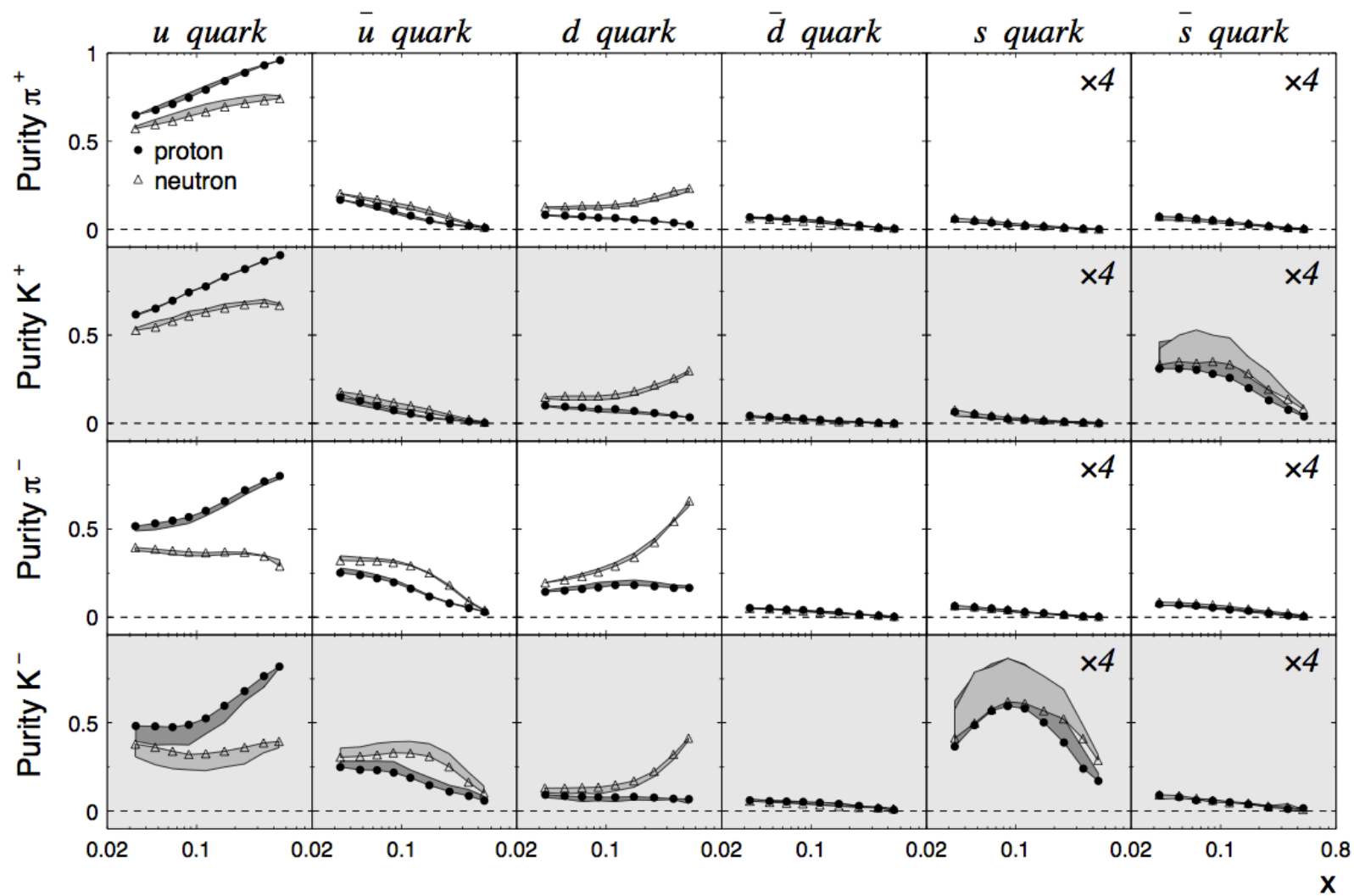


SIDIS Meson Purities



$$D^{unf} \approx 0.5 D^{fav}$$

$$d \approx 0.5 u$$

PROTON

$$A_1^{p,\pi^+} = \frac{4\Delta u D^{fav} + \Delta d D^{unf}}{4u D^{fav} + d D^{unf}} \approx \frac{4\Delta u + \frac{1}{2}\Delta d}{4u + \frac{1}{2}d} \approx \frac{1}{17} \left[16 \frac{\Delta u}{u} + \frac{\Delta d}{d} \right] \quad \delta \left(\frac{\Delta u}{u} \right) \approx \delta A$$

