

Analysis Progress

for the d_2^n analysis meeting

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Reminder: Neutron Extraction in DIS Regime

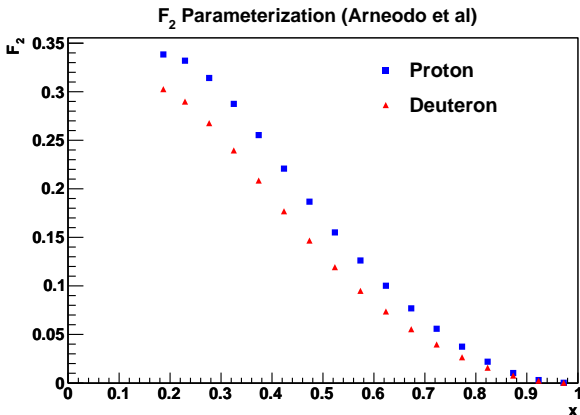
- For DIS data, we're starting with the approach from Bissey, Guzey, Strikman and Thomas (PRC **65** 064317 (2002))
- This is what E99-117 used in their published analysis

$$A_1^n = \frac{F_2^{3\text{He}}}{P_n F_2^n \left(1 + \frac{0.056}{P_n}\right)} \left(A_1^{3\text{He}} - 2 \frac{F_2^p}{F_2^{3\text{He}}} P_p A_1^p \left(1 - \frac{0.014}{2P_p}\right) \right) \quad (1)$$

- I'm starting to work up the necessary code for this

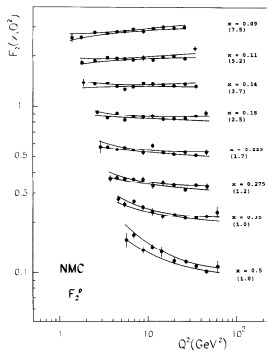
F_2 for Protons and Deuterons

- F_2^p goes into neutron-extraction equation directly
- F_2^d is used along with F_2^p to find $F_2^{^3\text{He}}$
- NMC produced a 15-parameter fit of for both targets (Arneodo *et al* Phys Lett B **364** 107 (1995))

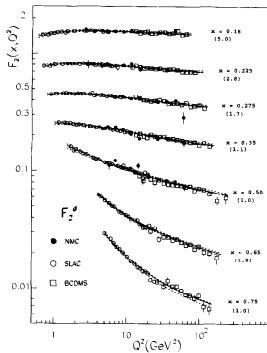


Cross-Check

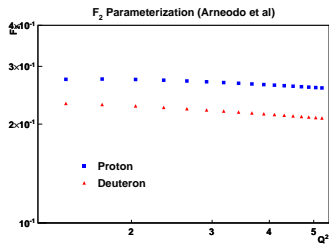
NMC - F_2^P



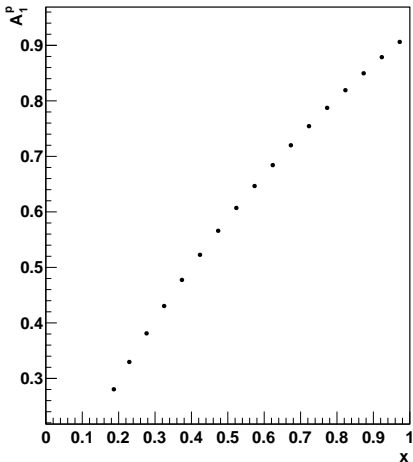
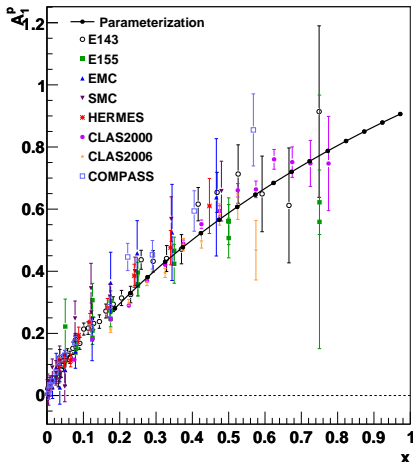
NMC - F_2^d



Our Parameterization ($x = 0.35$)



- I encoded the A_1^P parameterization from X. Zheng's thesis (Eq 5.56)

 A_1^P Parameterization A_1 on the Proton

What's Next?

- Code for extraction of neutron values in DIS region
 - ▶ Rough-guess of $F_2^{3\text{He}}$
 - ▶ Error bars on parameterizations
 - ▶ Proper (and asymmetric) error propagation
 - ▶ Practical parameterization of $a(x)$, $b(x)$
 - ▶ Practical parameterization of EMC effect from Hall C data (improved $F_2^{3\text{He}}$)
- Data
 - ▶ Testing 64-bit skim: currently troubleshooting bizarre farm problem
 - ▶ Sign-sorted 5-pass runlist (beam helicity/target spin)