



4.7 GeV Cu+Al beam+pipe event analysis

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Light flavor spectra meeting
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Summary of Low Energy Test Runs

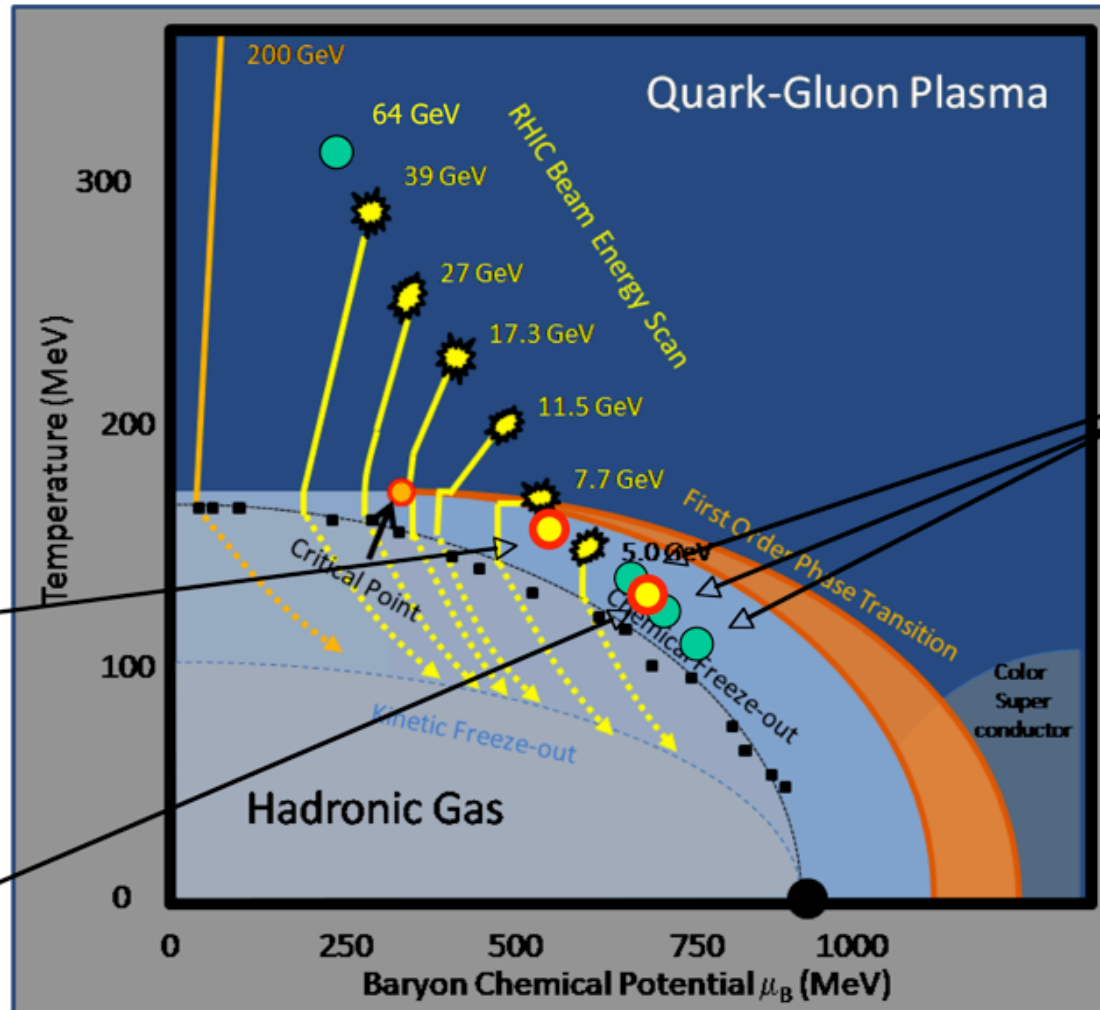
Collision Energy (GeV)	Single Beam Energy	Single Beam P_z (GeV/C)	Fixed Target \sqrt{s}	Single Beam Rapidity	Center of Mass Rapidity
22.4 Cu+Cu	11.2	11.16	4.66 Cu+Al	3.18	1.59
19.6 Au+Au	9.8	9.76	4.47 Au+Al	3.04	1.52
9.2 Au+Au	4.6	4.50	3.21 Au+Al	2.28	1.14

Proposed Beam Energy Scan



What if the critical point is here?

Or here?



