Kaon Production in Minimum Bias Pb+Pb Collisions at 40 and 158 AGeV

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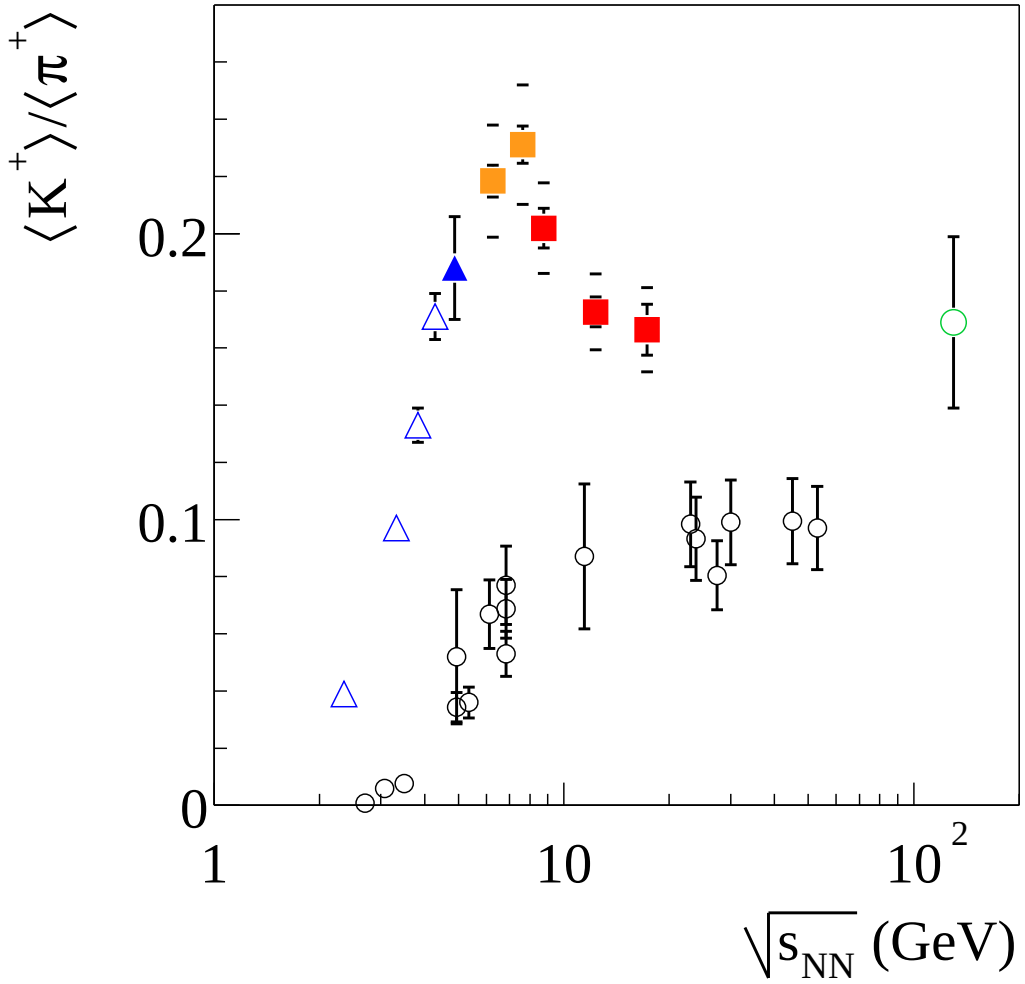
- Motivation
- Analyzed data
- 40 GeV min. bias
- 160 GeV min. bias
- To-do for QM'04

Motivation



What happens between p+p and central Pb+Pb?

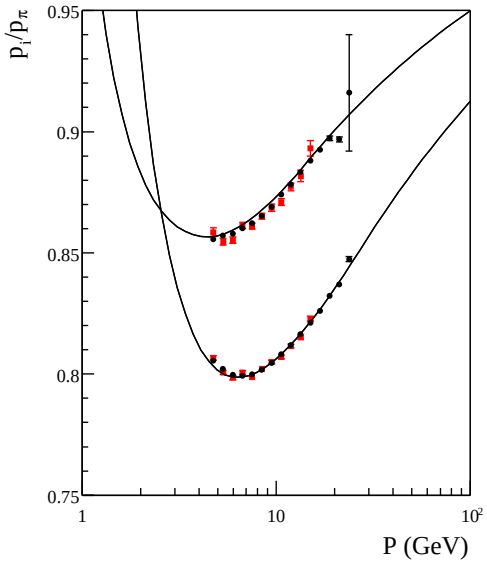
Are these phenomena due to a change from a canonical to a grand canonical system?

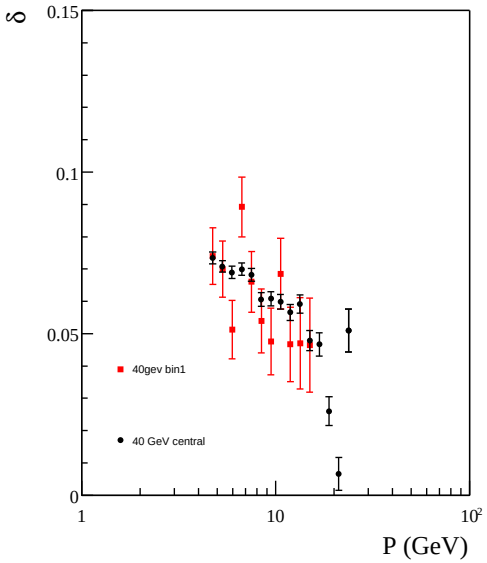
Or due to a phase transition to non-hadronic matter with more degrees of freedom?

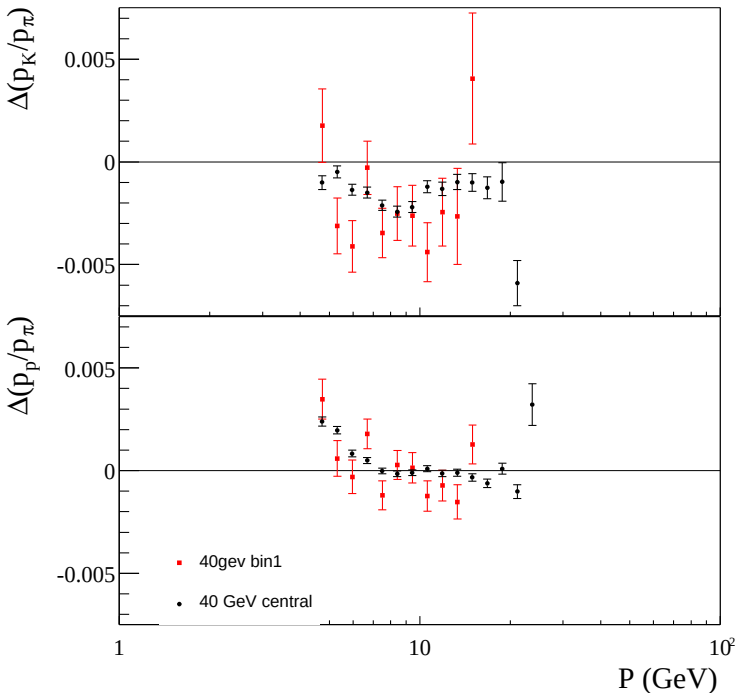
Analyzed Data Sets

	40 AGeV 2001 02C std+	160 AGeV 1996 00M std+
bin 1	15.665	13.544
bin 2	23.405	19.433
bin 3	36.713	28.845
bin 4	58.285	31.621
bin 5	77.386	68.383
bin 6	175.101	98.599
Sum	**386.555**	**260.425**

