

Run # 1307 (Carbon)

$$E_{\text{beam}}=4.89\text{GeV}, E'=3.00\text{GeV}$$

$$\theta_{\text{HRS}}=15.0^\circ$$

$$\text{BCharge} = 2.04\mu\text{A} \times 10.778\text{mins} \times \frac{60}{64} = 1.23\text{e-03 C}$$

$$\text{Target Thickness} = 988 \mu\text{m}$$

$$\rho_{\text{T}}=1.69 \text{ g/cm}^3$$

$$\Delta E=E' \times 0.09= 0.270 \text{ GeV } (\pm 0.045 \text{ is the hardware momentum acceptance})$$

$$\Delta\theta=0.080 \text{ rad}, \quad \Delta\phi=0.035 \text{ rad}$$

$$\Delta\Omega = \Delta\theta\Delta\phi = 2.80\text{e-03 sr}$$

$$N_{\text{good}}=53970$$

$$\text{LT}=0.935, \quad \epsilon_{\text{track}}=0.994$$

$$Q^2 = 4EE'\sin^2(\theta_{\text{HRS}}/2) = 1.00 \text{ GeV}^2$$

$$\text{L\#Dletat} = \frac{\text{BCharge}}{e} \rho_{\text{t}} l_{\text{t}} \frac{N_{\text{A}}}{A_{\text{Z}}} = 6.44\text{e+37 cm}^{-2}$$

$$\left(\frac{d^2\sigma}{dE'd\Omega}\right)_{\text{measured}} = \frac{N_{\text{good}}}{\Delta E\Delta\Omega \text{L\#Dletat} \text{LT}\epsilon_{\text{track}}} = 1.19\text{e-30 cm}^2/\text{GeV sr} = 1192 \text{ nb}/(\text{GeV sr})$$

$$\left(\frac{d^2\sigma}{dE'd\Omega}\right)_{\text{expected}} = 1430 \text{ nb}/(\text{GeV sr}) \text{ (from Peter Bosted model: arXiv:0712.3731)}$$

$$\left(\frac{d^2\sigma}{dE'd\Omega}\right)_{\text{measured}} / \left(\frac{d^2\sigma}{dE'd\Omega}\right)_{\text{expected}} = 0.83$$