Fixed Target points

Magnet

EMC

CTB

TPC

EEMC

y=2

y=1.5

y=1

y=2

y=1.5

y=1

ZDC

FTPC

SVT

FTPC

ZDC

Al Beam Pipe

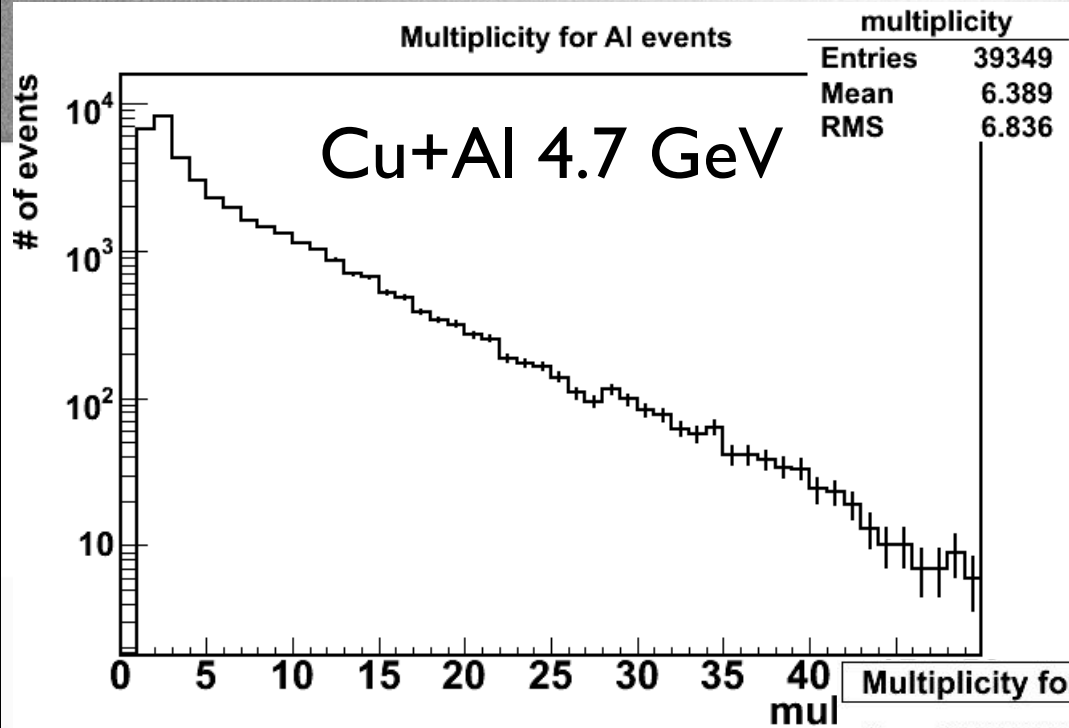
Be Beam Pipe

Al Beam Pipe

ToF

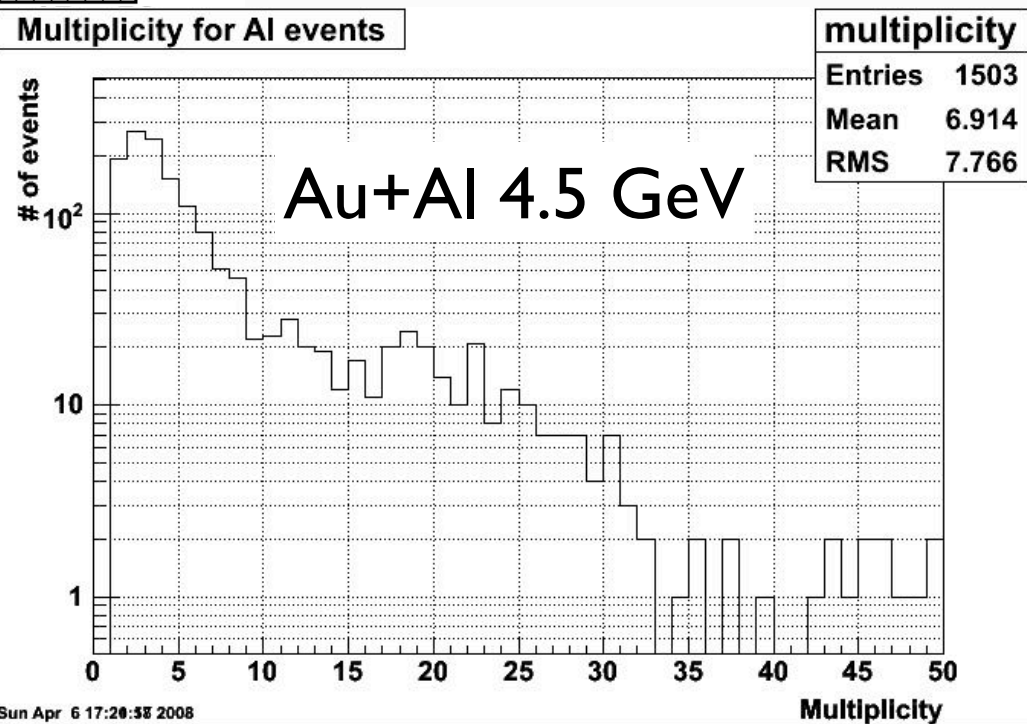