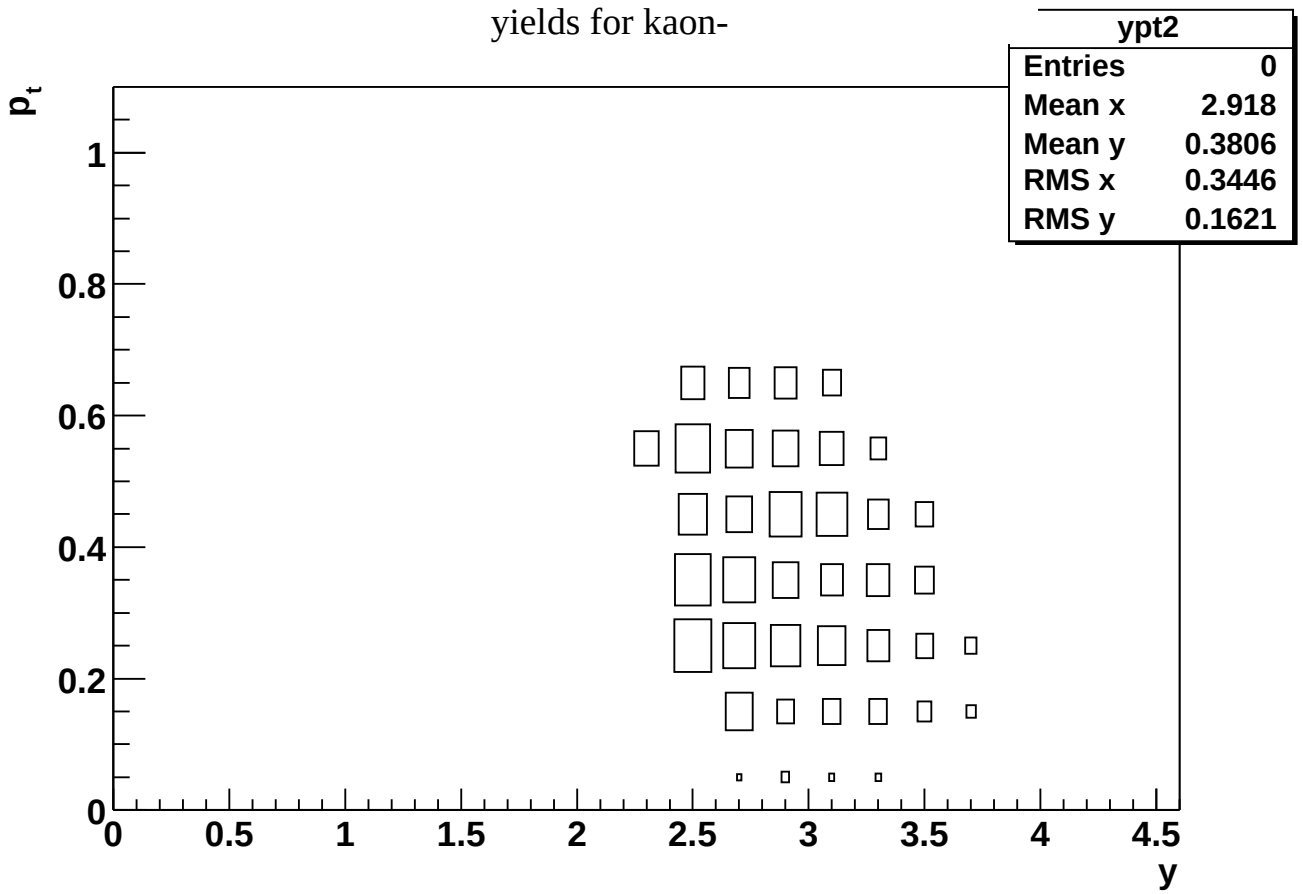
dE/dx Parametrization @ 40 AGeV



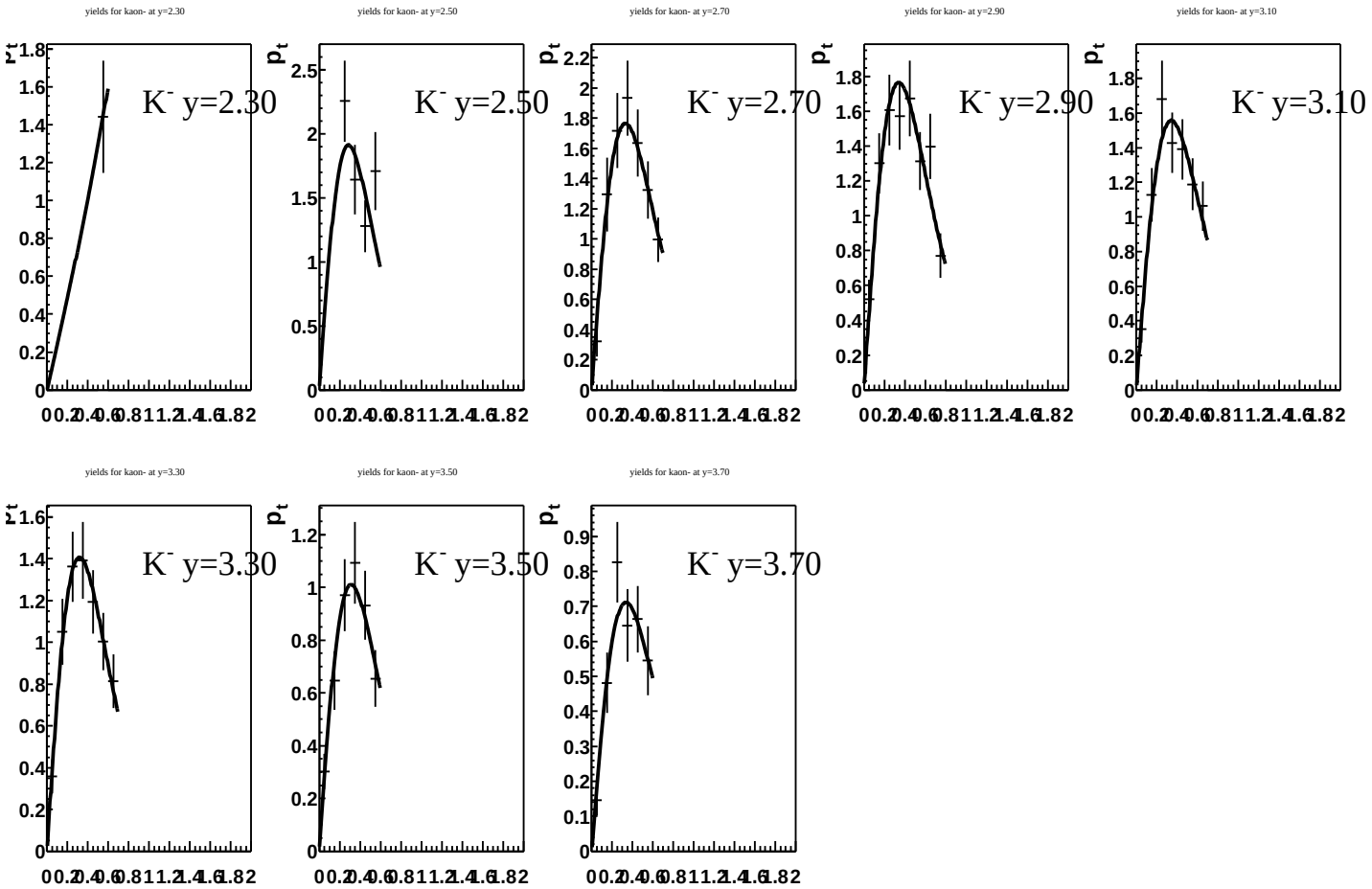




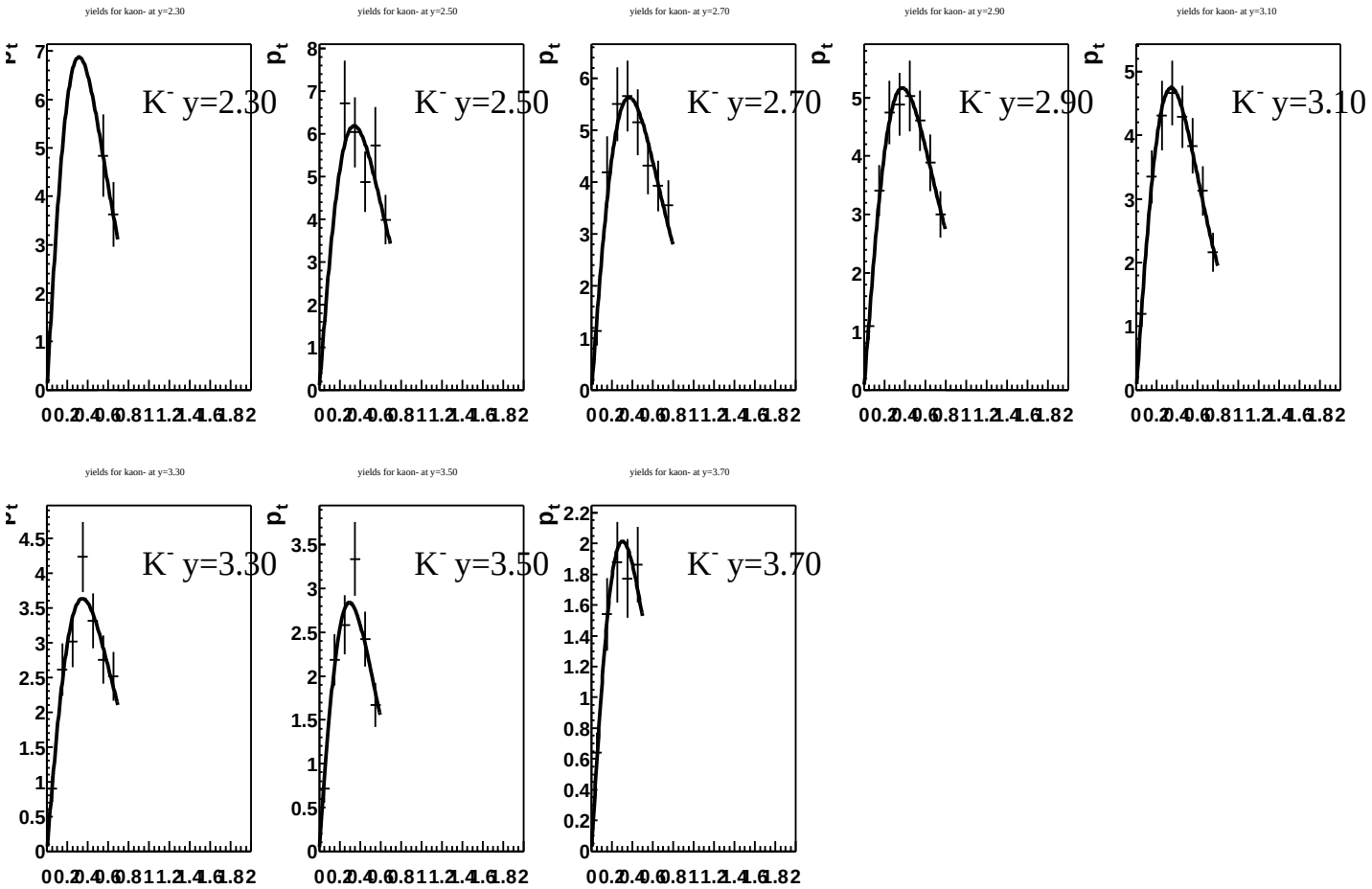
K^- Rapidity - Pt @ 40 AGeV bin 1



