

# Analysis Progress

for the  $d_2^n$  analysis meeting

Diana Parno

Carnegie Mellon University

March 18, 2011

1 Background

2 Dilution Factor

3  $R = \sigma_L / \sigma_T$

4 Kinematic Variables

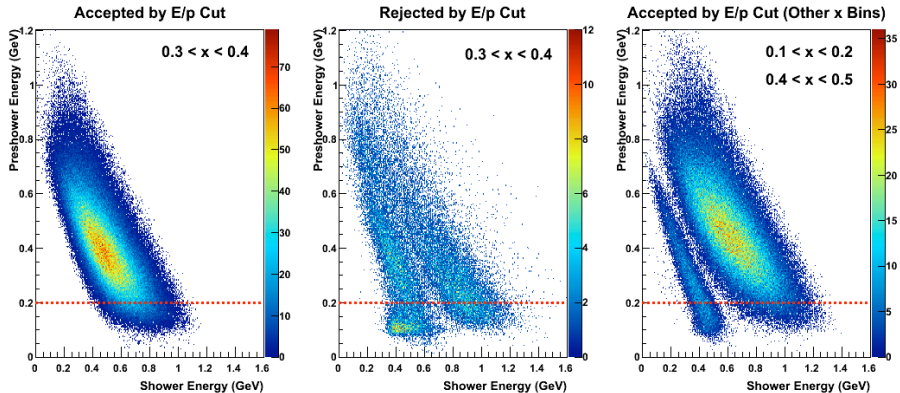
5 Asymmetry Results

# Summary

- I turned in the final draft of my dissertation to my committee yesterday
- The defense is set for March 25

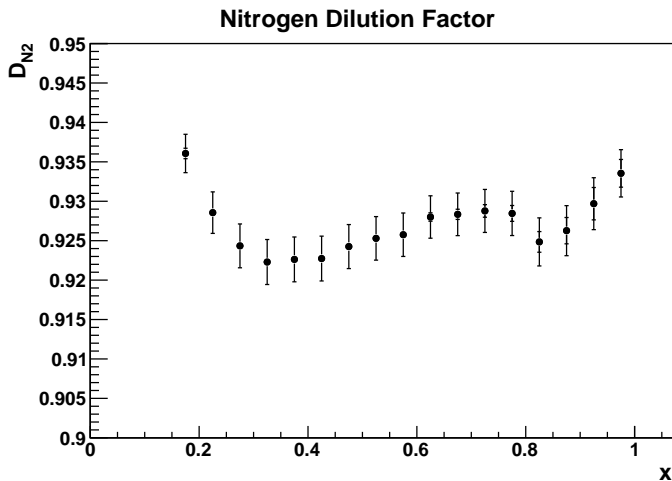
# Background Modeling ( $E/p$ Spectrum)

Why do we think our major source of background is mis-binned electrons?



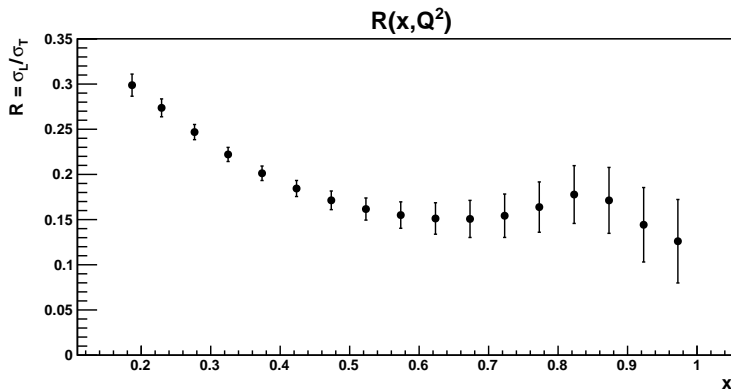
## Fixed Errors on $N_2$ Dilution Factor

The statistical errors weren't scaled properly, and thus appeared way too large



# Updated Parameterization of $R = \sigma_L/\sigma_T$

New reference: Abe *et al.* (E143 collaboration), Phys Lett B **452**: 194 (1999)