3





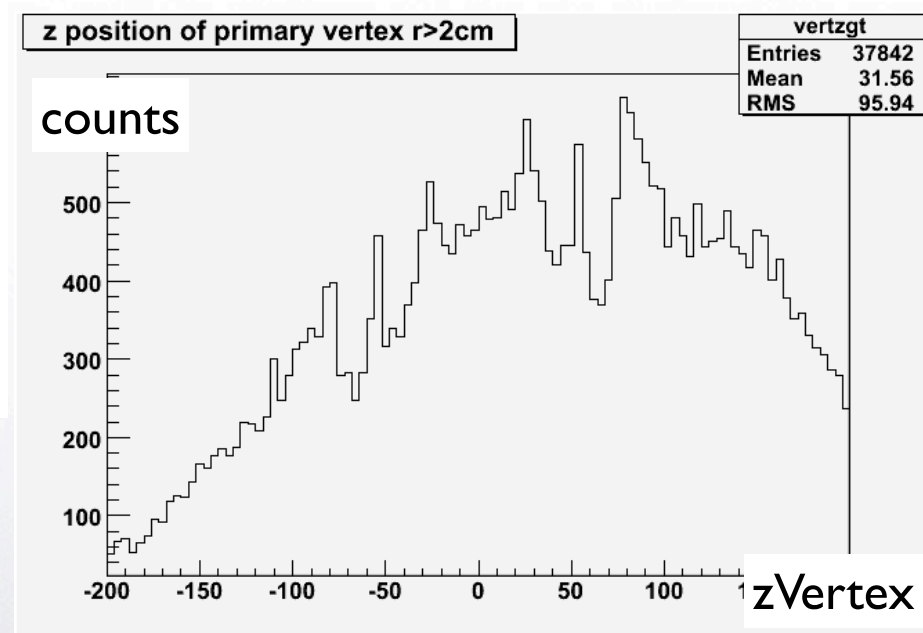
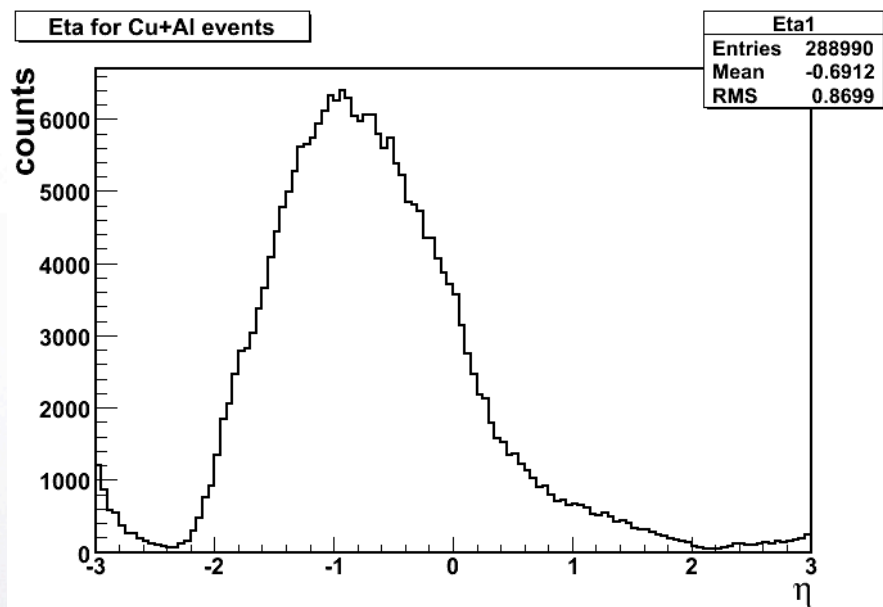
Beam+Pipe Cu+Al Cuts:

- $|zVertex| > 75$ cm
- $rVertex > 2$ cm
- multiplicity > 1
- $\sum p_z * zVertex < 0$