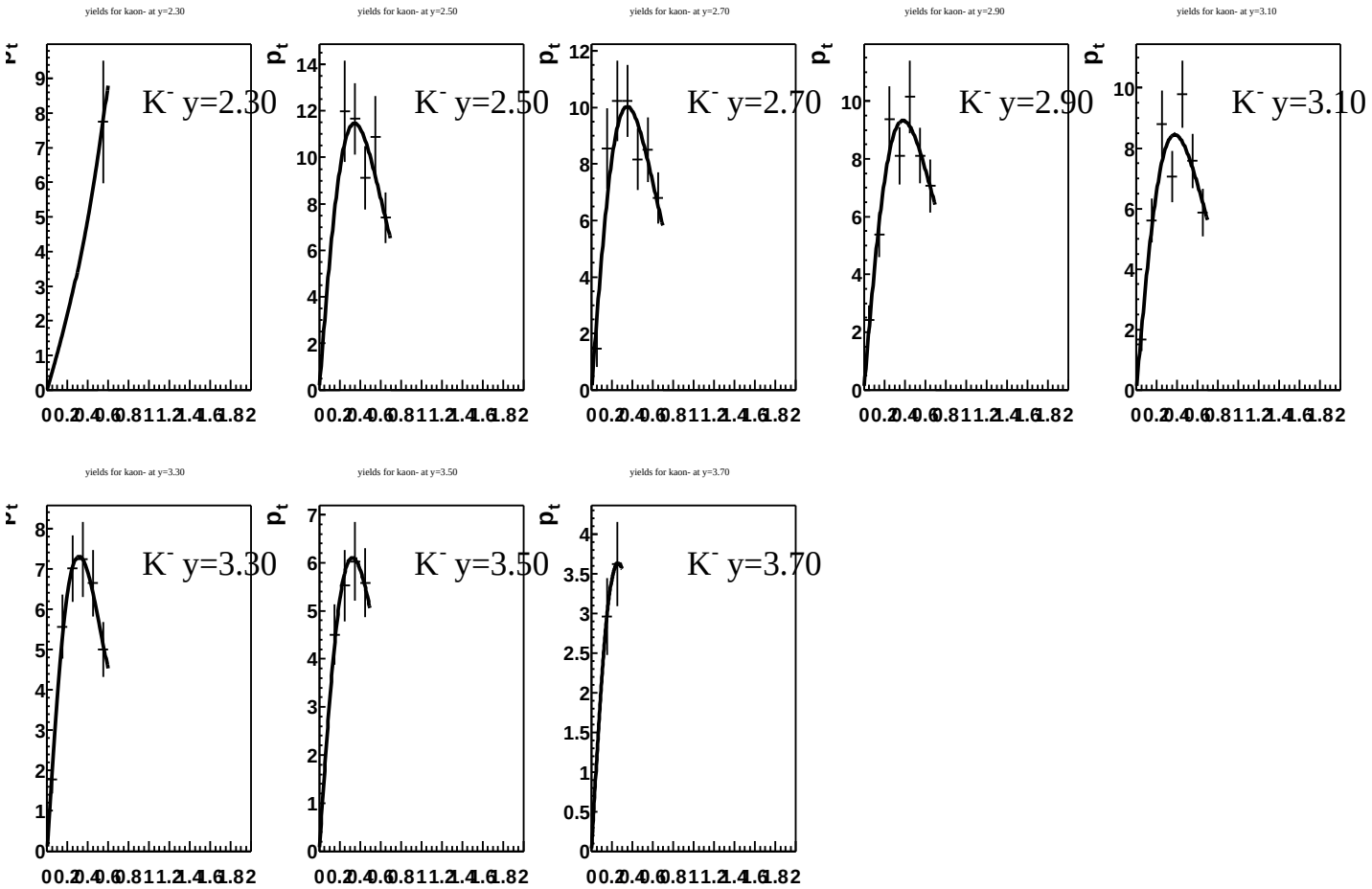
K⁻ @ 40 AGeV bin 5



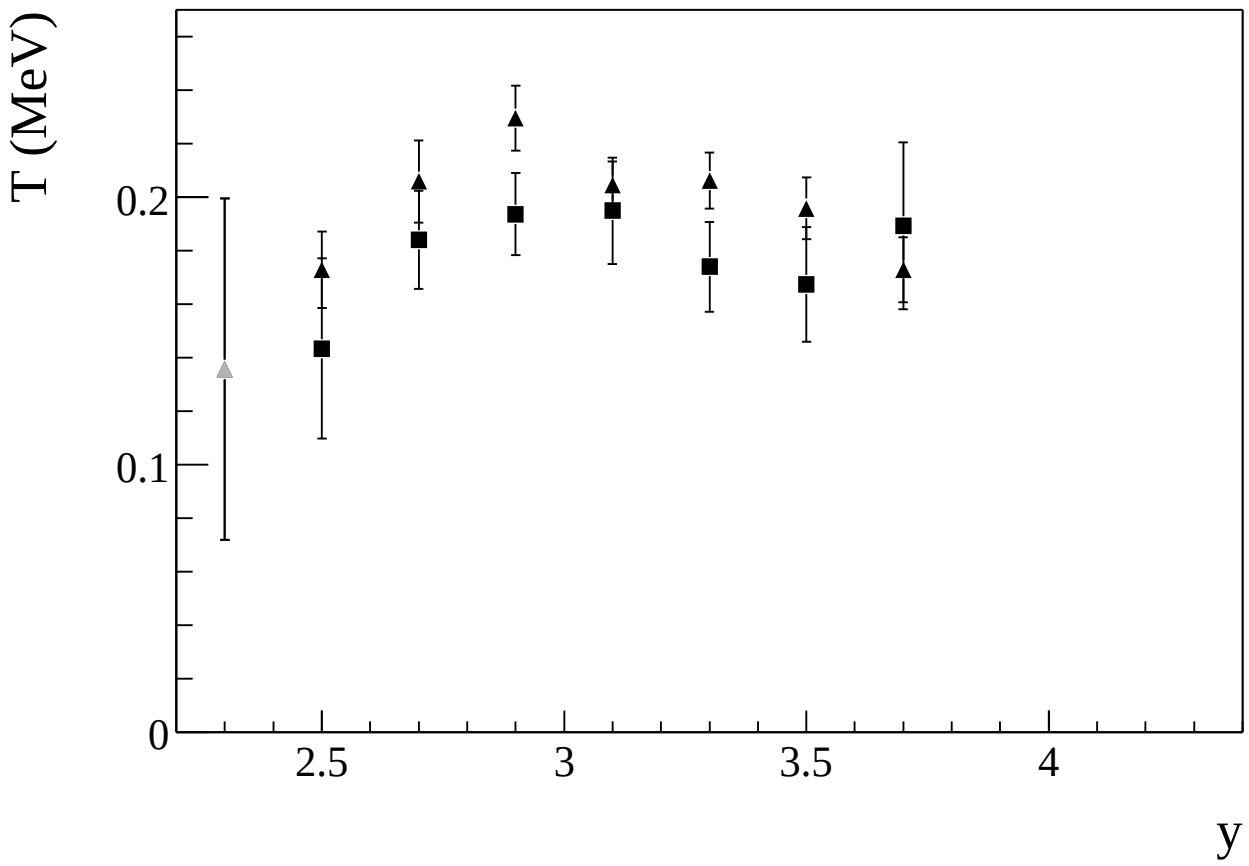
K⁻ @ 40 AGeV bin 3



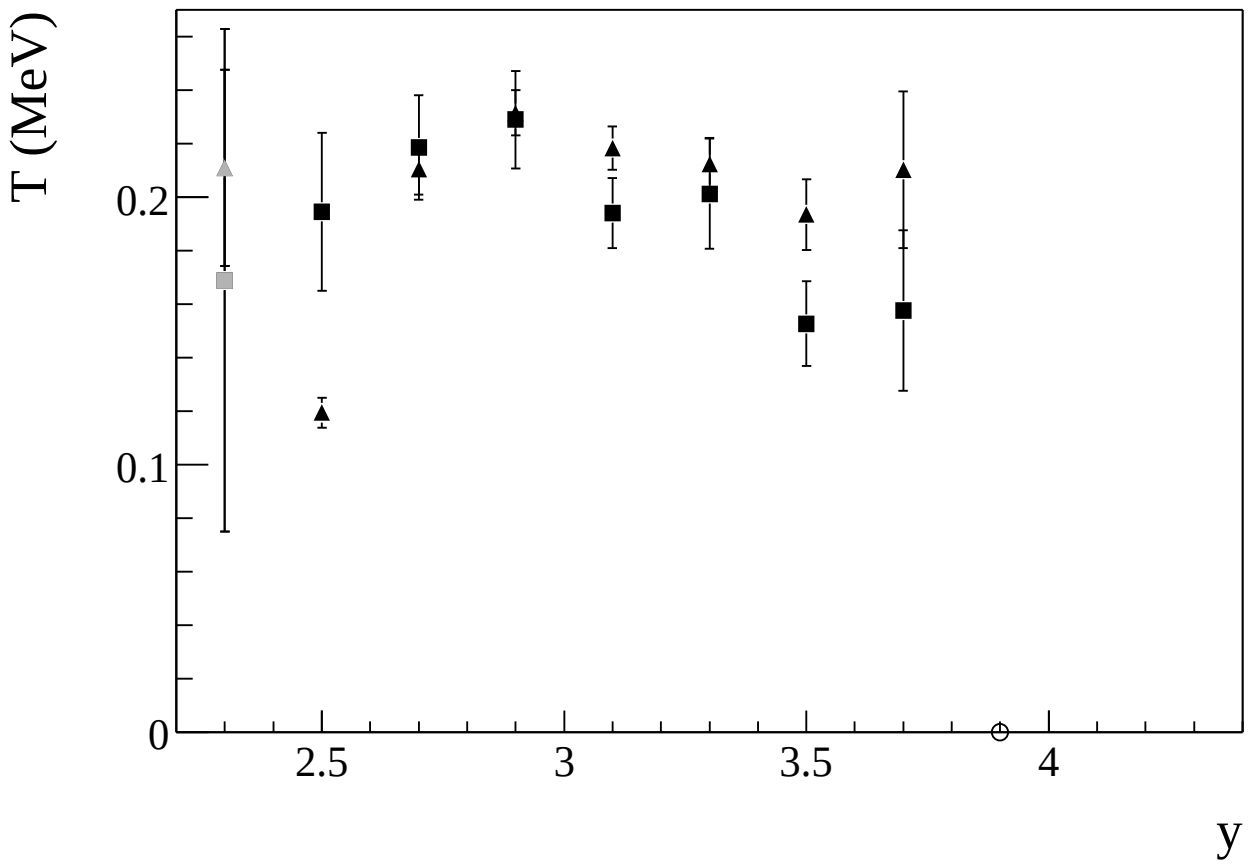
