

Lambda Production @ 30A GeV

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Outline:

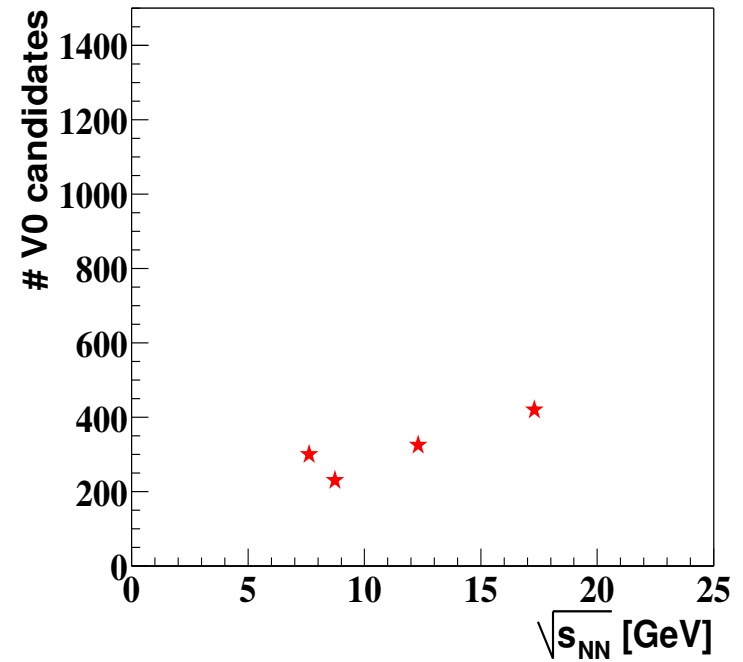
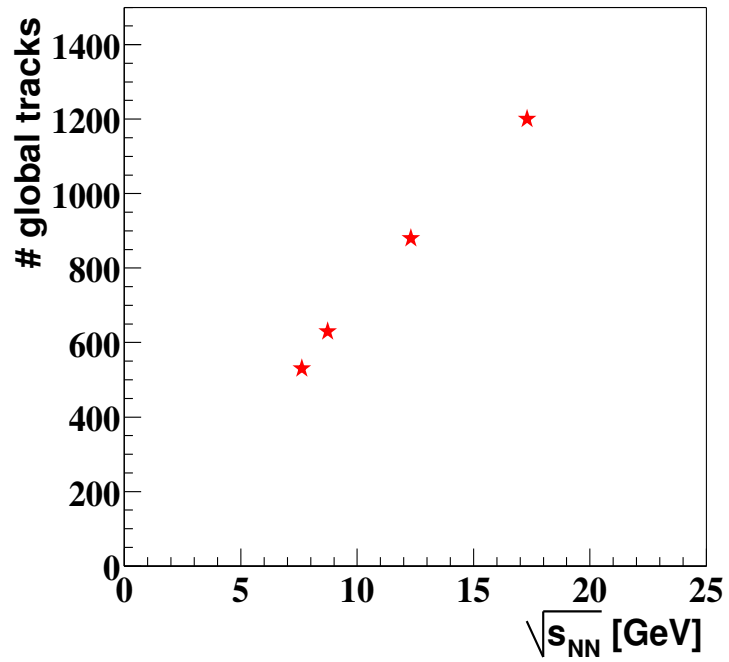
- Data sample
- Some systematic studies
- Applied cuts
- Invariant mass distribution
- “Spectra” (uncorrected)
- Future Progress

NA49 Collaboration Meeting, March 28th – 31th 2003, CERN

Data Sample

- Central (7%) Pb+Pb collisions @ 30A GeV
- Std+ magnet field configuration
- 02J production
- ~280k events (450k available)
- Additional information: $y^*=2.08$ and $\sqrt{s_{NN}}=7.62$ GeV

Systematic Studies

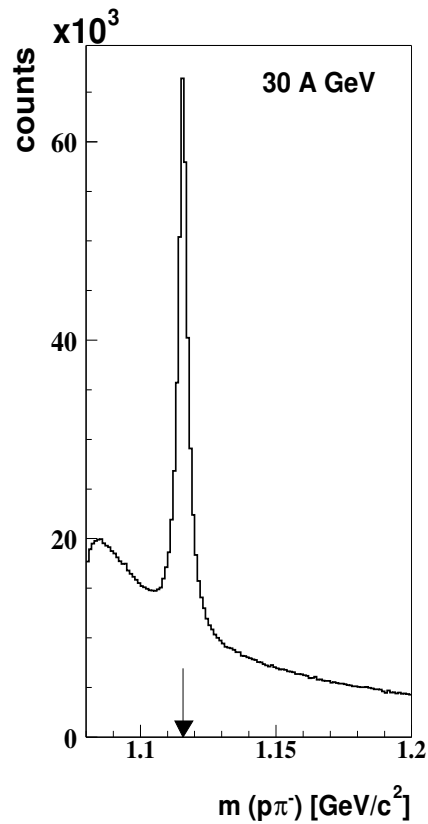


Applied Quality Cuts

- Take only GSI type V0 (corresponds to a certain set of V0 Finder cuts)

