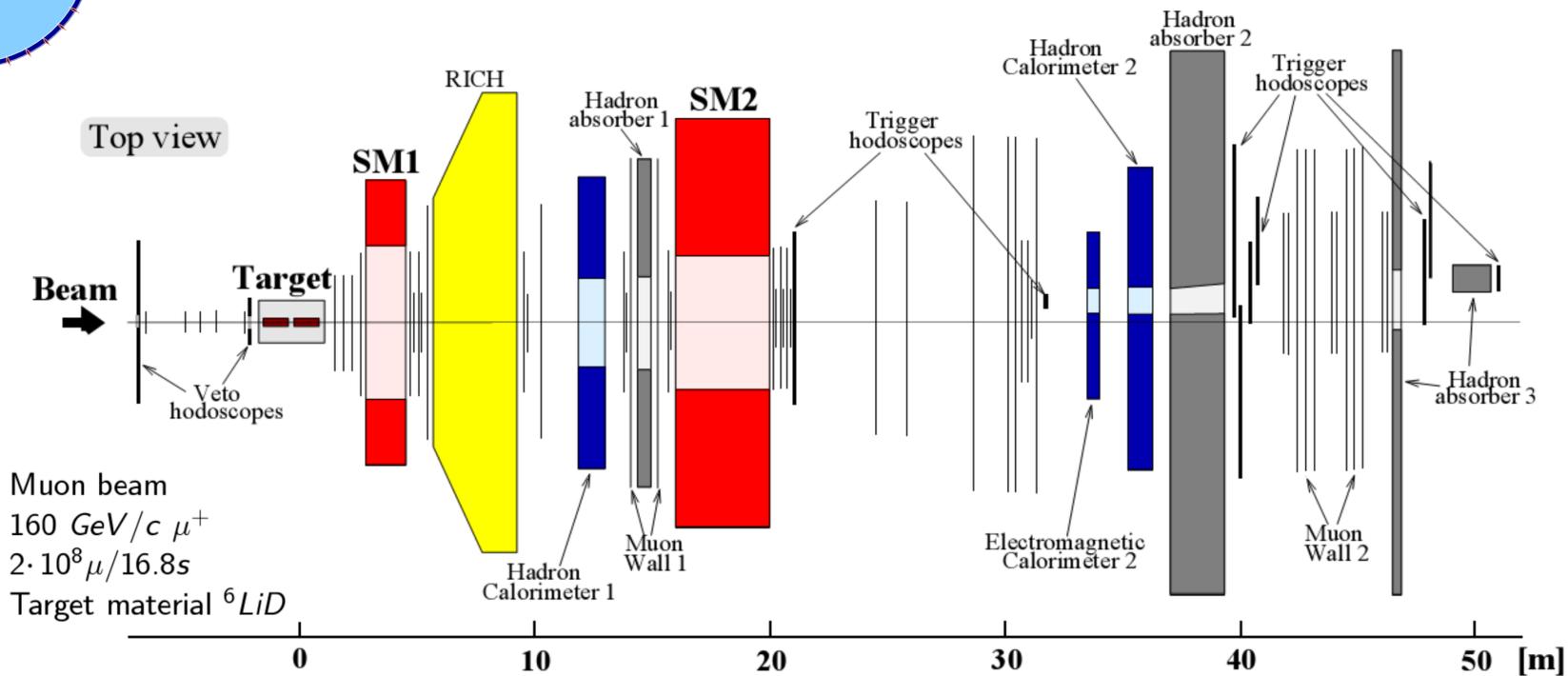




Heavy hyperon production in DIS at COMPASS

N. Rossiyskaya (on behalf of the COMPASS collaboration)

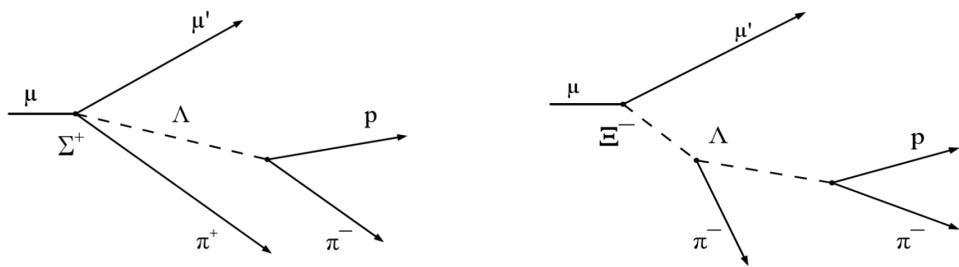


Studied reaction:

$$\mu^+ + d \rightarrow \mu^+ + \Lambda (\bar{\Lambda}) + X$$

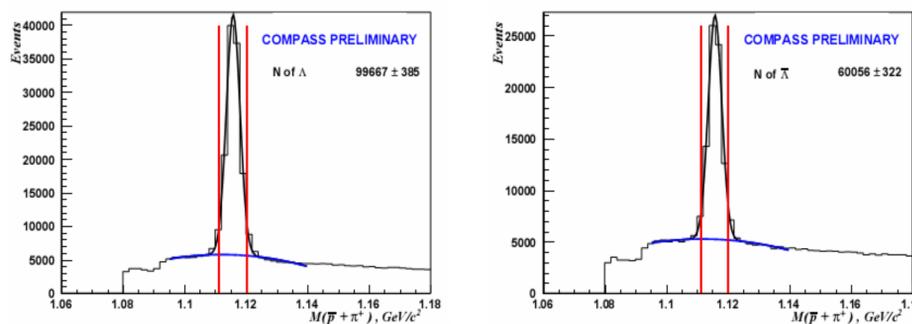
$$\mu^+ + d \rightarrow \mu^+ + \Sigma^+(1385) + X \quad \mu^+ + d \rightarrow \mu^+ + \Xi^-(1321) + X$$

$\downarrow \Lambda + \pi^+$ $\downarrow \Lambda + \pi^-$

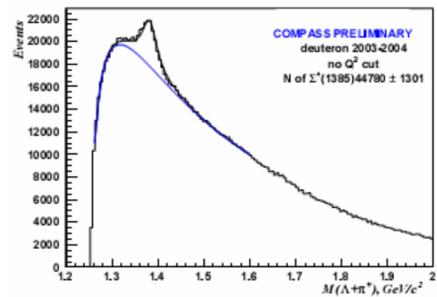


Statistics:

2003 - 2004 data were used for this analysis

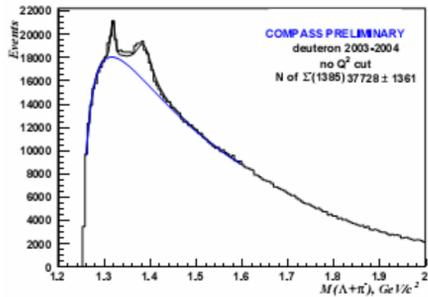


DIS region: $Q^2 > 1 \text{ (GeV/c)}^2$ and $0.2 < y < 0.9$



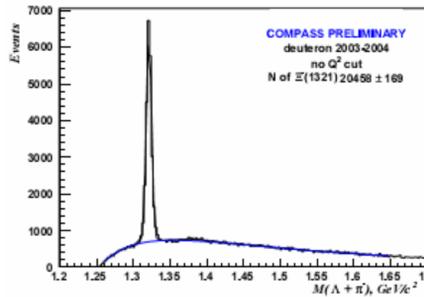
$$N(\Sigma^+) = 40000 \pm 1250$$

$$\text{DIS: } N(\Sigma^+) = 3600 \pm 330$$



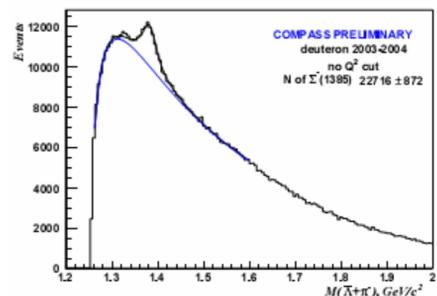
$$N(\Sigma^-) = 35200 \pm 1500$$

$$N(\Sigma^-) = 3000 \pm 500$$



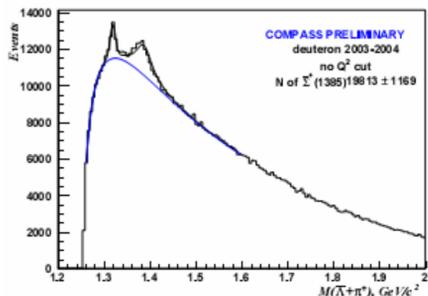
$$N(\Xi^-) = 20500 \pm 170$$

$$N(\Xi^-) = 1600 \pm 50$$



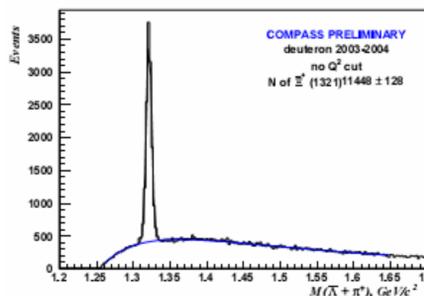
$$N(\bar{\Sigma}^-) = 20000 \pm 850$$

$$\text{DIS: } N(\bar{\Sigma}^-) = 2200 \pm 220$$



$$N(\bar{\Sigma}^+) = 19500 \pm 1200$$

$$N(\bar{\Sigma}^+) = 1900 \pm 260$$



$$N(\bar{\Xi}^+) = 11500 \pm 130$$

$$N(\bar{\Xi}^+) = 1050 \pm 40$$

	$N(\Lambda)$	$N(\bar{\Lambda})$
E665	750	650
NOMAD	8087	649
HERMES	26714	3610
RHIC	13000	10000
COMPASS	100000	60000

Comparison with other experiments:

Ratios	Present data	NOMAD
$\Sigma^+(1385)/\Lambda$	0.055 ± 0.005	0.058 ± 0.011
$\bar{\Sigma}^-(1385)/\bar{\Lambda}$	0.047 ± 0.006	—
$\Sigma^-(1385)/\Lambda$	0.056 ± 0.009	0.026 ± 0.009
$\bar{\Sigma}^+(1385)/\bar{\Lambda}$	0.039 ± 0.006	—
$\Xi^-(1321)/\Lambda$	0.034 ± 0.003	0.019 ± 0.017
$\bar{\Xi}^+(1321)/\bar{\Lambda}$	0.039 ± 0.004	—

Relative yields:

$$\Sigma^+(1385)/\Lambda = 0.055 \pm 0.005 \pm 0.005$$

$$\bar{\Sigma}^-(1385)/\bar{\Lambda} = 0.047 \pm 0.006 \pm 0.005$$

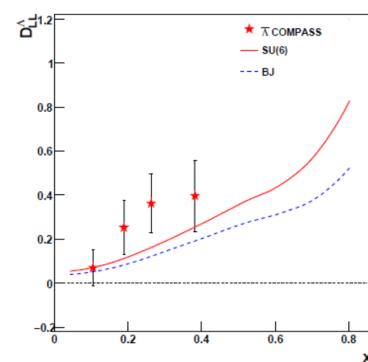
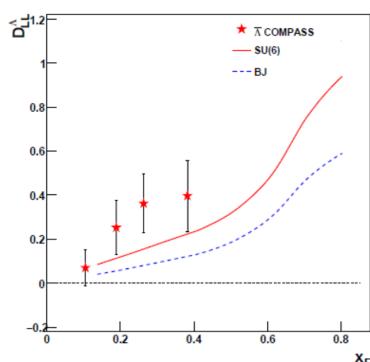
$$\Sigma^-(1385)/\Lambda = 0.056 \pm 0.009 \pm 0.007$$

$$\bar{\Sigma}^+(1385)/\bar{\Lambda} = 0.039 \pm 0.006 \pm 0.006$$

$$\Xi^-(1321)/\Lambda = 0.037 \pm 0.003 \pm 0.002$$

$$\bar{\Xi}^+(1321)/\bar{\Lambda} = 0.046 \pm 0.004 \pm 0.002$$

Tuning the Monte Carlo



★ - COMPASS results
BJ - blue line
SU(6) - red line

Conclusion:

- The yields of heavy (anti-)hyperons in DIS are measured
- The relative yields of indirect Λ and $\bar{\Lambda}$ production are similar
- The ratios Σ/Λ , Ξ/Λ are not dependent on Q^2
- The LEPTO generator parameters have been tuned to reproduce the yields
- The values of Σ/Λ are important for correct description of $\Lambda(\bar{\Lambda})$ spin transfer