K⁻ @ 40 AGeV bin 1



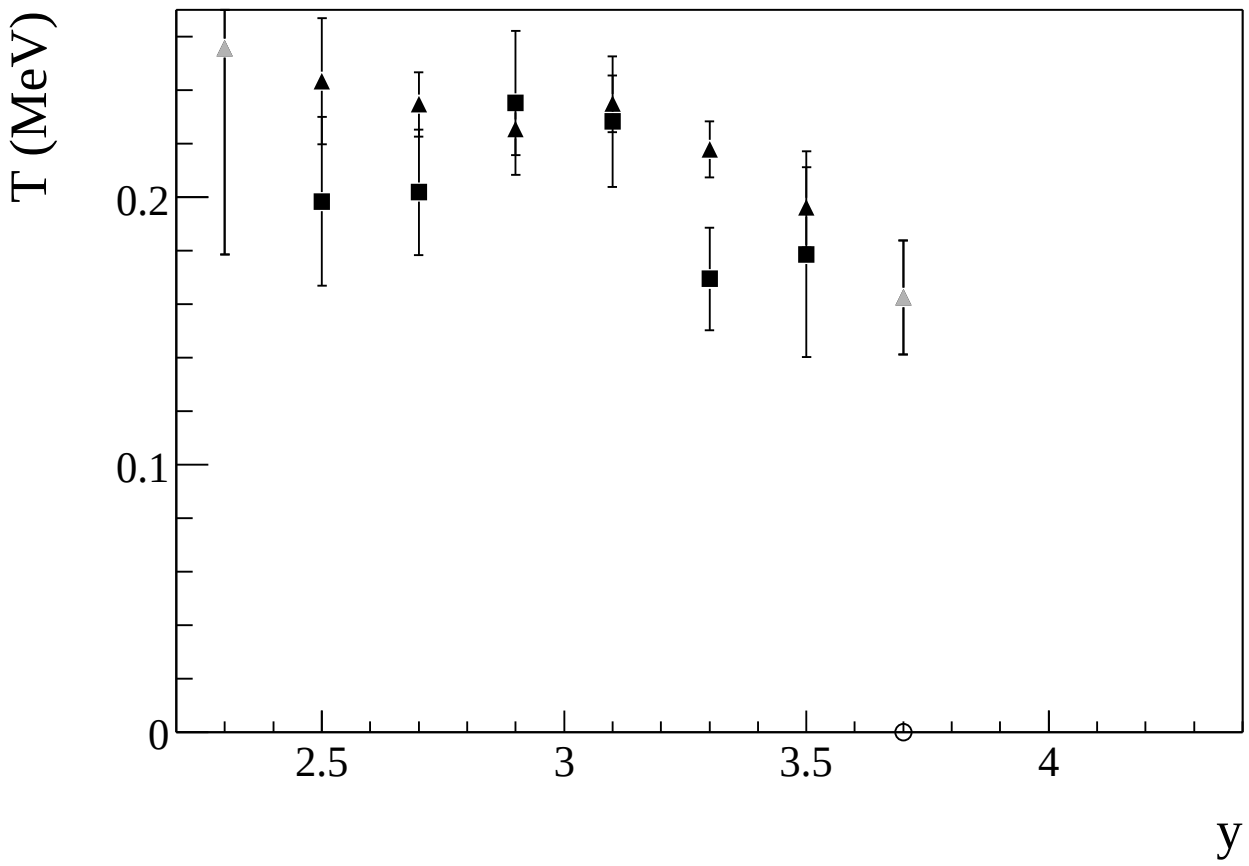
K Slope Parameter @ 40 AGeV bin 5



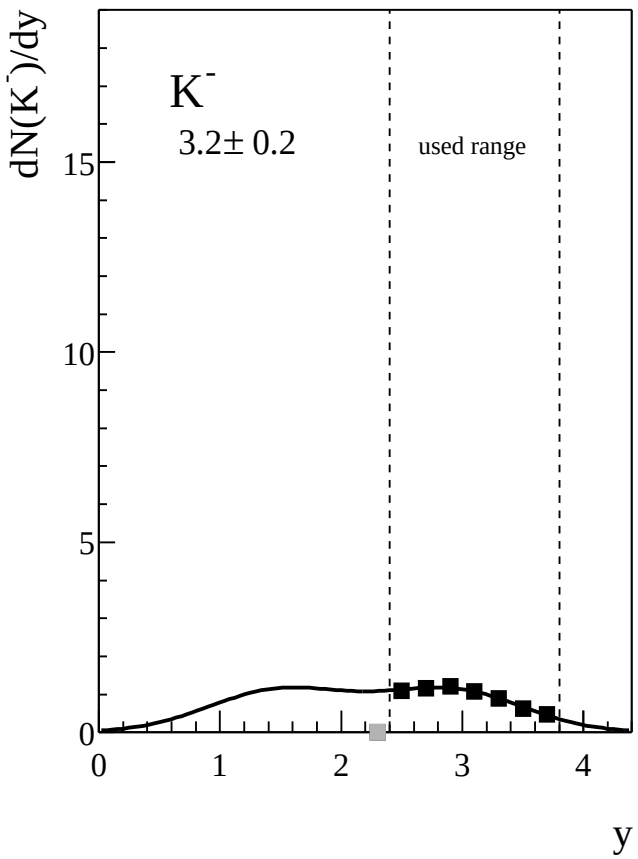
K Slope Parameter @ 40 AGeV bin 3