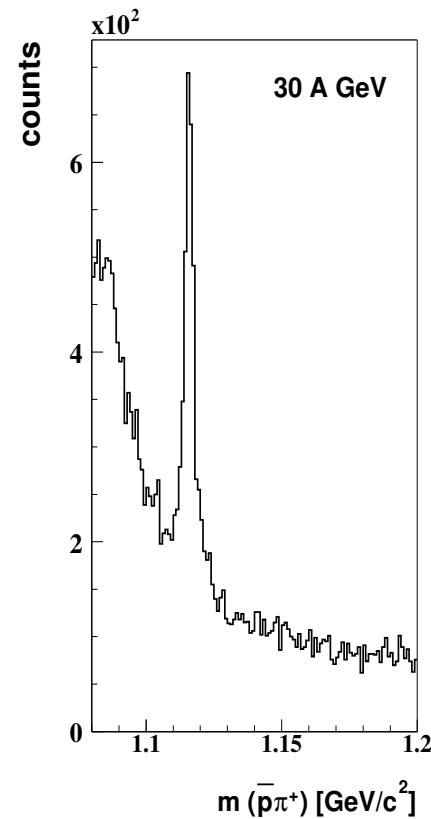
Cut variable	Lambda	Antilambda
vertex_z	> -550 cm	
lx_targl	<= 0.5 cm	<= 0.35 cm
ly_targl	<= 0.2 cm	<= 0.25 cm
cos θ^*	[-0.9, 1.]	[-0.8, 0.7]
τ/τ_0 (cm)	[0.3, 5]	
V0 decay vertex outside VTPC's		
pot. point cut on daughter tracks: 20/25 for VT1 / VT2		
dE/dx cut on	-	anti-proton (+- 4σ)
pion momentum	-	≥ 0.6 GeV/c

Invariant Mass Distribution



250k Lambdas \rightarrow 0.9 L/ev

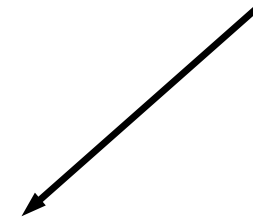
$\sigma_{\text{mass}} = 2.06$ MeV



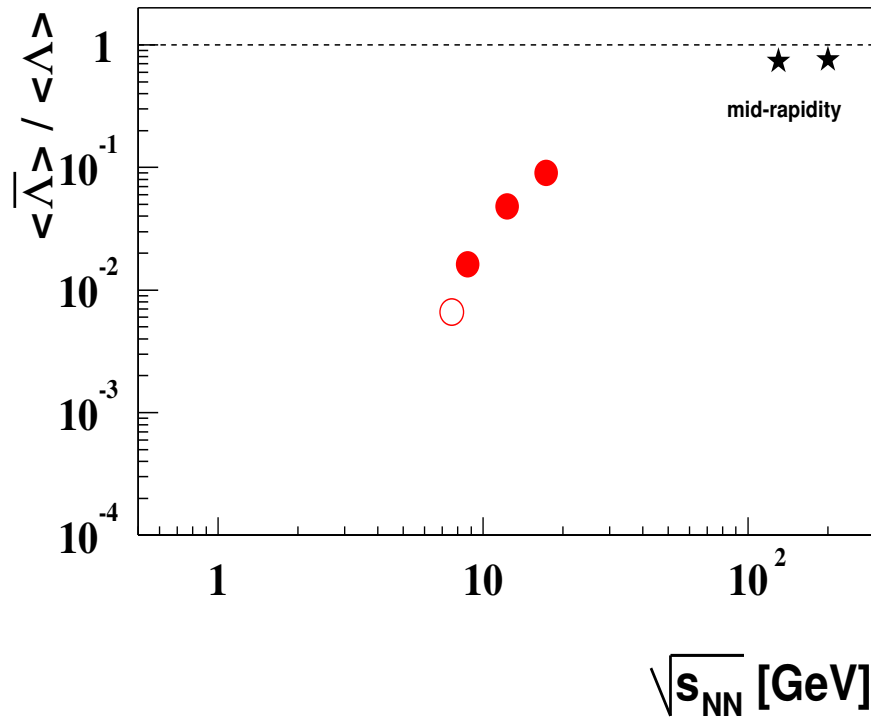
1.6k Antilambdas \rightarrow 0.006 antiL/ev

$\sigma_{\text{mass}} = 1.7$ MeV

0.011 @ 40AGeV
0.027 @ 80AGeV



AntiL/L Ratio (uncorr.)



- $\text{antiL/L} = 0.0066 = R(30)$

- $R(40)/R(30) = 0.0162 / 0.0066$
 ~ 2.5

-> μ_B increases by **~25%**
when going from 40 -> 30 AGeV

Summary and Outlook

- Good mass resolution (~ 2 MeV)
- Raw yields: $N(L @ 30) \sim N(L @ 40)$
 $N(\text{anti}L @ 30) \sim 0.5 * N(\text{anti}L @ 40)$
- Baryo-chem. Potential increases by 25 % (40- \rightarrow 30AGeV)
- Pt and Y spectra (even for antiL) should be possible

NEXT:

- Correction calculation for acceptance and efficiency