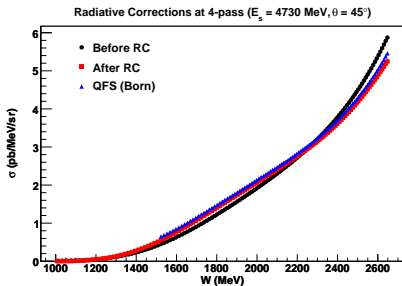
## A Review

- We need to subtract the tails of the QE and  $\Delta$  from **each** input spectrum **before** unfolding the data



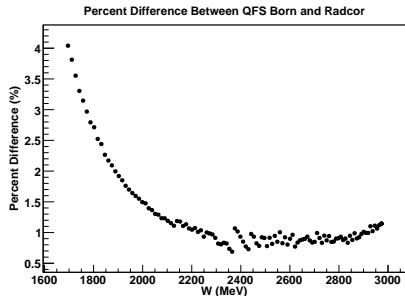
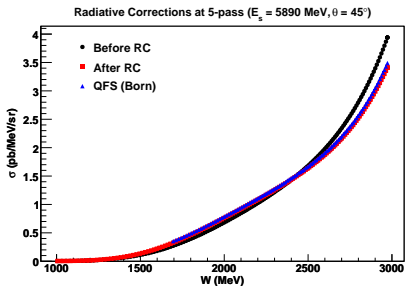
# Current Status (2)

A Review:  $E_s = 4.73$  GeV



# Current Status (3)

A Review:  $E_s = 5.89$  GeV

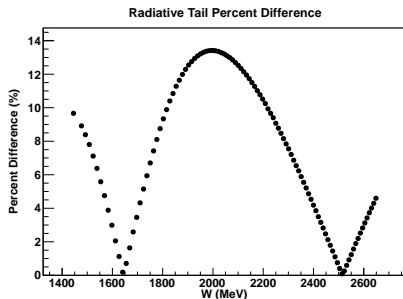
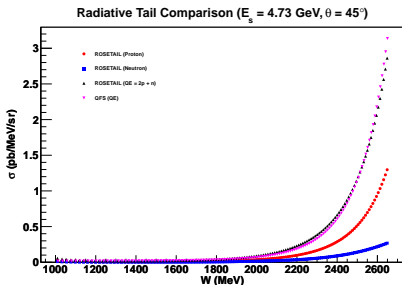


# Comparing QFS to ROSETAIL

- Before we subtract the QE and  $\Delta$  tails from the **real** data, we need to be certain that they are **reliable**
  - Compare to ROSETAIL
- We ‘build up’ the tails by considering scattering from protons and neutrons:
  - QE:  $2p + n$  using the standard dipole form for  $G_{E,M}^p$  and Galaster’s fit for  $G_E^n$
  - $\Delta$ :  $3p$  using  $G_E^* = 0$  and Carlson’s fit (shown on 2/16/12) for  $G_M^*$

# Quasi-Elastic Tail (1)

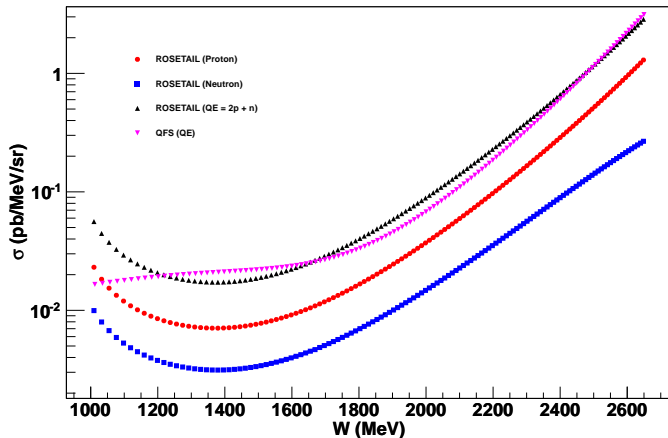
Comparing QFS to ROSETAIL:  $E_s = 4.73$  GeV



# Quasi-Elastic Tail (2)

Comparing QFS to ROSETAIL:  $E_s = 4.73$  GeV (Log Plot)

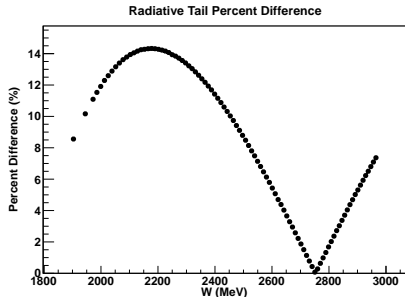
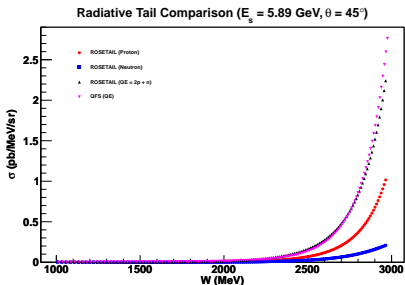
Radiative Tail Comparison ( $E_s = 4.73$  GeV,  $\theta = 45^\circ$ )