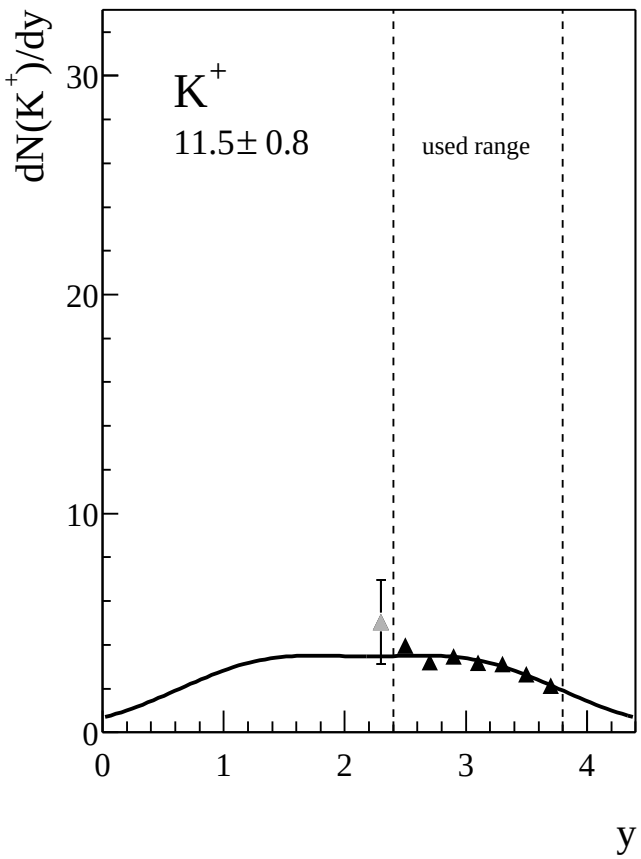


K Slope Parameter @ 40 AGeV bin 1

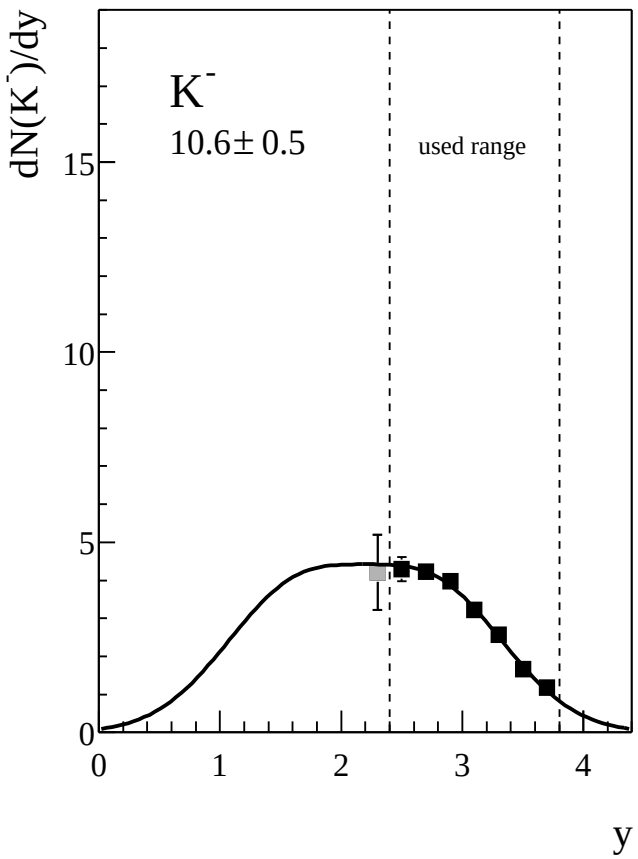


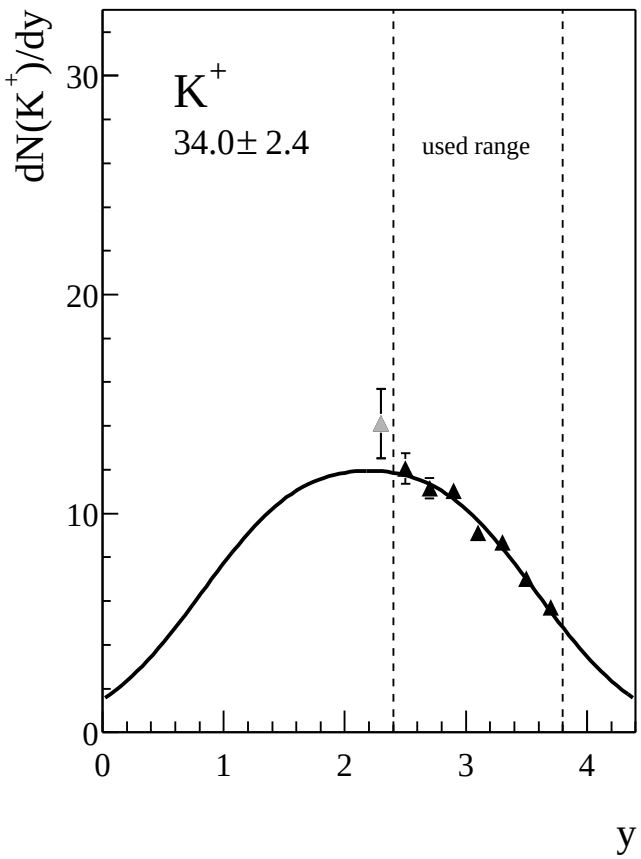
K Rapidity Spectra @ 40 AGeV bin 5



