

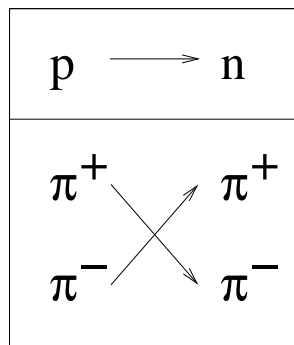
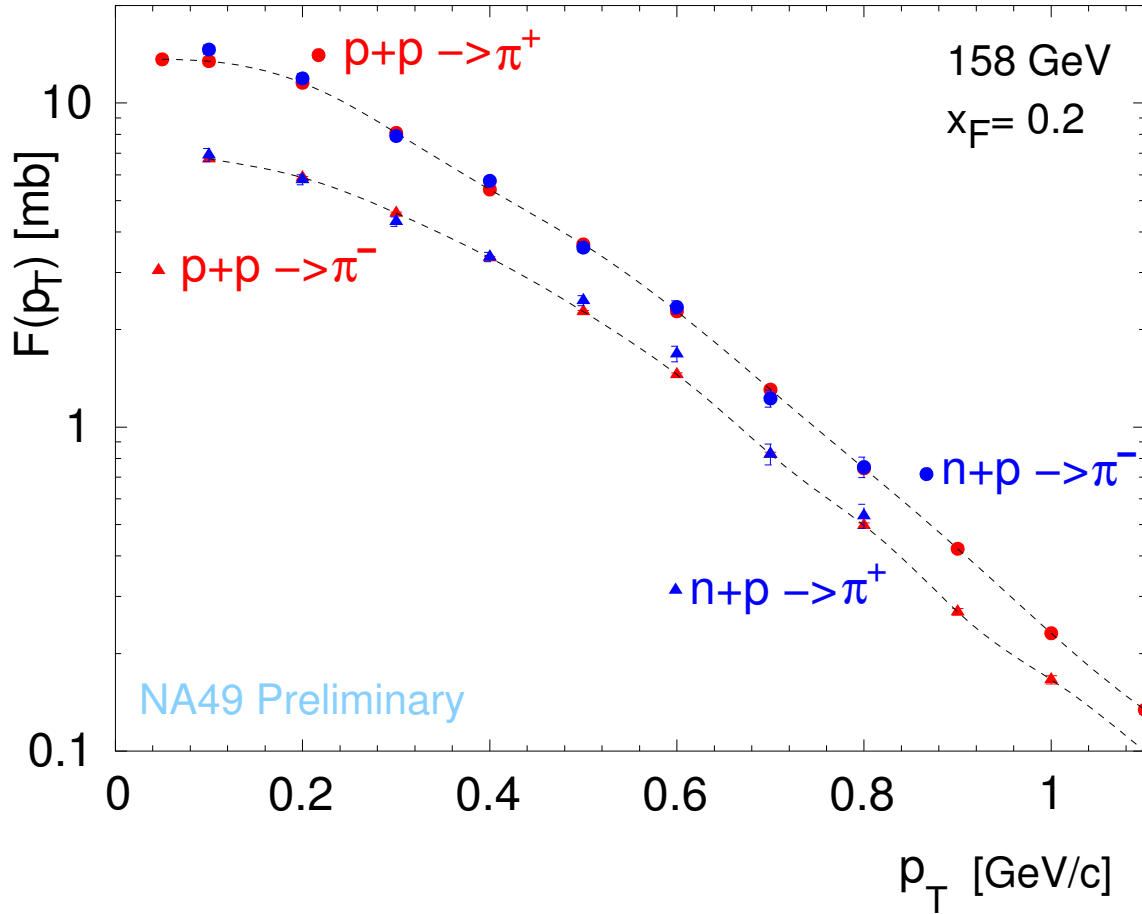
Particle Production in Nuclear Matter: Highlights from $h+A$ and $h+h$ Data at SPS Energies