$$A_1^{p,\pi^-} = \frac{4\Delta u D^{unf} + \Delta d D^{fav}}{4u D^{unf} + d D^{fav}} \approx \frac{2\Delta u + \Delta d}{2u + d} \approx \frac{1}{5} \left[4 \frac{\Delta u}{u} + \frac{\Delta d}{d} \right] \quad \delta \left(\frac{\Delta d}{d} \right) \approx 7\delta A$$

$$D^{unf} \approx 0.5 D^{fav}$$

$$d \approx 0.5 u$$

PROTON

$$A_1^{p,\pi^+} = \frac{4\Delta u D^{fav} + \Delta d D^{unf}}{4u D^{fav} + d D^{unf}} \approx \frac{4\Delta u + \frac{1}{2}\Delta d}{4u + \frac{1}{2}d} \approx \frac{1}{17} \left[16 \frac{\Delta u}{u} + \frac{\Delta d}{d} \right] \quad \delta \left(\frac{\Delta u}{u} \right) \approx \delta A$$

$$A_1^{p,\pi^-} = \frac{4\Delta u D^{unf} + \Delta d D^{fav}}{4u D^{unf} + d D^{fav}} \approx \frac{2\Delta u + \Delta d}{2u + d} \approx \frac{1}{5} \left[4 \frac{\Delta u}{u} + \frac{\Delta d}{d} \right] \quad \delta \left(\frac{\Delta d}{d} \right) \approx 7\delta A$$

NEUTRON

$$A_1^{n,\pi^+} = \frac{4\Delta d D^{fav} + \Delta u D^{unf}}{4d D^{fav} + u D^{unf}} \approx \frac{4\Delta d + \frac{1}{2}\Delta u}{4d + \frac{1}{2}u} \approx \frac{1}{5} \left[\frac{\Delta u}{u} + 4 \frac{\Delta d}{d} \right] \quad \delta \left(\frac{\Delta d}{d} \right) \approx \delta A$$

$$A_1^{n,\pi^-} = \frac{4\Delta d D^{unf} + \Delta u D^{fav}}{4d D^{unf} + u D^{fav}} \approx \frac{2\Delta d + \Delta u}{2d + u} \approx \frac{1}{2} \left[\frac{\Delta u}{u} + \frac{\Delta d}{d} \right] \quad \delta \left(\frac{\Delta d}{d} \right) \approx 2.2 \delta A$$