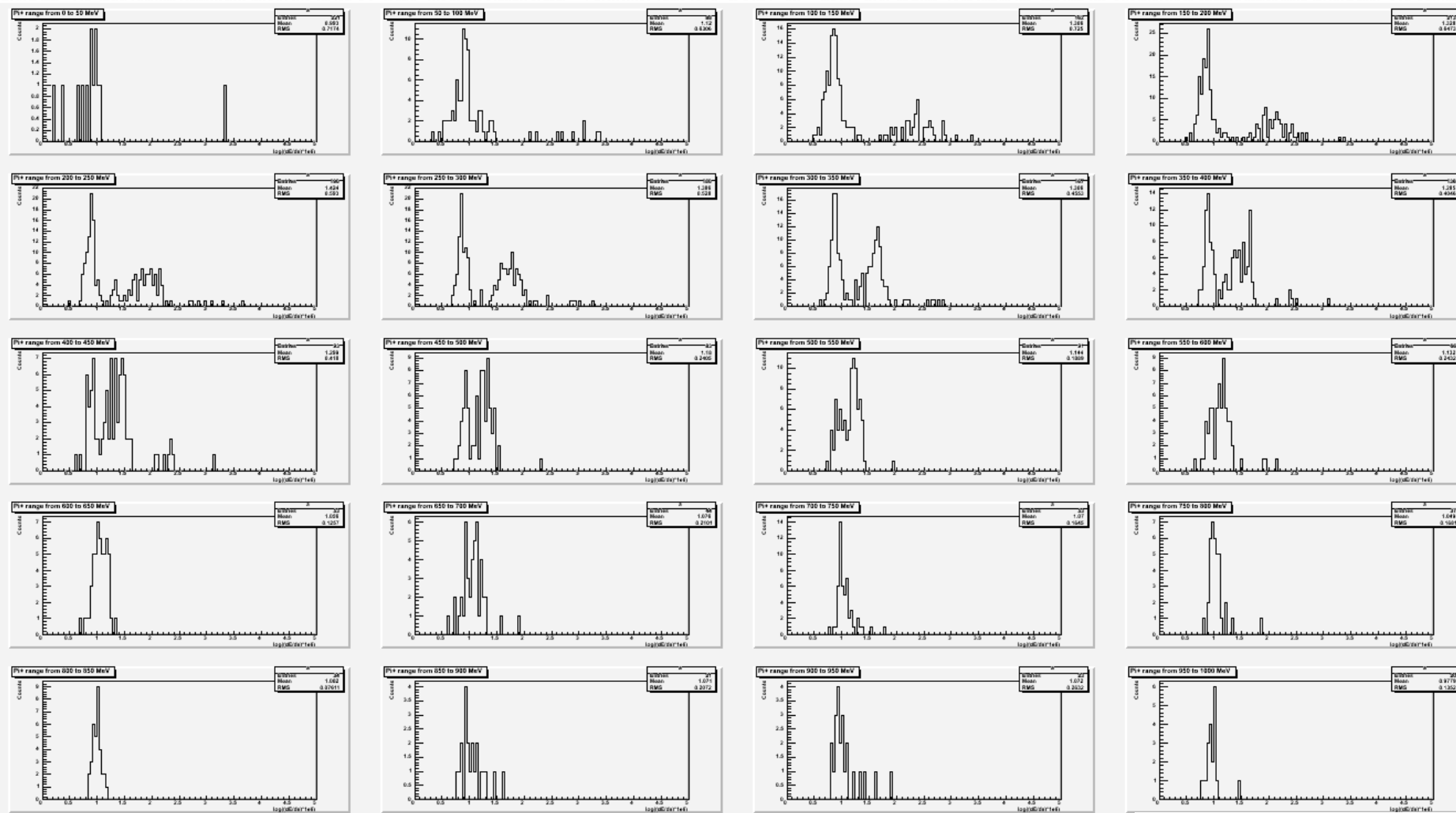


Event characteristics



home icon
 $m_T - m_0$
0 - 50 MeV

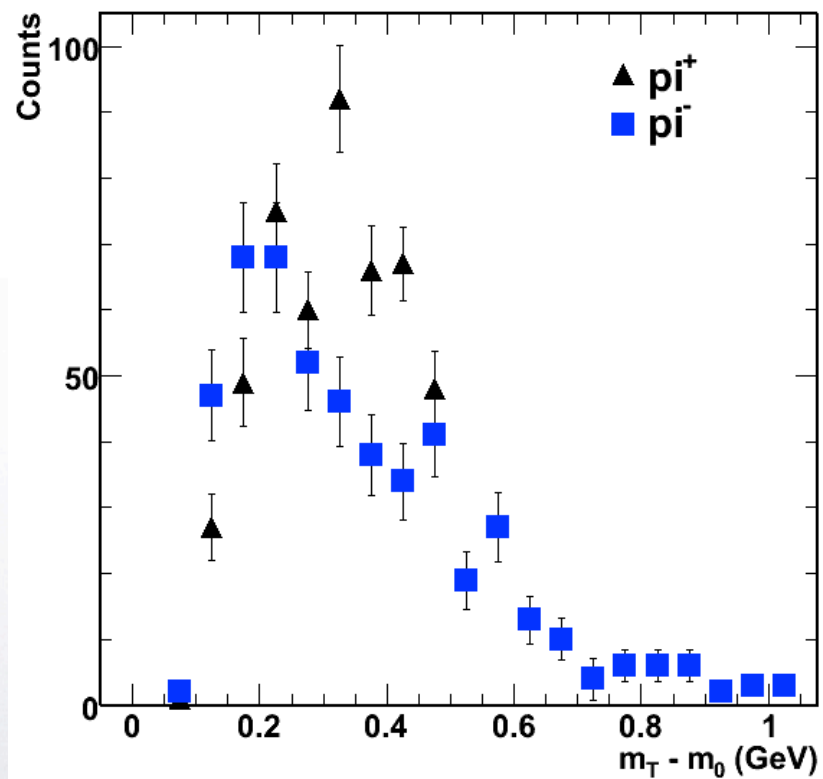
π^+ spectra Cu+Al 4.7 GeV



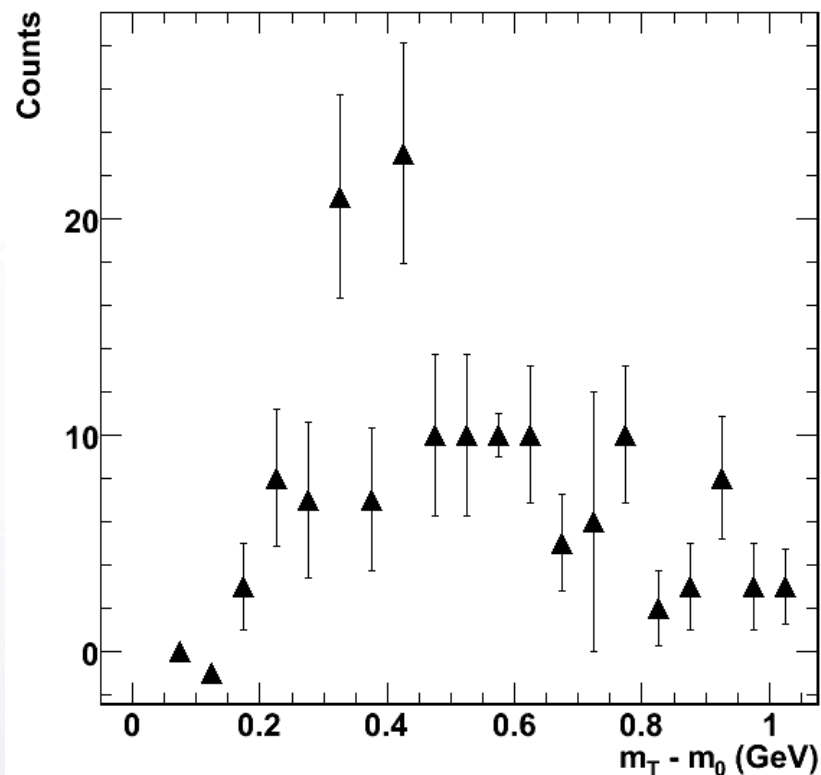
$m_T - m_0$
950 - 1000 MeV



Raw Pion Yields