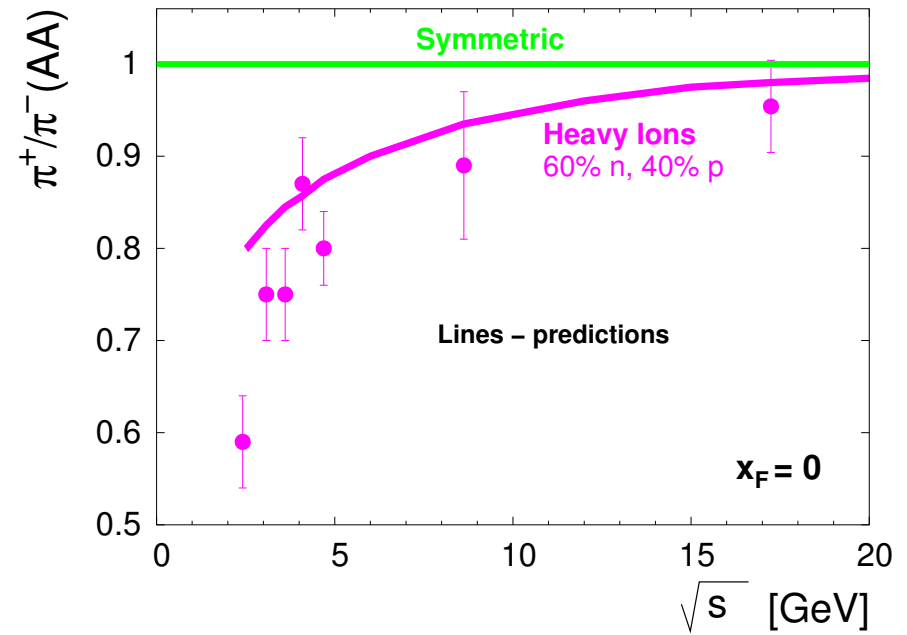
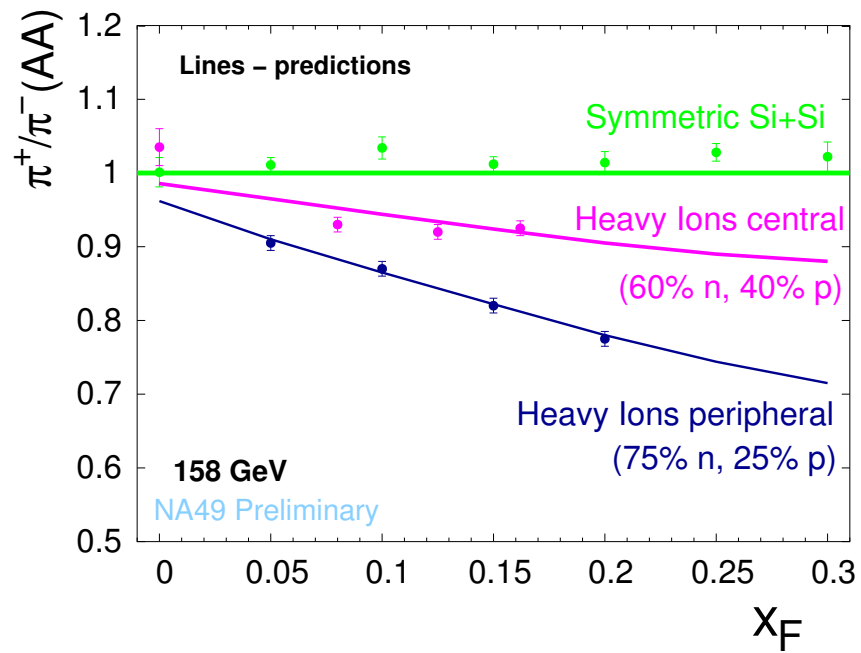
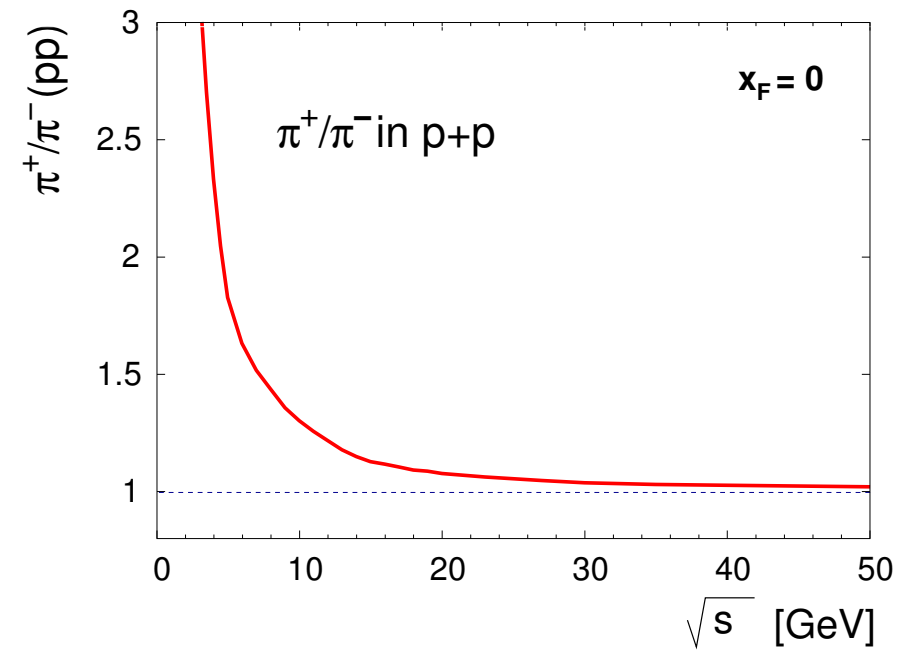
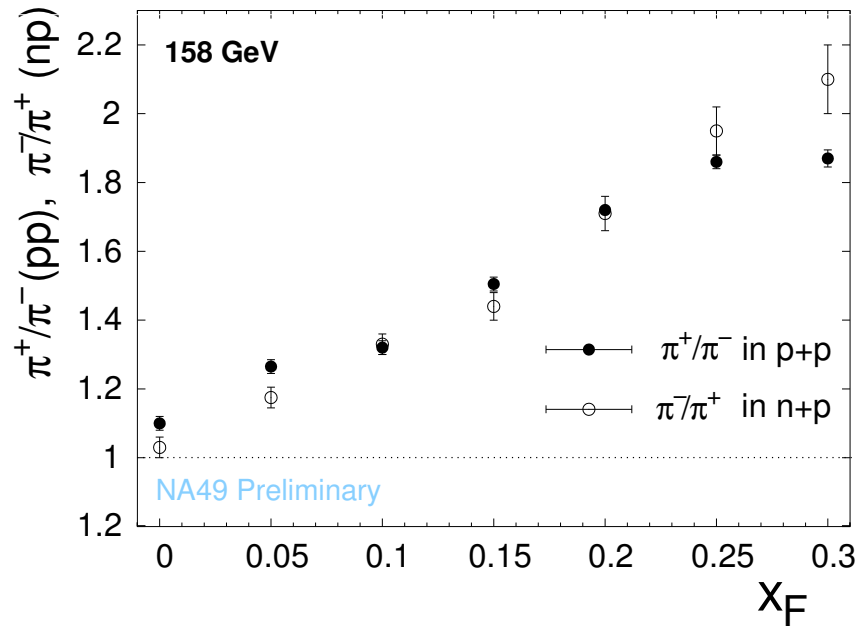
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Outline:

