Experiment E99-117 Data Analysis

From ^{3}He to Neutron

convolution approach

Ciofi degli Atti et.al., Phys.Rev.**C48**, 968(1993); Phys. Lett., **B404**, 223(1997)

- ^3He consists S, S', D
- Three body calculation using Fadeev wavefunction

$$\tilde{g_1^n} = \frac{1}{\rho_n}(g_1^{^3\mathrm{He}} - 2\rho_p g_1^p)$$

$$\tilde{A_1^n} = \frac{W_1^{^3\mathrm{He}}}{W_1^n}\frac{1}{\rho_n}(A_1^{^3\mathrm{He}} - 2\frac{W_1^p}{W_1^{^3\mathrm{He}}}\rho_p A_1^p)$$

with $P_p = -0.027$,$P_n = 0.87$

- valid at DIS regime;

Contribution from $\Delta(1232)$ - F. Bissey et. al., hep-ph/0109069

- Taken into account the presence of Δ isobar in ^3He wavefuntion

$$A_1^n = \frac{F_2^{^3He}}{P_n F_2^n(1+\frac{0.056}{P_n})}[A_1^{^3He} - 2\frac{F_2^p}{F_2^{^3He}}P_p A_1^p(1-\frac{0.014}{2P_p})]$$

- $R(x,Q^2)$ from E143 fit: K. Abe et. al., hep-ex/9808028
- F_2^p, F_2^d from NMC fit: M. Arneodo et. al., hep-ph/9509406, assuming $F_2^{^3He} = F_2^p + 2F_2^d$, $F_2^n = 2F_2^d - F_2^p$
- $P_p = -0.021$,$P_n = 0.879$ from Paris N-N potential with 5 channels: F. Bissey et. al, Phys.Rev.**C64**, 024004(2001)
- A_1^p from E155 fit, P. L. Anthony et. al., Phys.Lett.**B493**:19-28,(2000) (hep-ph/0007248)

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