# Quasi-Elastic Tail (3)

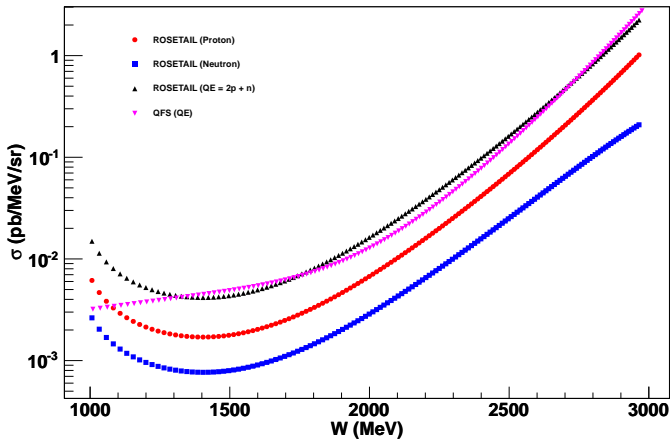
Comparing QFS to ROSETAIL:  $E_s = 5.89$  GeV



# Quasi-Elastic Tail (4)

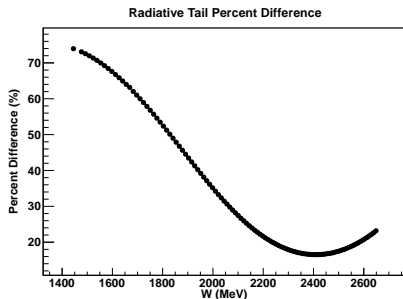
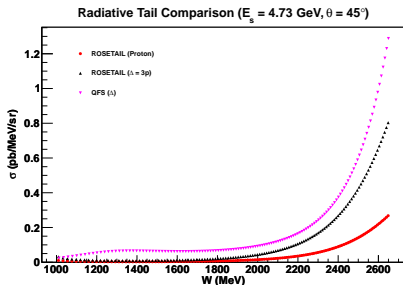
Comparing QFS to ROSETAIL:  $E_s = 5.89$  GeV (Log Plot)

Radiative Tail Comparison ( $E_s = 5.89$  GeV,  $\theta = 45^\circ$ )



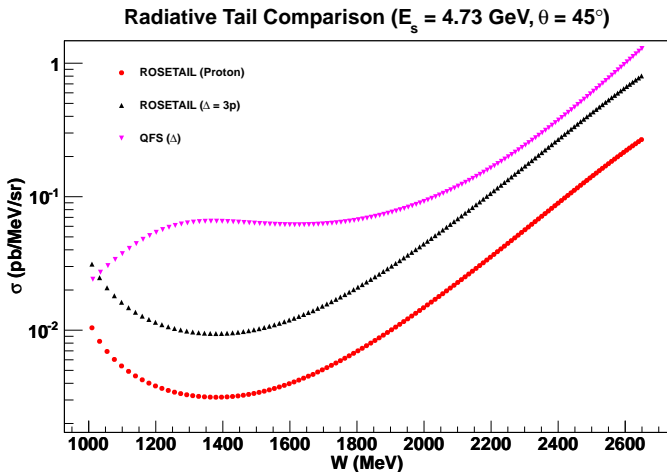
# $\Delta$ Tail (1)

Comparing QFS to ROSETAIL:  $E_s = 4.73$  GeV



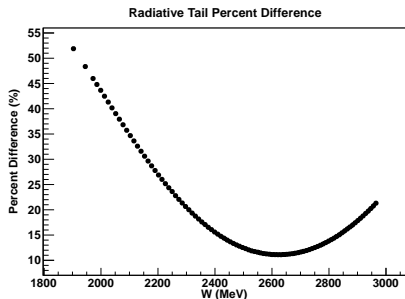
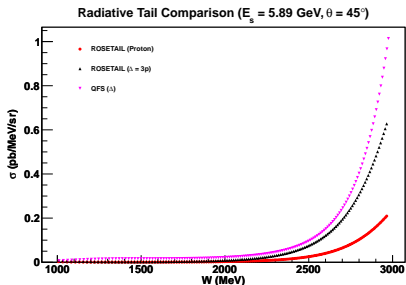
## $\Delta$ Tail (2)

Comparing QFS to ROSETAIL:  $E_s = 4.73$  GeV (Log Plot)



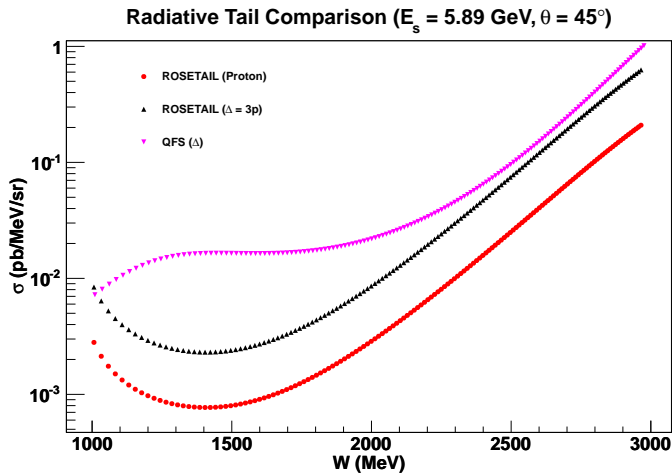
# △ Tail (3)

Comparing QFS to ROSETAIL:  $E_s = 5.89$  GeV



## $\Delta$ Tail (4)

Comparing QFS to ROSETAIL:  $E_s = 5.89$  GeV (Log Plot)



# Summary

- The radiative tails calculated in ROSETAIL are in reasonable agreement with those from QFS

# What's Next?

- Continue work on cross section fits
  - Use models of  $F_1$  and  $F_2$  (from fortran code of Xiao Chao and separately P. Bosted)
- Continue investigation of QE and  $\Delta$  tail subtractions before radiative corrections
  - Proper procedure
  - Are we satisfied with the tails seen in QFS/ROSETAIL?