DEUTERON

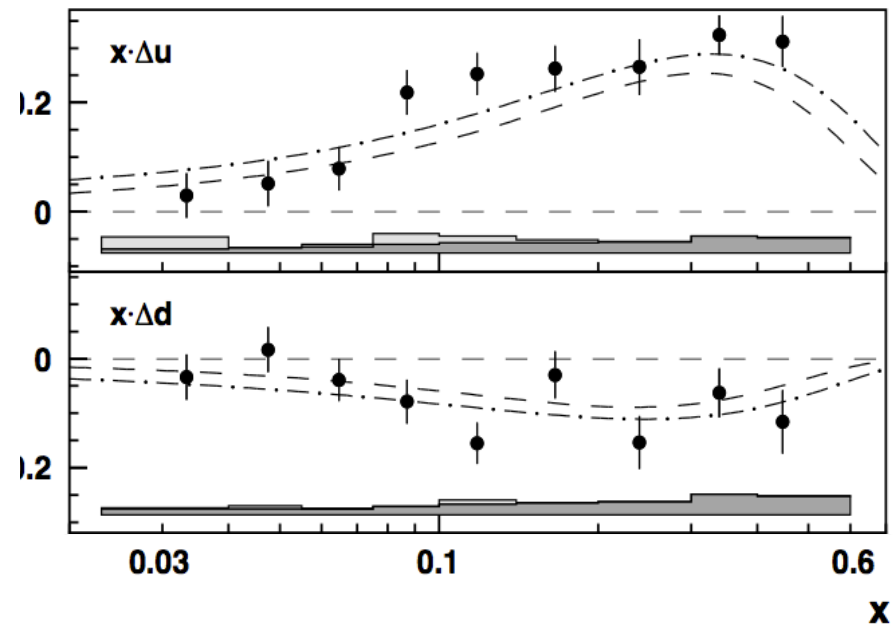
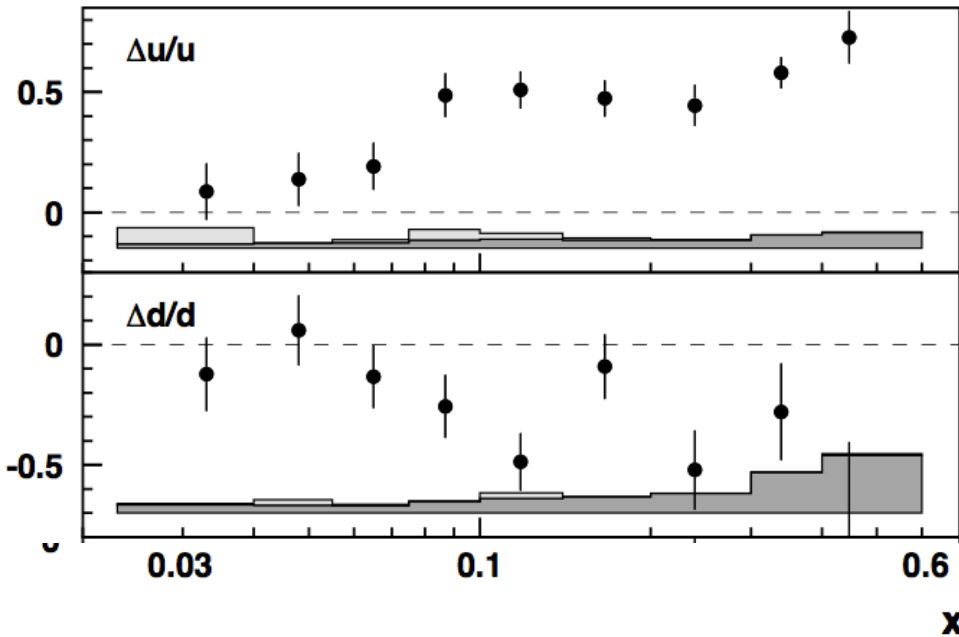
$$A_1^{d,\pi^+} = \frac{\Delta u + \Delta d}{u + d} \frac{4D^{fav} + D^{unf}}{4D^{fav} + D^{unf}} \approx \frac{\Delta u + \Delta d}{u + d} \approx \frac{1}{3} \left[2 \frac{\Delta u}{u} + \frac{\Delta d}{d} \right] \quad \delta \left(\frac{\Delta d}{d} \right) \approx 3.6 \delta A$$

$$A_1^{d,\pi^-} = \frac{\Delta u + \Delta d}{u + d} \frac{4D^{unf} + D^{fav}}{4D^{unf} + D^{fav}} \approx \frac{\Delta u + \Delta d}{u + d} \approx \frac{1}{3} \left[2 \frac{\Delta u}{u} + \frac{\Delta d}{d} \right] \quad \delta \left(\frac{\Delta d}{d} \right) \approx 3.6 \delta A$$