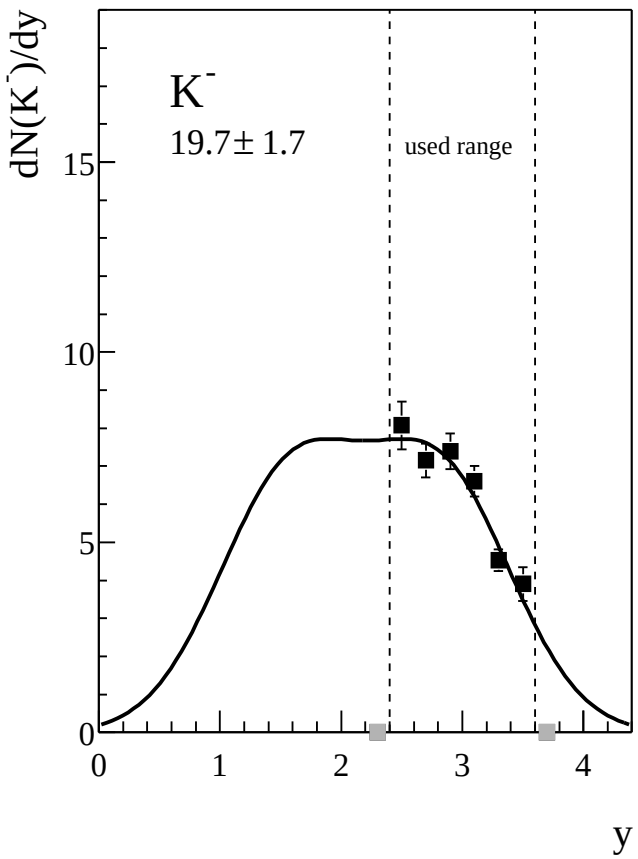


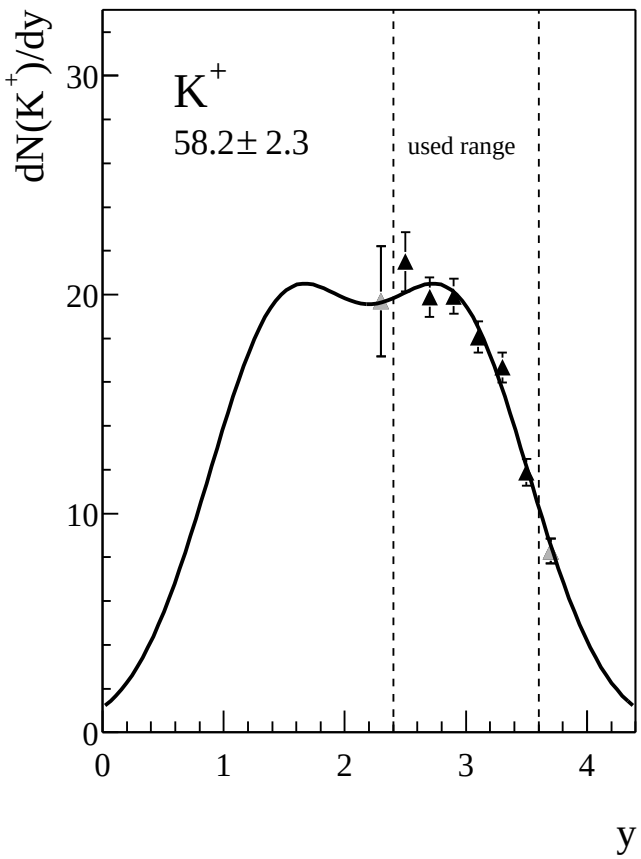
K Rapidity Spectra @ 40 AGeV bin 3



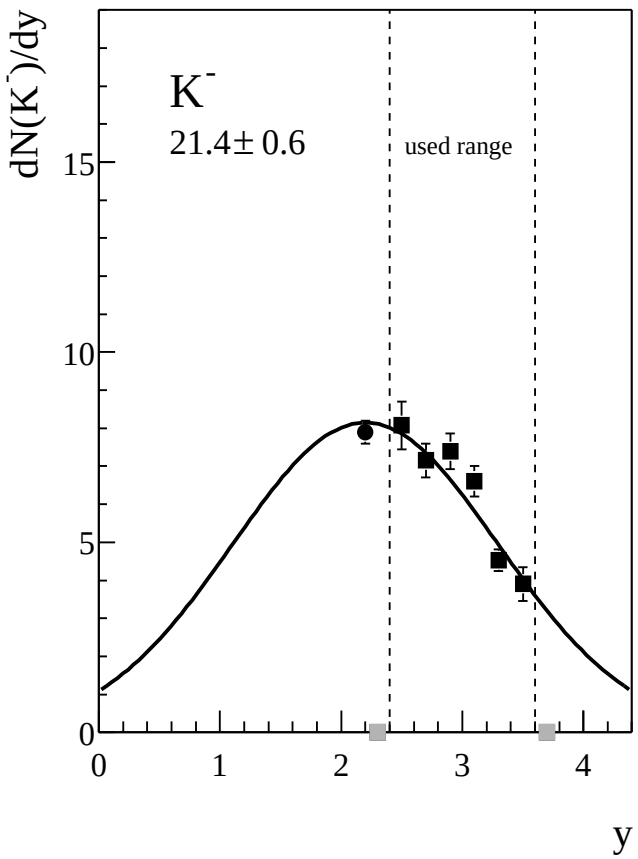


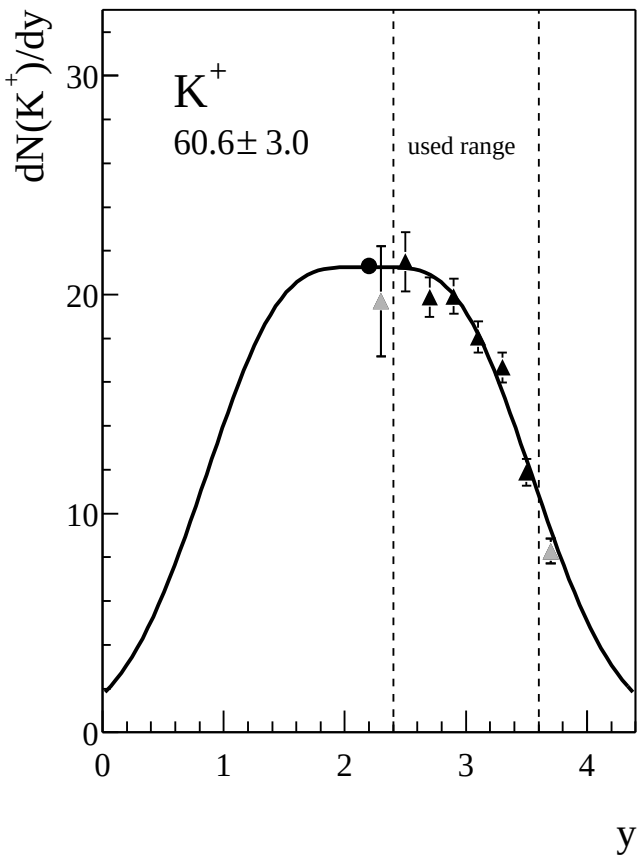