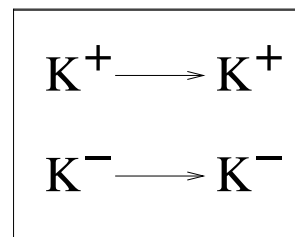
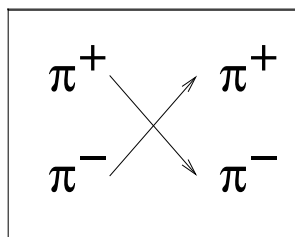
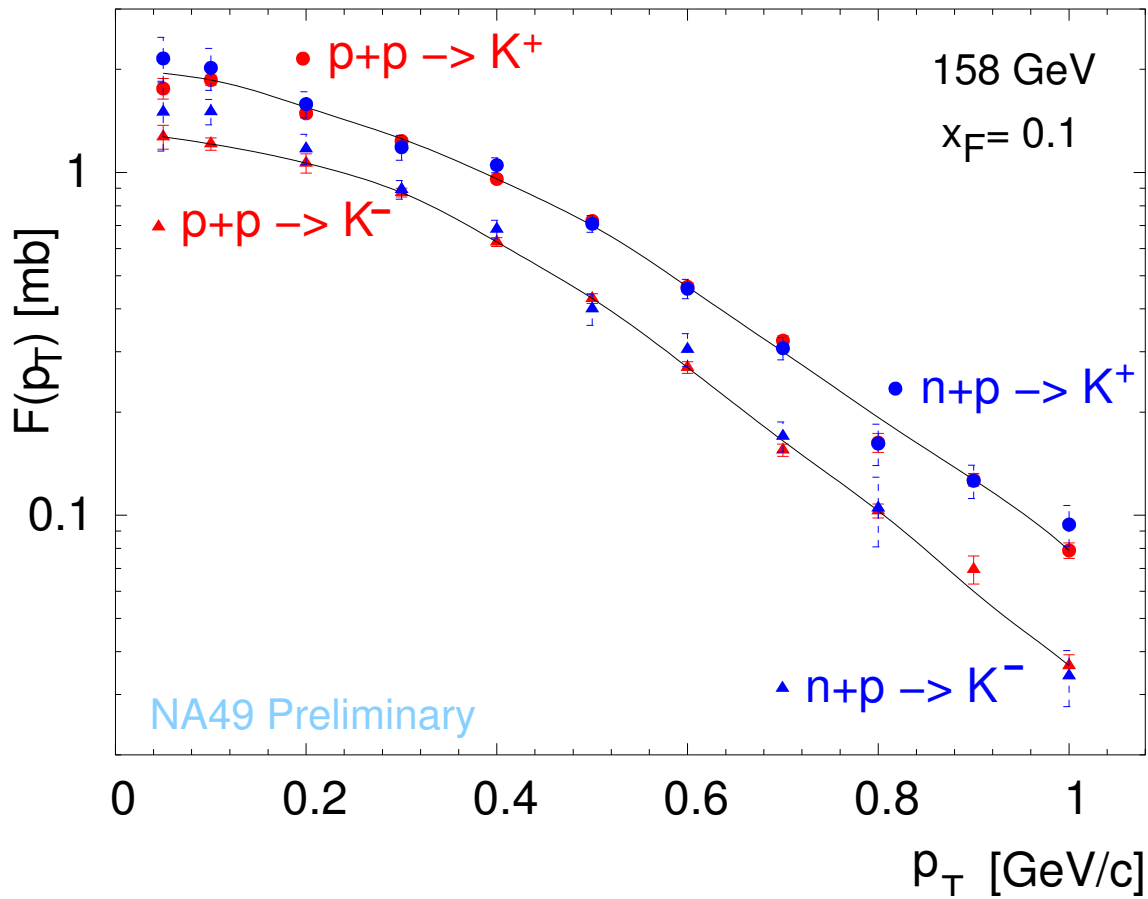
- 1) valence structure of the projectile
- 2) multiple collisions
- 3) penta-quarks
- 4) summary