HERMES Case

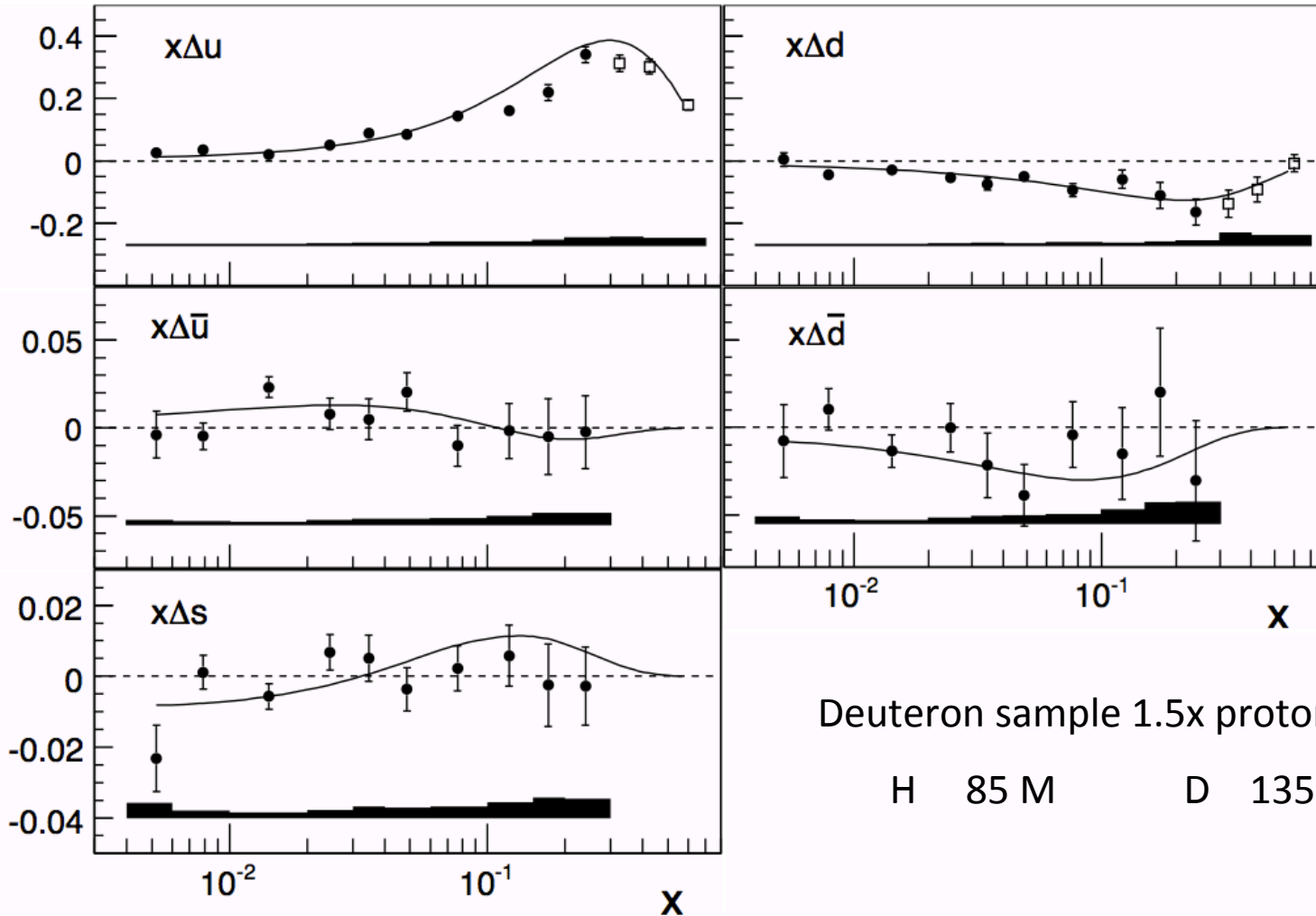
No target dilution, deuteron sample 4x proton one

Target	DIS evts.	SIDIS events			
		π^+	π^-	K^+	K^-
H	1.7×10^6	117×10^3	82×10^3		
D	6.7×10^6	491×10^3	385×10^3	76×10^3	33×10^3



COMPASS Case

NH_3 $P = 0.90$ $f = 0.15$ $\text{FOM} = 0.14$
 ${}^6\text{LiD}$ $P = 0.40$ $f = 0.50$ $\text{FOM} = 0.2$



Deuteron sample 1.5x proton one ?

H 85 M

D 135 M

Isoscalar Channel

$$A_1^K = \frac{\Delta Q D_Q^K + \Delta S D_S^K}{Q D_Q^K + S D_S^K}$$