K Rapidity Spectra @ 40 AGeV bin 1



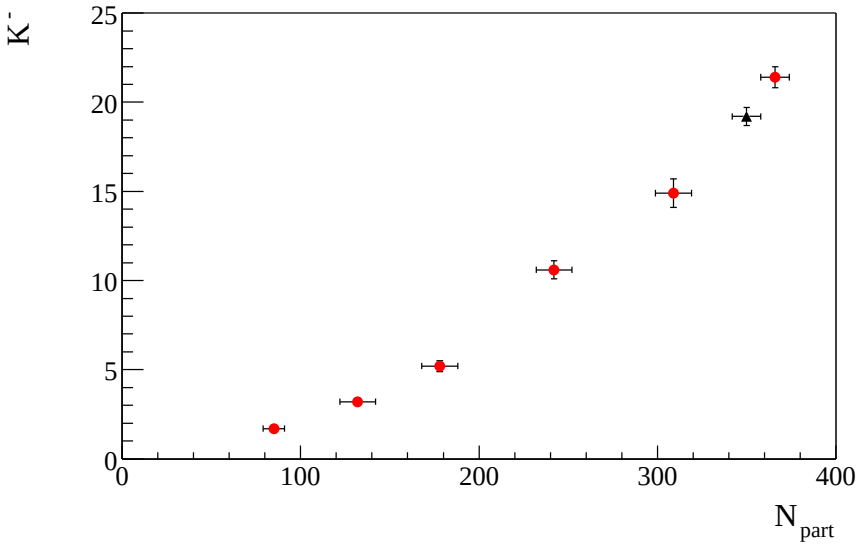


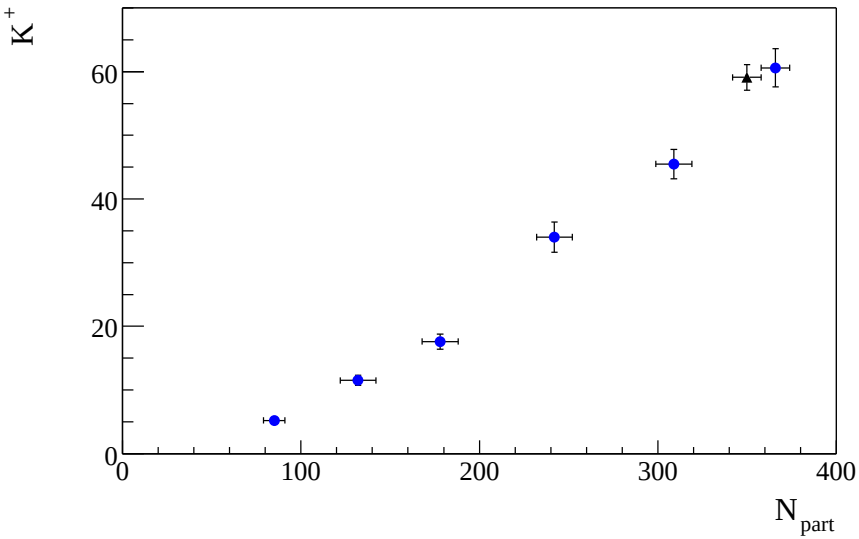
K Rapidity Spectra @ 40 AGeV bin 1 + TOF