1) valence structure of the projectile

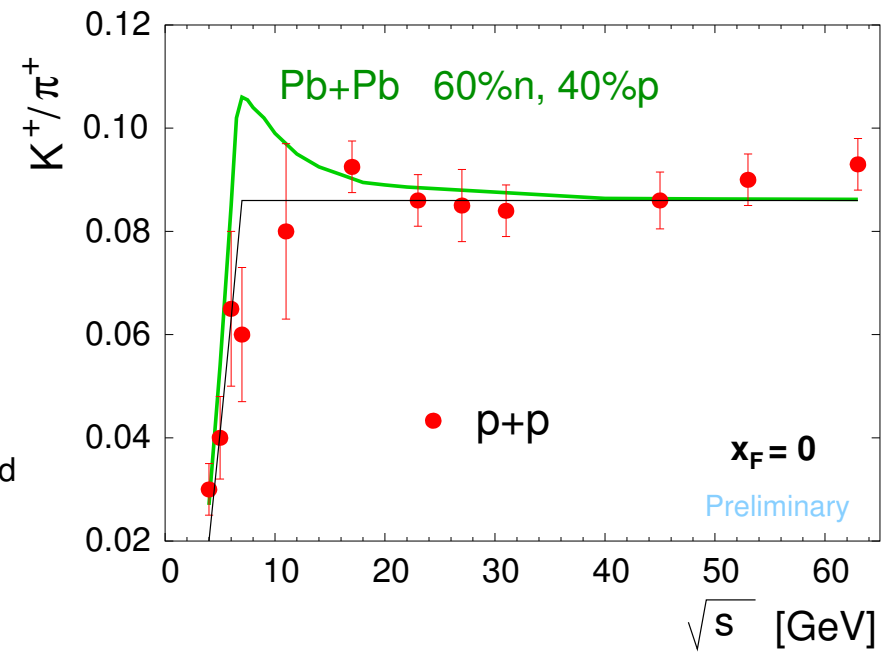
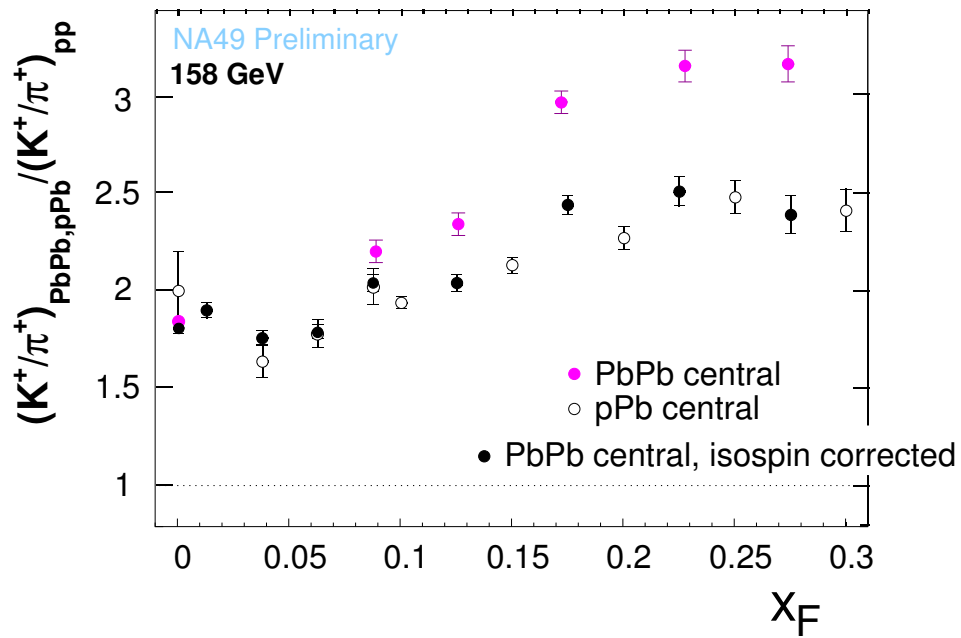
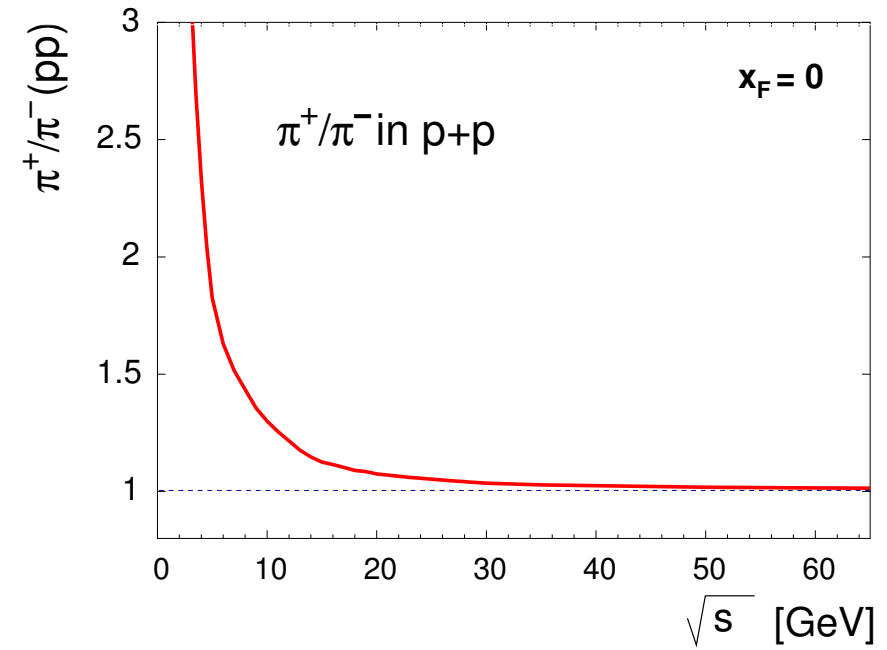
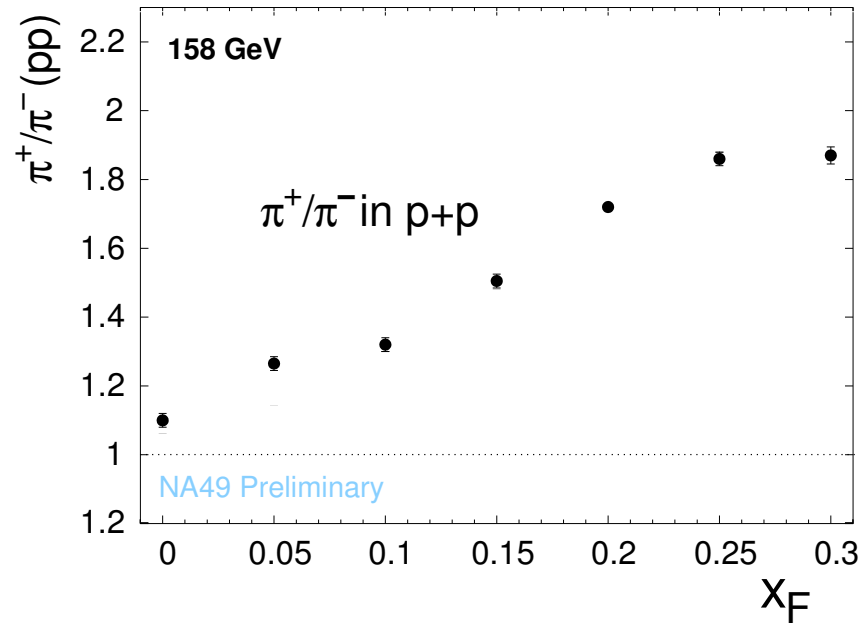