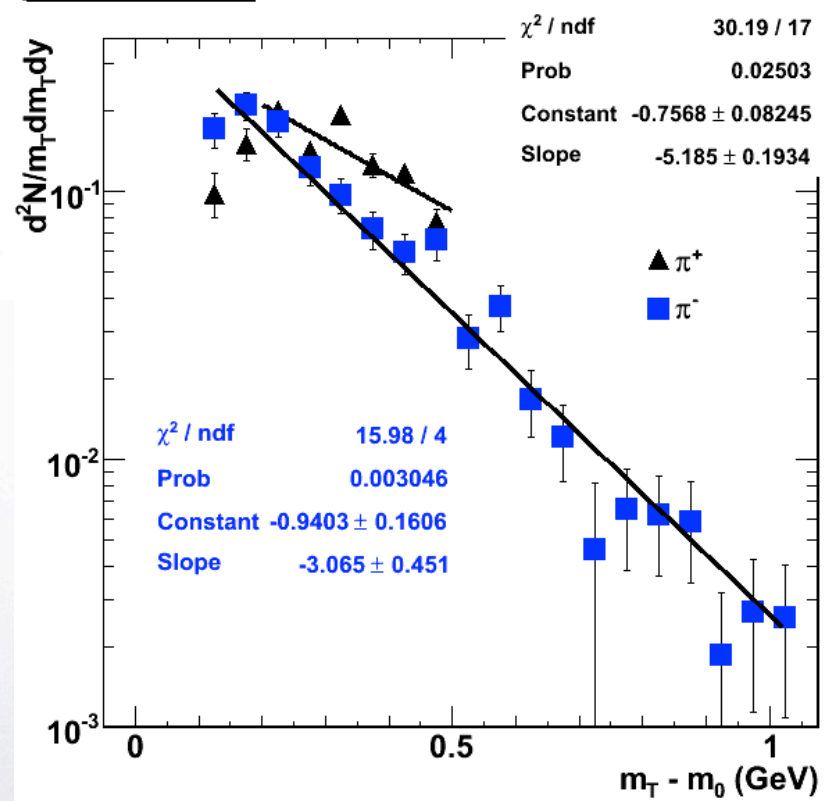
Raw Proton Yields



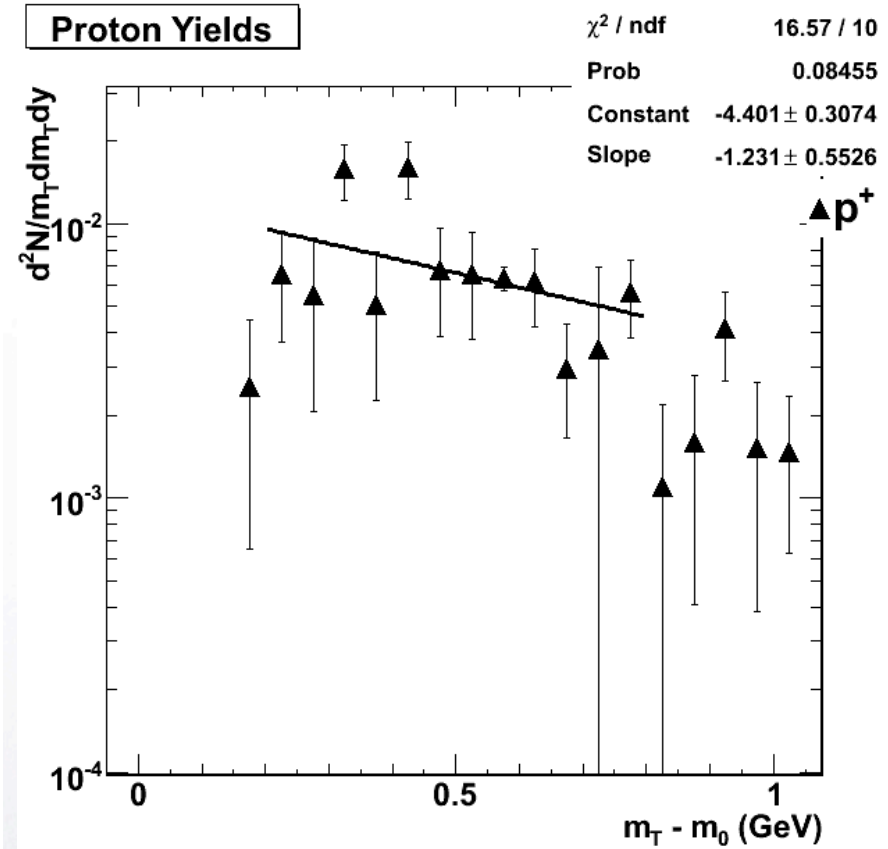
$$y = 1.59 \pm 0.25$$



Pion Yields



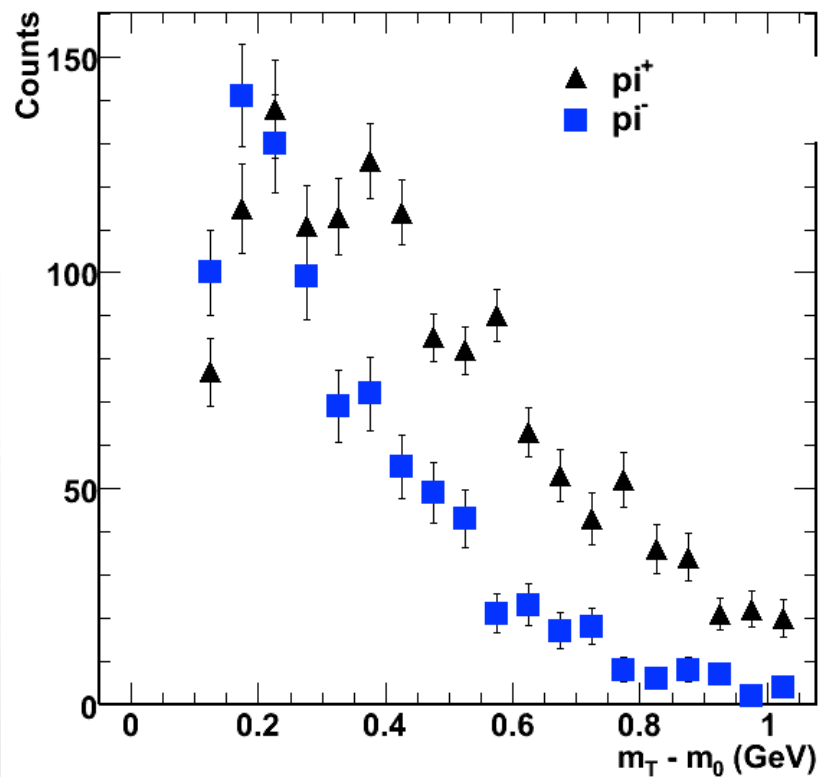
Proton Yields



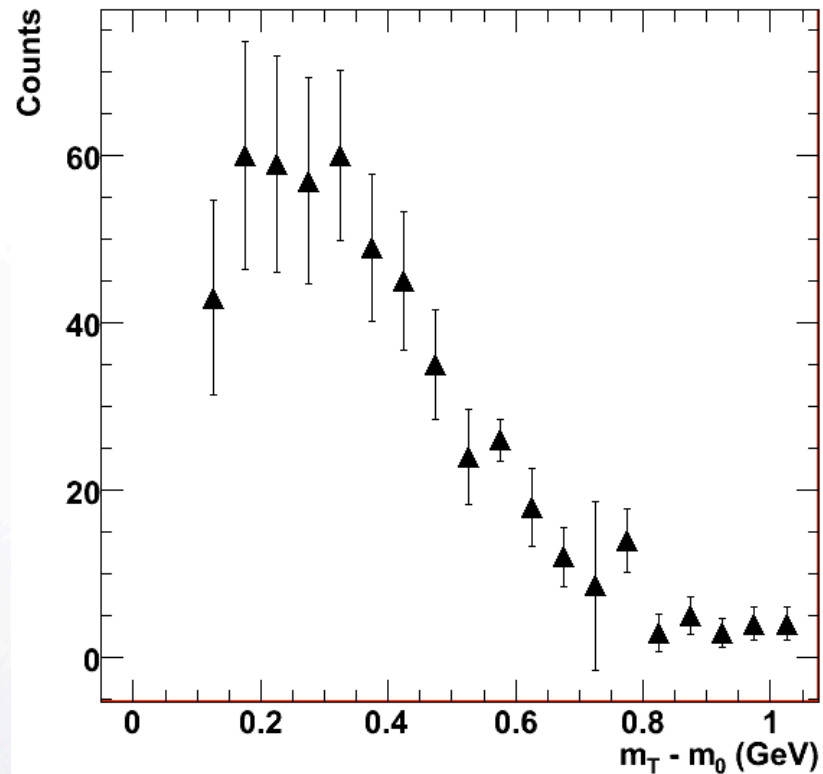
$$y = 1.59 \pm 0.25$$



