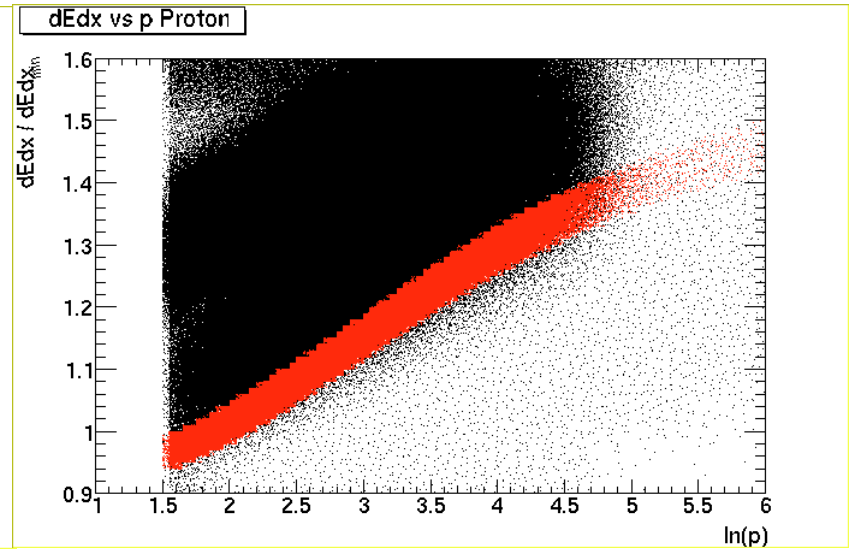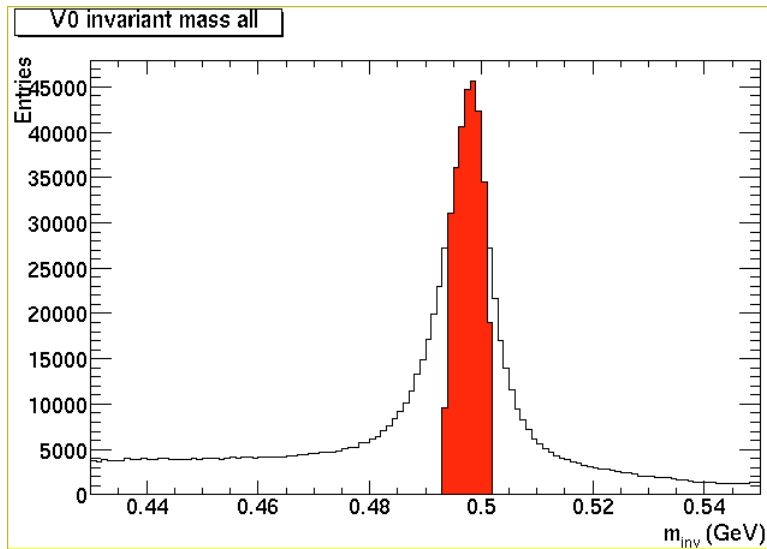# Pentaquark Search in Pb+Pb

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NA49 Collaboration Meeting
5.10. – 8.10. 2003

Pentaquark Search in Pb+Pb

- First look into the data
  - No tuning of parameter
  - No simulations
- Pb+Pb 158 AGeV
  - 20% most central, 256 timebin (01I)
  - 2×10^6 events analyzed
- $\theta^+ \rightarrow p + K^0$
- $\Xi^{--} \rightarrow \Xi^- + \pi^-$