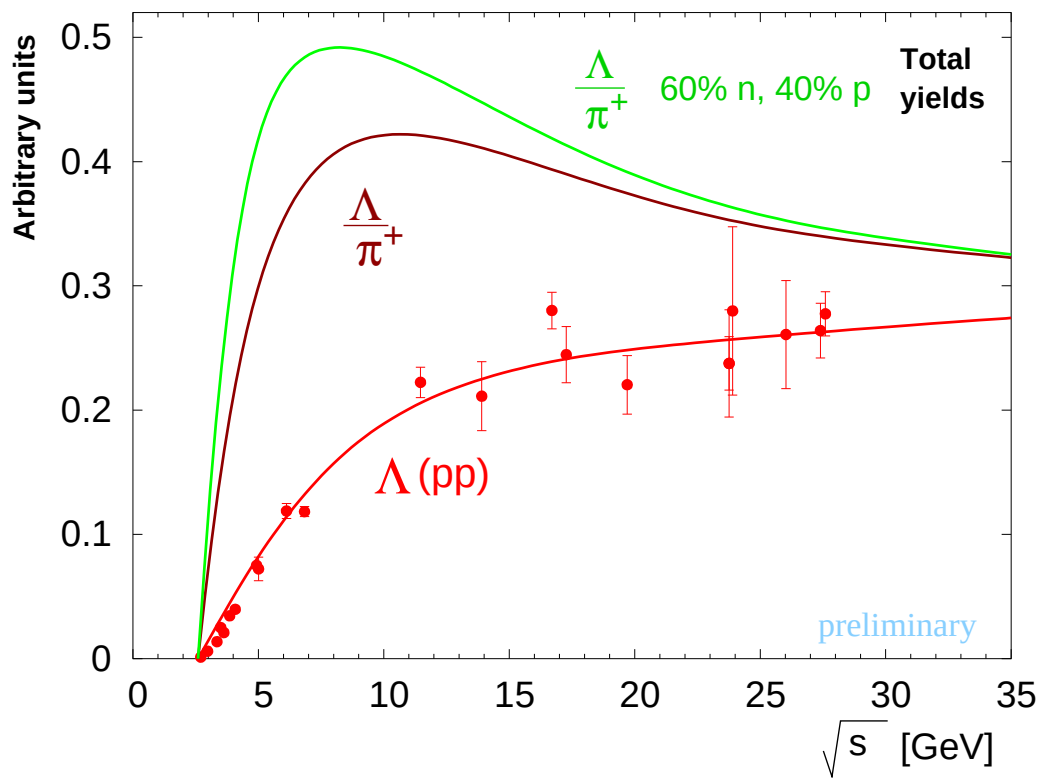
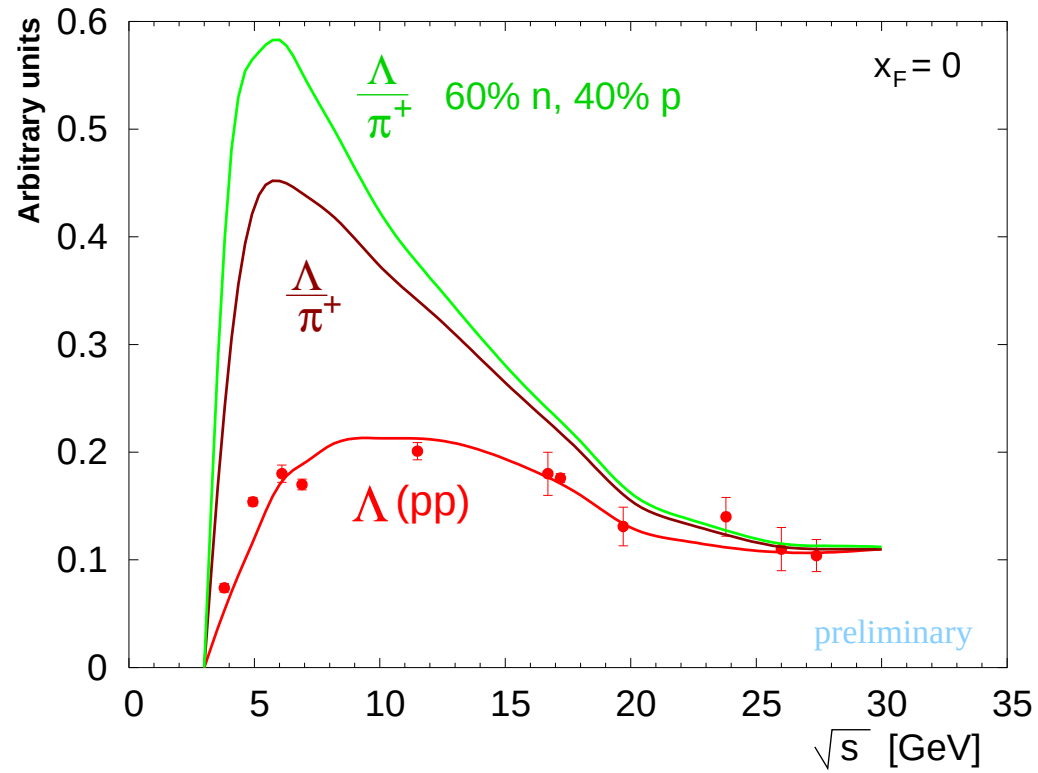
kaon production