Raw Pion Yields



Raw Proton Yields

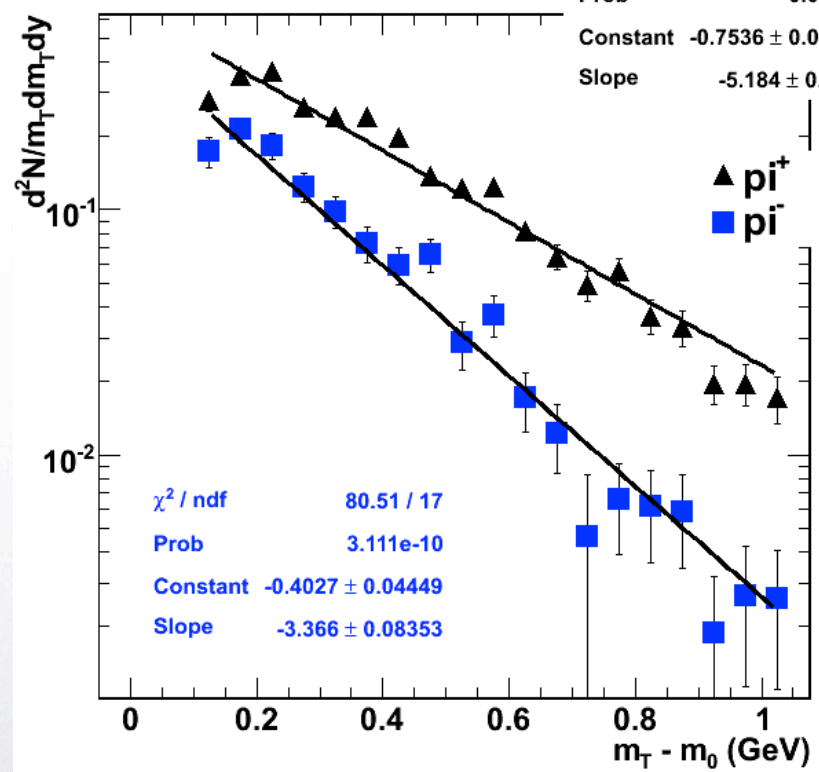


$$y = 1.13 \pm 0.25$$



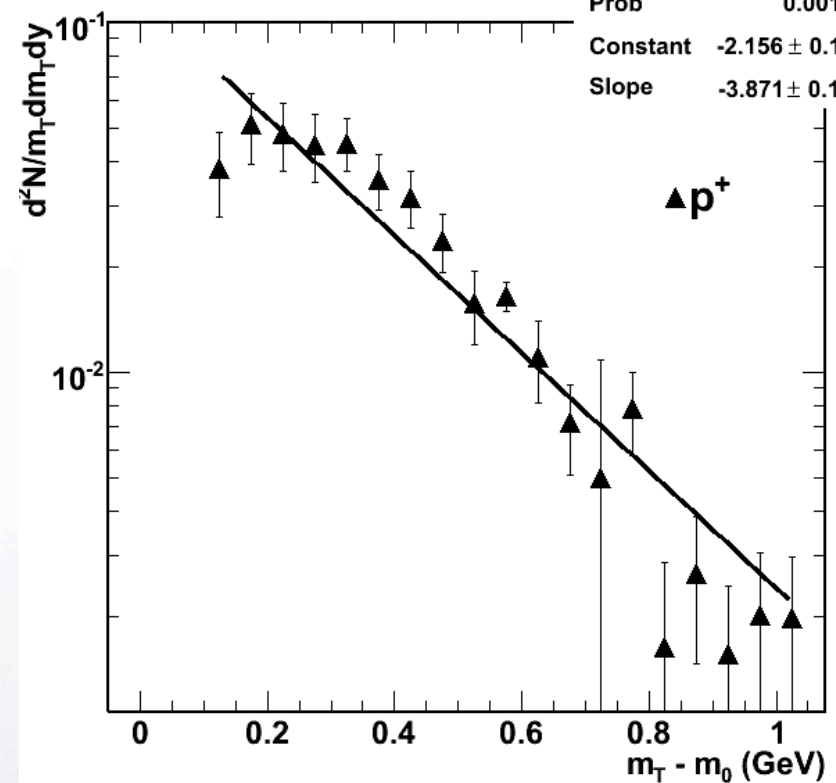
Pion Yields

χ^2 / ndf 30.42 / 17
Prob 0.02348
Constant -0.7536 ± 0.08123
Slope -5.184 ± 0.1911



Proton Yields

χ^2 / ndf 38.86 / 17
Prob 0.001868
Constant -2.156 ± 0.1033
Slope -3.871 ± 0.1875



$$y = 1.13 \pm 0.25$$



Conclusions and Outlook

- we have been able to extract yields and spectra from several species for fixed target collisions at lab rapidity
 - need to understand centrality
 - need to understand detector efficiency at high rapidities
 - need much better statistics - this study is a proof of principle
 - the ultimate aim is to get yields and slopes which compare favorably with published data in this energy range