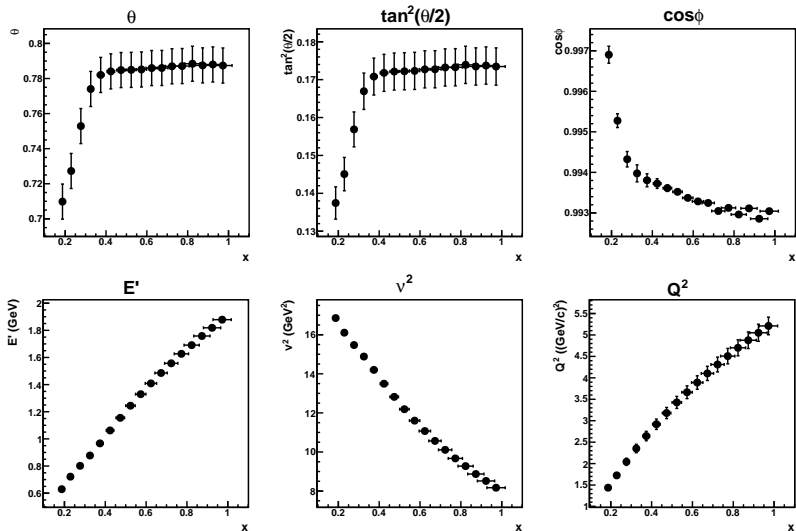


# Systematic Errors on Kinematic Variables (i)

Estimated by varying  $p$  by 1%, angles  $\phi$  and  $\theta$  by 10 mrad

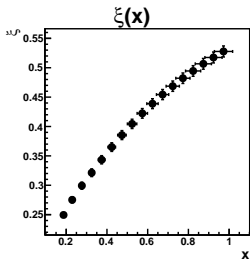
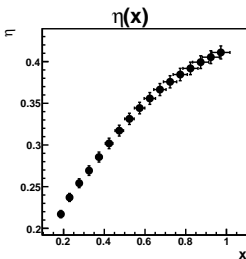
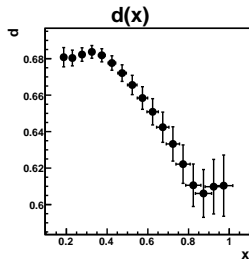
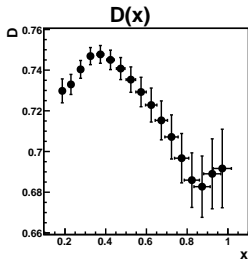
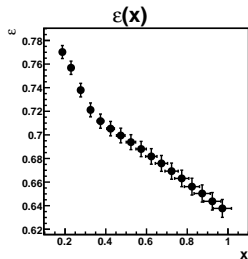
Parameter	Dependence	Maximum Relative Error (%)
$ \vec{k}'  = E'$	$ \vec{k}' $	1.0
$\theta$	$\theta$	1.4
$\tan^2(\theta/2)$	$\theta$	3.0
$\cos \phi$	$\phi$	0.02
$x$	$\theta,  \vec{k}' $	4.6
$\nu^2$	$ \vec{k}' $	1.5
$Q^2$	$\theta,  \vec{k}' $	4.2