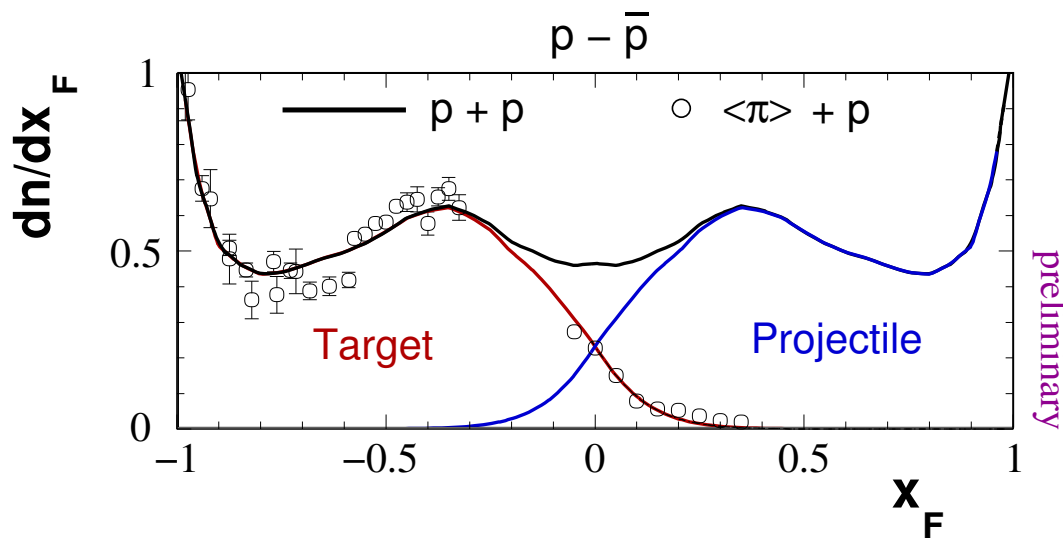
$$\left(\frac{K^+}{\pi^+}\right)^n = \left(\frac{K^+}{\pi^-}\right)^p = \left(\frac{K^+}{\pi^+}\right)^p \cdot \left(\frac{\pi^+}{\pi^-}\right)^p !$$



Λ production



3) multiple collisions



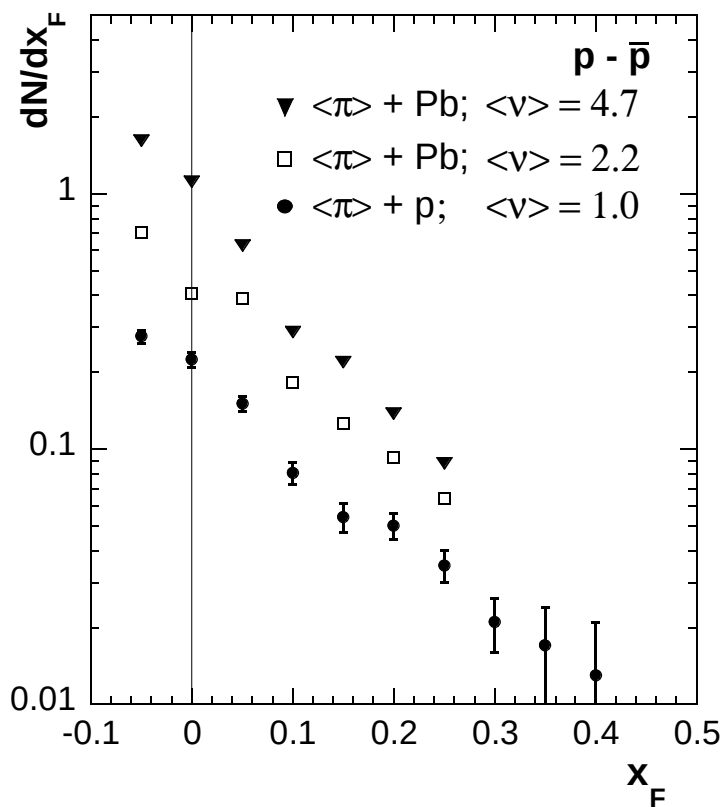
Note:

$$\langle \pi \rangle = \frac{\pi^+ + \pi^-}{2}$$

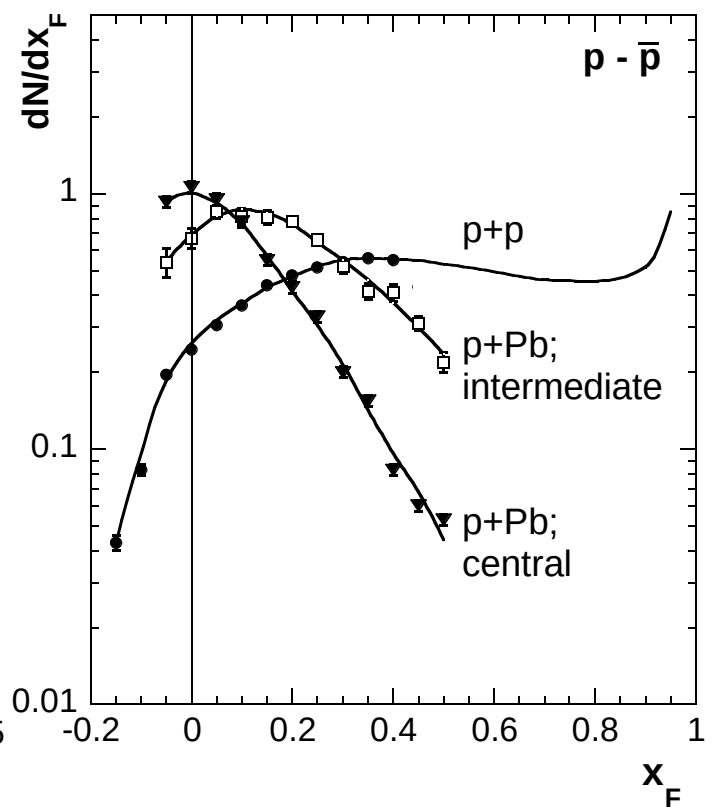
$pPb = \text{target} + \text{projectile}$