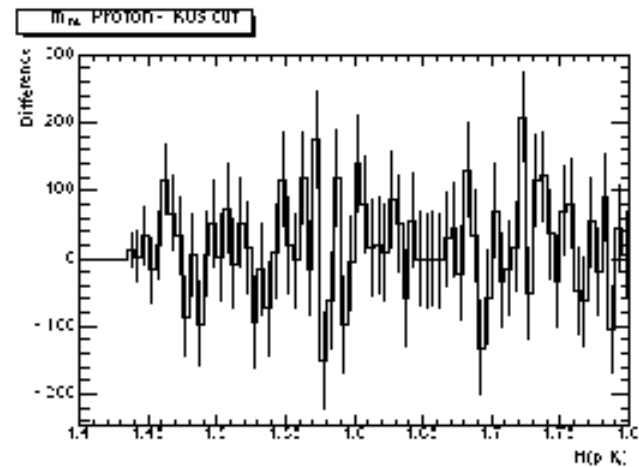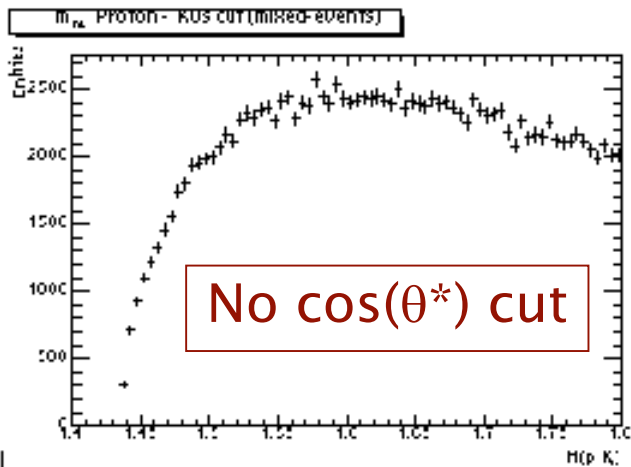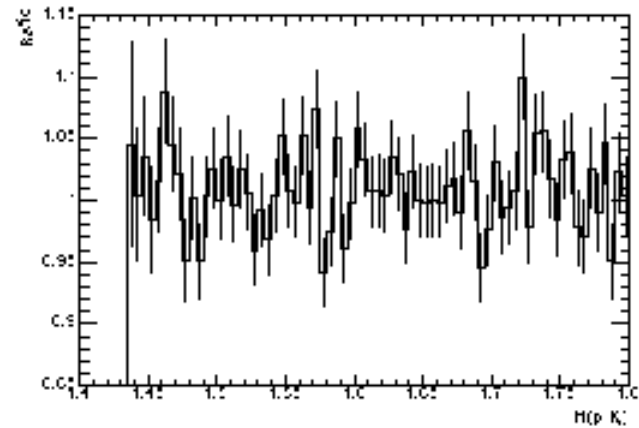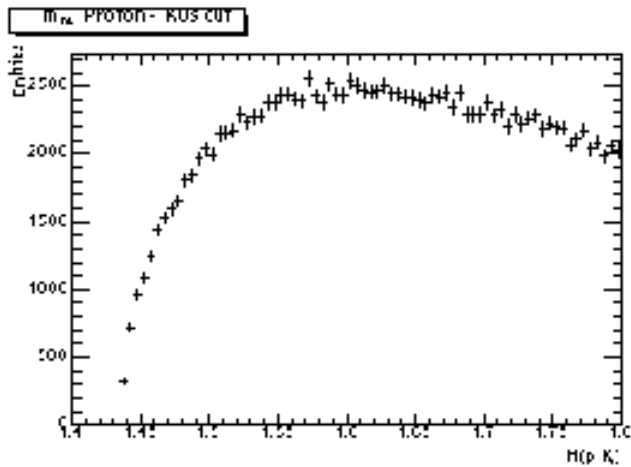# $\theta^+ \rightarrow p + K^0$ in central Pb+Pb

K^0 Cuts:

Z_{vertex}	>	-565.0 cm
$|x_{targ}|$	<	0.30 cm
$|y_{targ}|$	<	0.15 cm
$|y_1 - y_2|$	>	2.5 cm
p_t	>	0.2 GeV/c
$1.0 < y < 3.5$		
$\cos(\theta^*)$	>	-0.9

Proton Cuts:

$N_{point}(MTPC)$	> 30
$N_{point}/N_{maxpoint}$	> 0.55
p_{tot}	> 3.0 GeV/c
y	> 2.3
dEdx	< 1.75 σ
Φ-wedge cut 30°	

$\theta^+ \rightarrow p + K^0$ in central Pb+Pb

No cos(θ*) cut

$\theta^+ \rightarrow p + K^0$ in central Pb+Pb

$P_t > 0.5$ GeV/c

$\Xi^{--} \rightarrow \Xi^- + \pi^-$ in central Pb+Pb

Pion Cuts:

N_{point}(glb)	> 40
$N_{point}/N_{maxpoint}$	> 0.8
p_{tot}	> 0.1 GeV/c
p_t	= 0.2 – 0.7
y	> 2.3
dEdx	< 1 σ
$|b_x|$	< 1.0 cm
$|b_y|$	< 0.5 cm
Φ-wedge cut 30°	
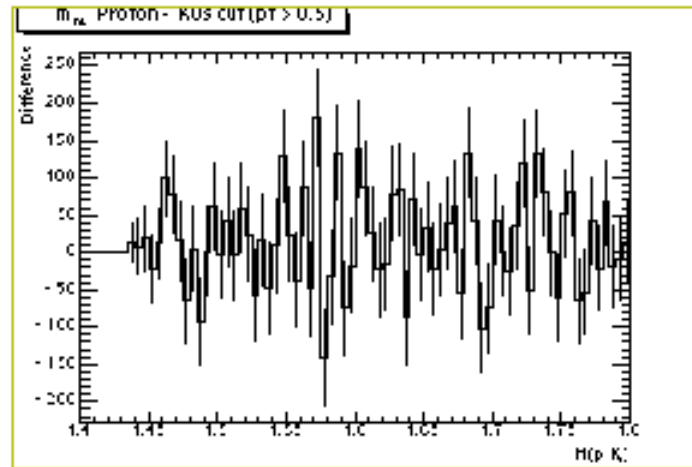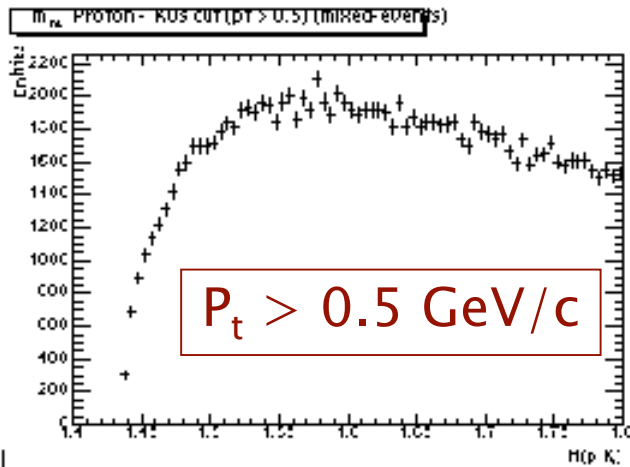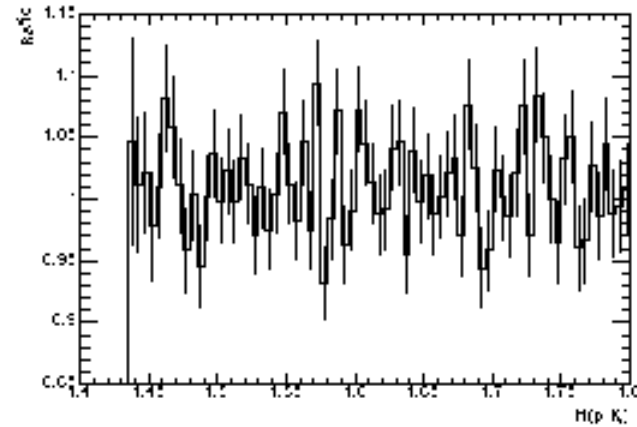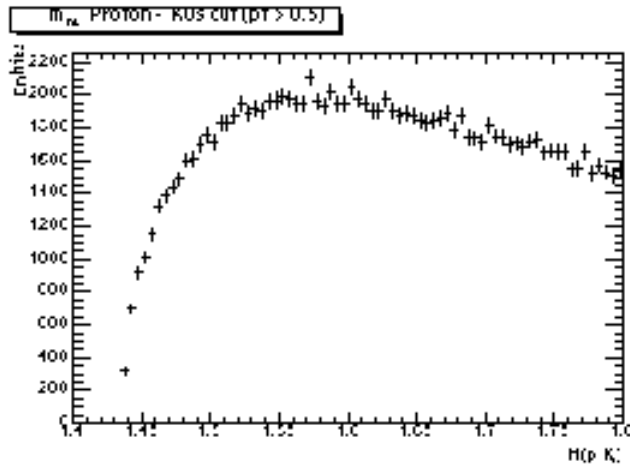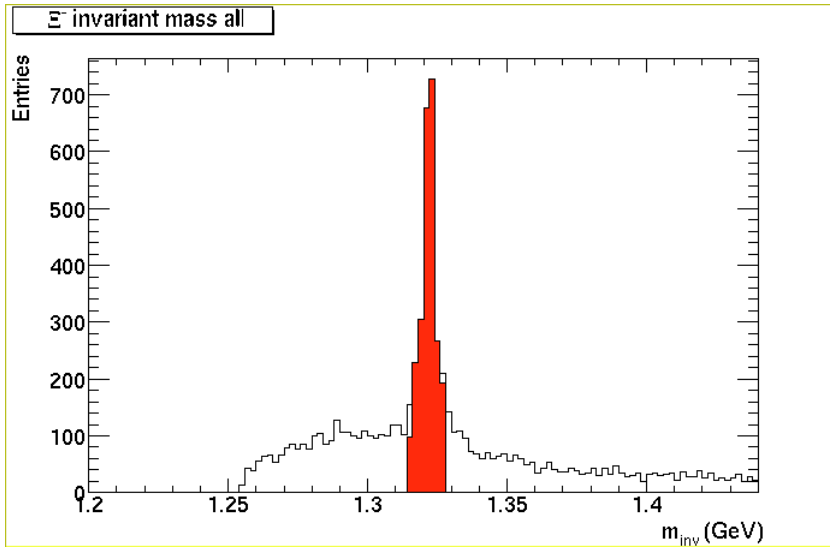
Ξ^- Cuts:

Z_{vertex}	>	–555.0 cm
$|x_{targ}|$	<	0.50 cm
$|y_{targ}|$	<	0.25 cm
$\cos(\theta^*)$	<	0.9
Z_{vertex} (Λ)	>	–510.0 cm

$\Xi^{--} \rightarrow \Xi^- + \pi^-$ in central Pb+Pb

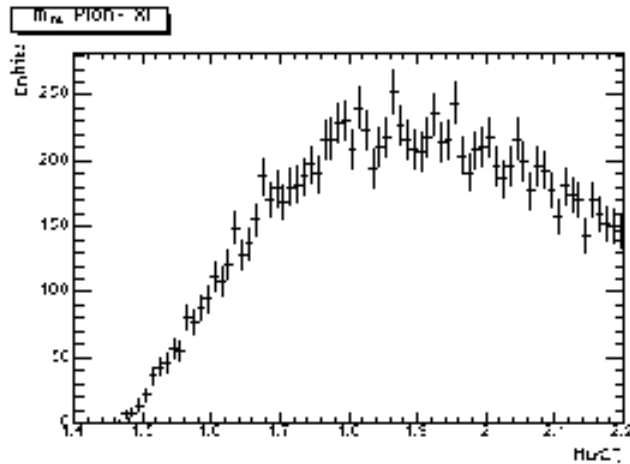No cos(θ*) cut
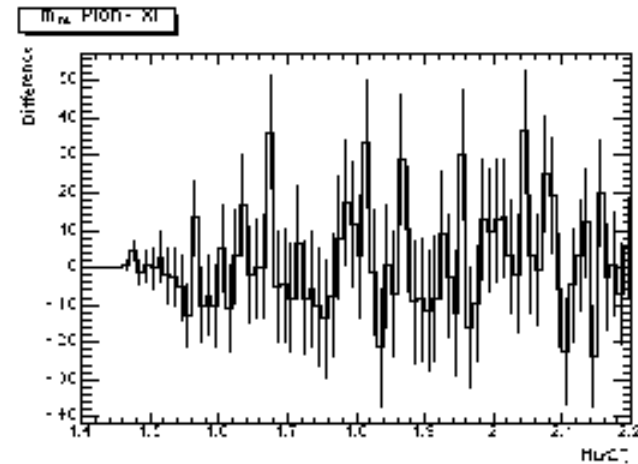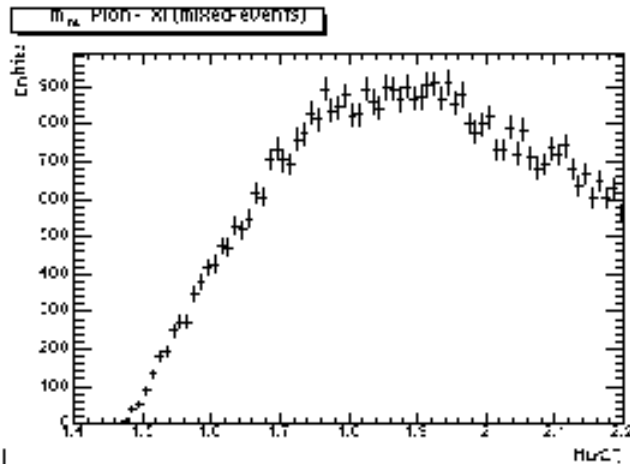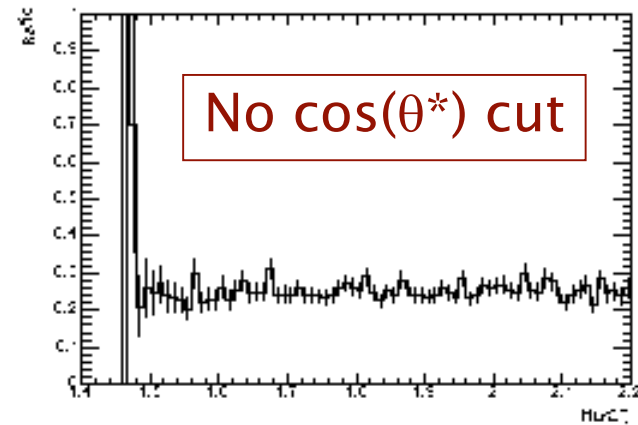
Conclusions

- So far no signal
- Use input from simulation
  - Pair cuts (e.g. $\cos(\theta^*)$)
- Add different isospins (e.g. $\Xi^{--} \rightarrow \Xi^- + \pi^-$, $\Xi^- + \pi^+$, …)
- Statistics
  - 96 Production (but no Ξ on mini-DSTs)
  - Other beam energies
- p+p Data:
  - Use 2000 data, 1.5×10^6 events after cuts
  - Bham + MTV0 finder $\rightarrow$ different Ξ cuts?
  - Work in progress