# Systematic Errors on Kinematic Variables (ii)



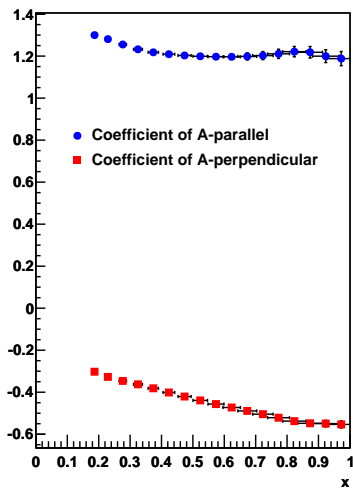


# Systematic Errors on Kinematic Variables (iii)

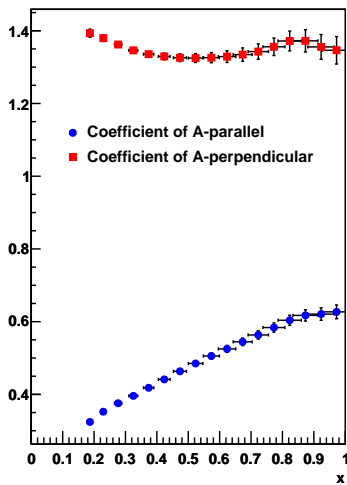


# Systematic Errors on Kinematic Variables (iv)

### Coefficients for $A_1$ Calculation

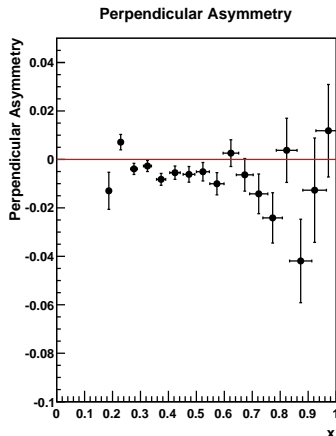
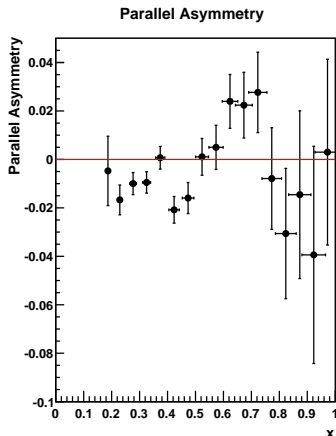


### Coefficients for $A_2$ Calculation

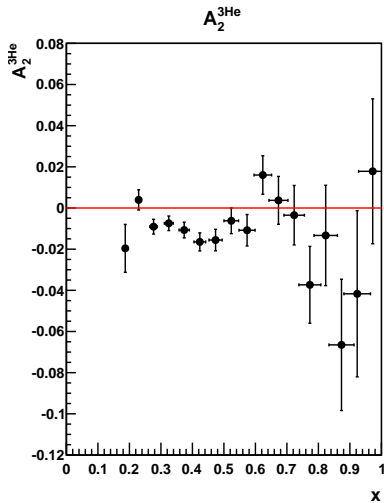
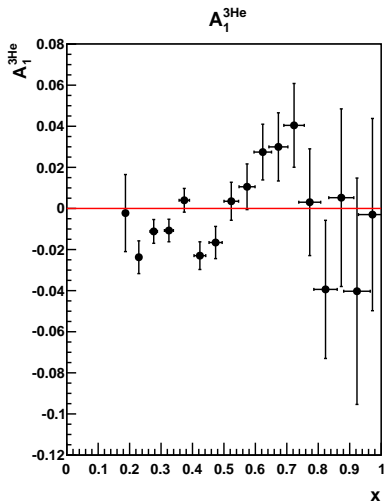


# Asymmetries (i)

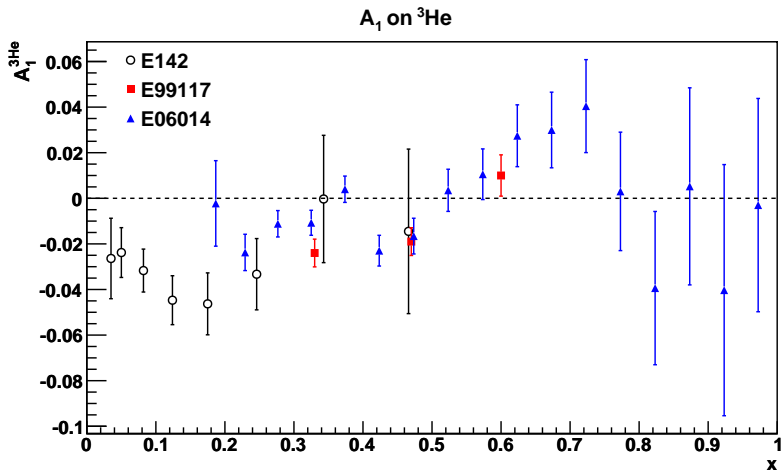
- The meaning of the HWP-out helicity logic signal changed between our  $90^\circ$  and  $270^\circ$  data sets
- Transverse asymmetries no longer cancel each other out



# Asymmetries (ii)



# Asymmetries (iii)



# Asymmetries (iv)