$\langle \pi \rangle Pb$

$pPb - \langle \pi \rangle Pb$



passive

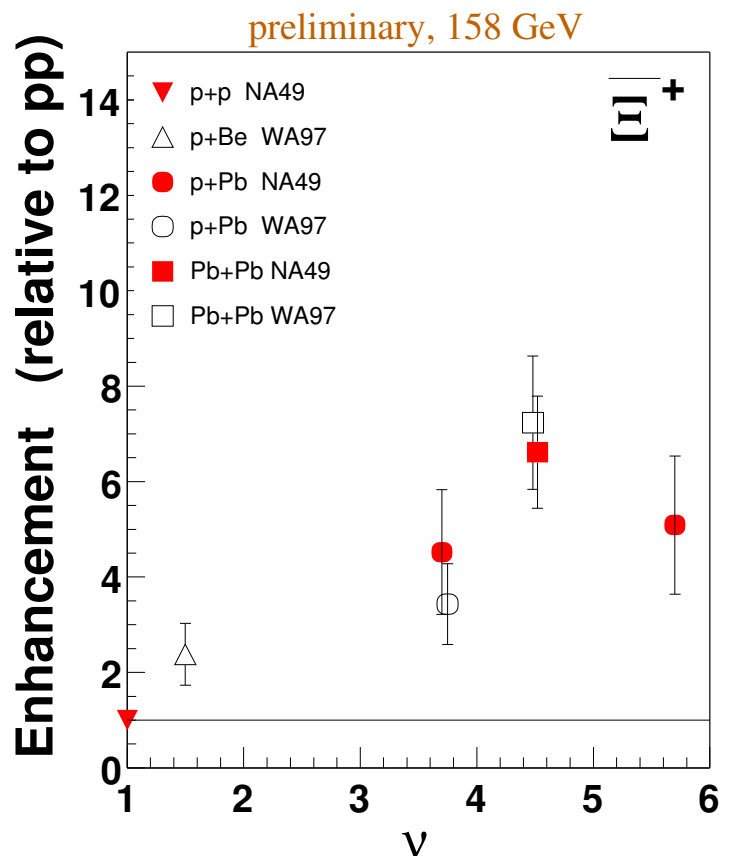
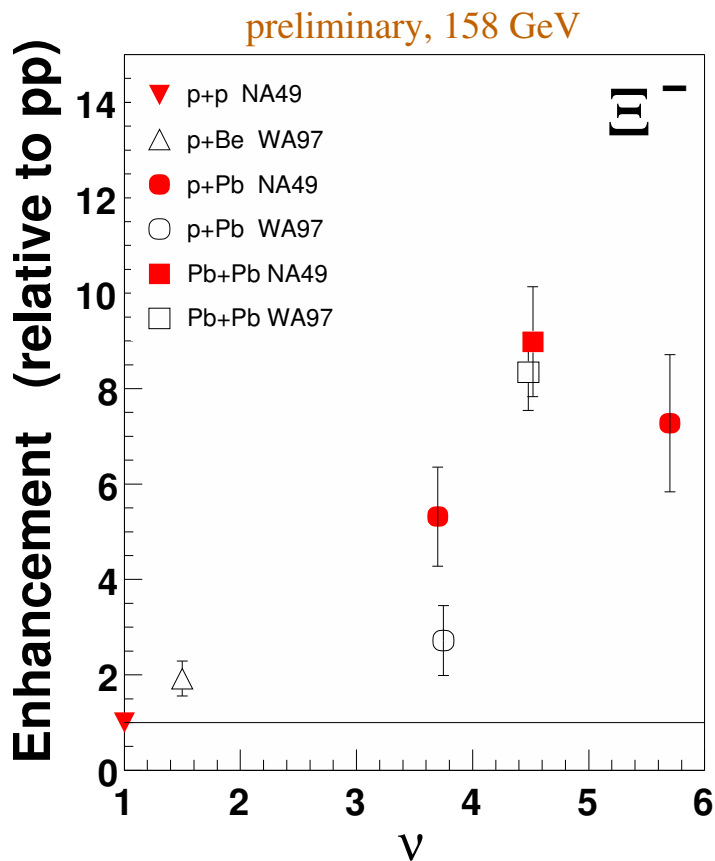


active

158 GeV, NA49 preliminary

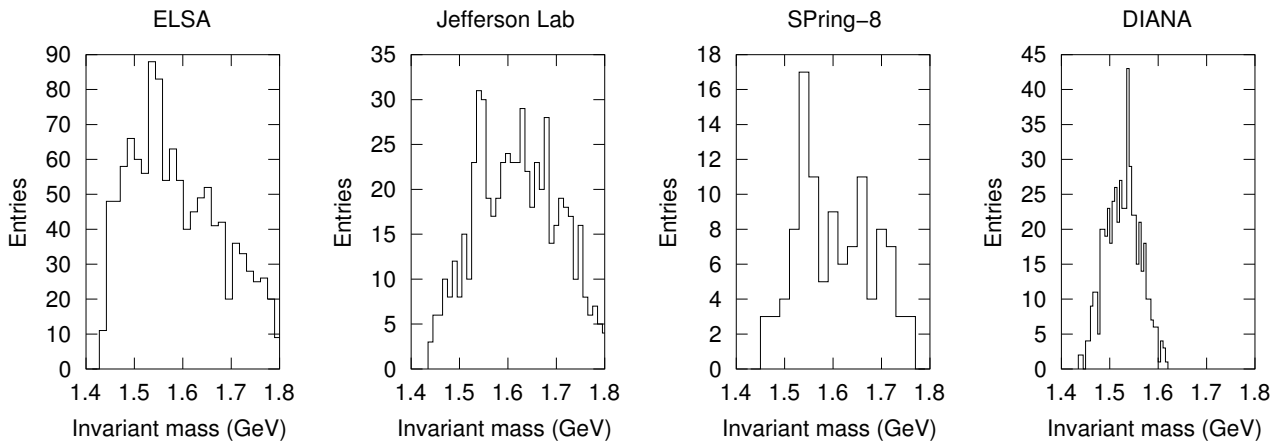
strange baryon production

- WA97, NA49: mid-rapidity yields in pp, pBe, pPb
→ deviations from VLN scaling
- how to interpret?

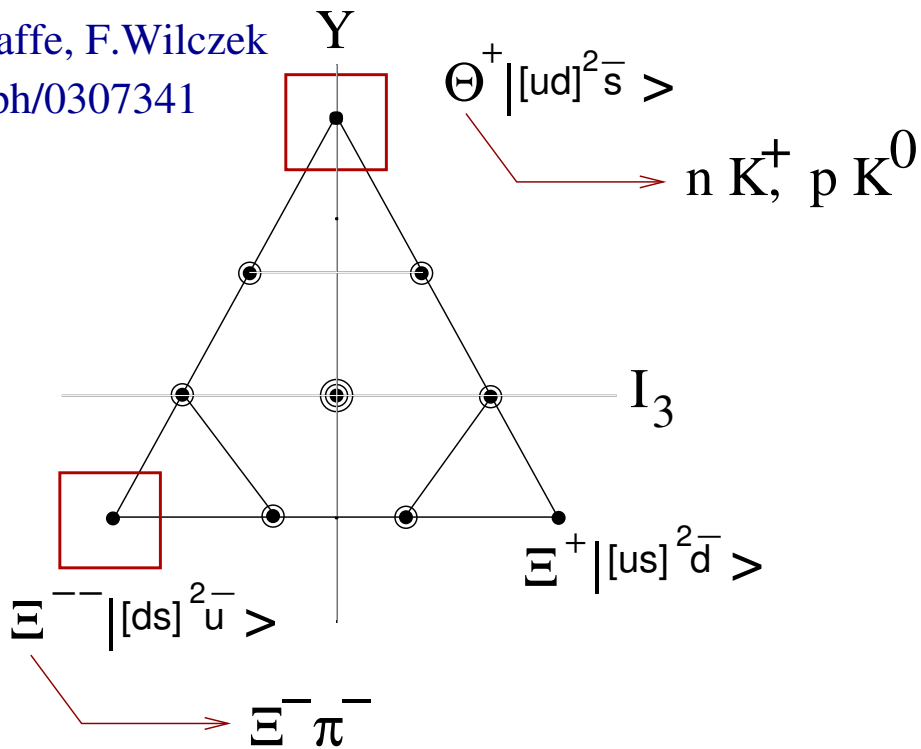


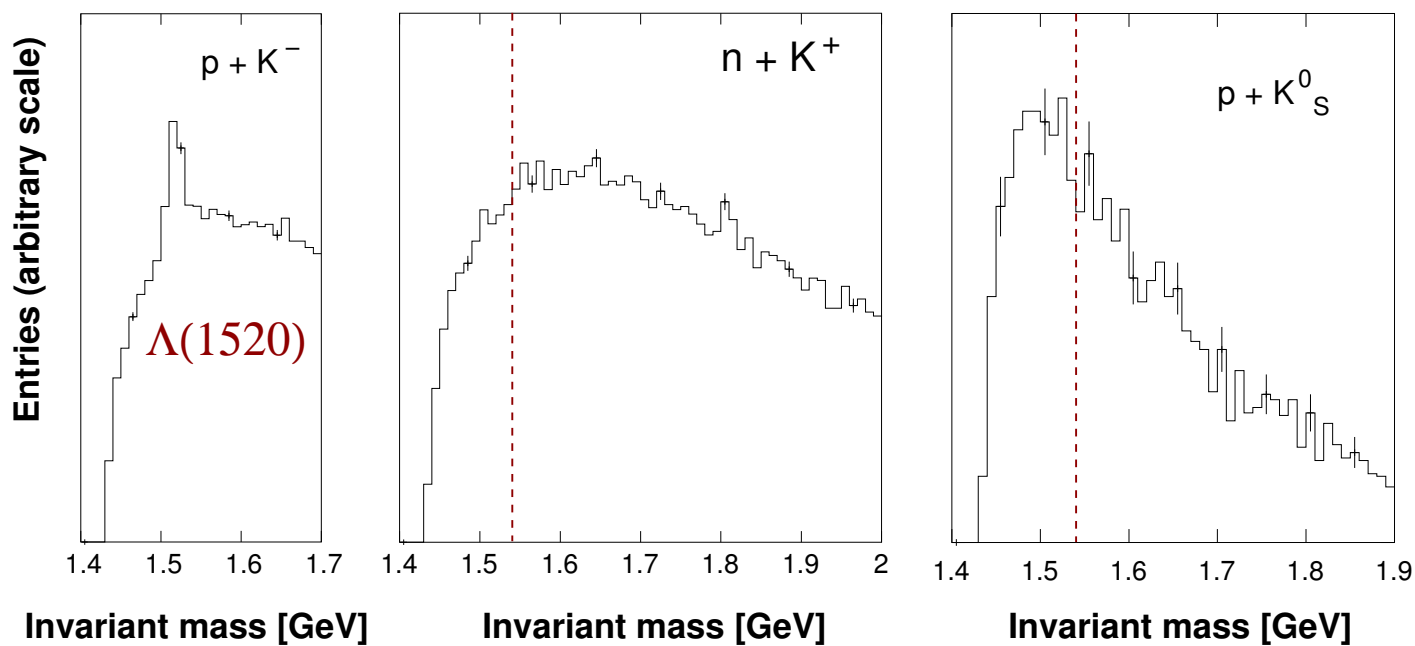
4) penta-quarks

$$\Theta^+(1540) : uud\bar{d}\bar{s} \longrightarrow nK^+, pK^0$$



R.L.Jaffe, F.Wilczek
hep-ph/0307341





5) summary

- NA49 provides a new, versatile dataset
- non-trivial isospin effects in elementary reactions
→ caution in $A+A$!
- projectile undergoing multiple collisions can be isolated
→ similar in $p+A/A+A$ → caution, again.