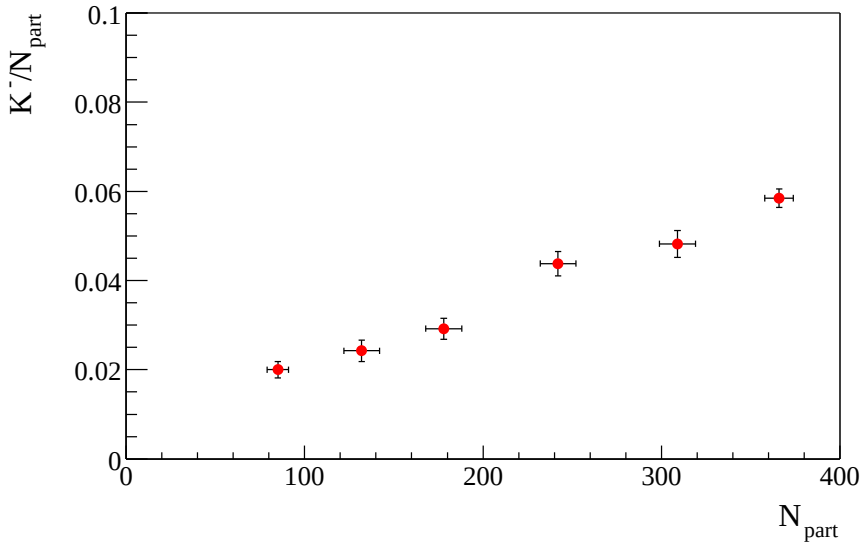


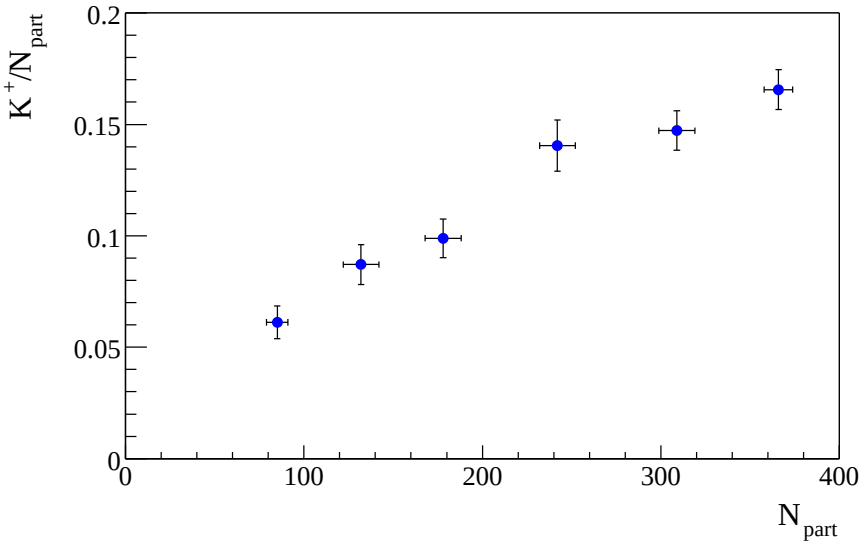
K Yield vs. Centrality @ 40 AGeV



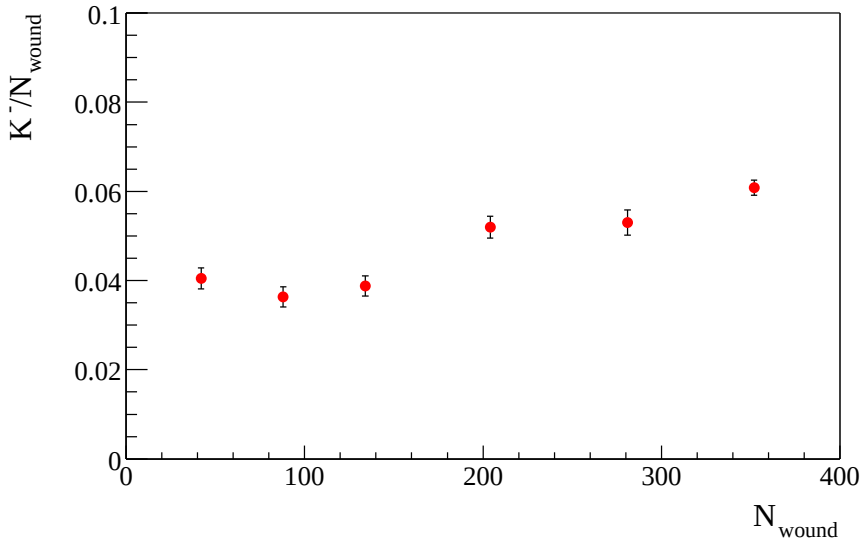


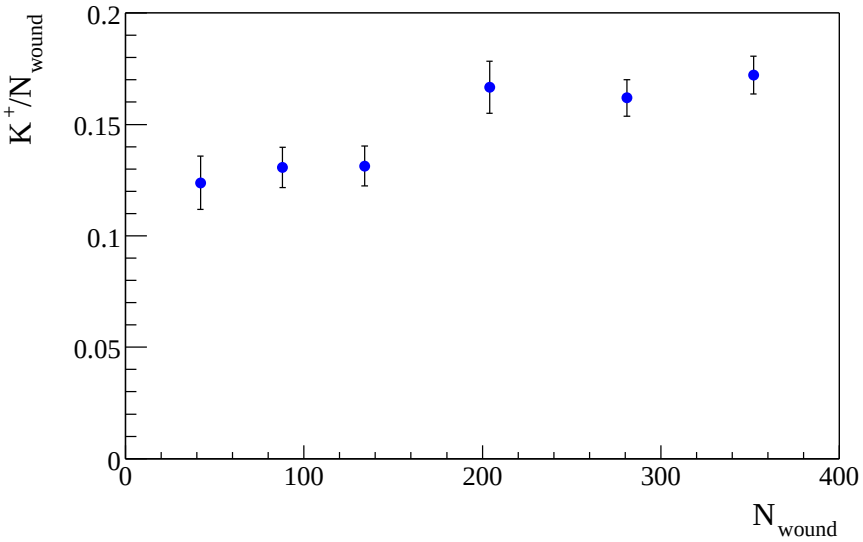
K Yield/Npart vs. Centrality @ 40 AGeV



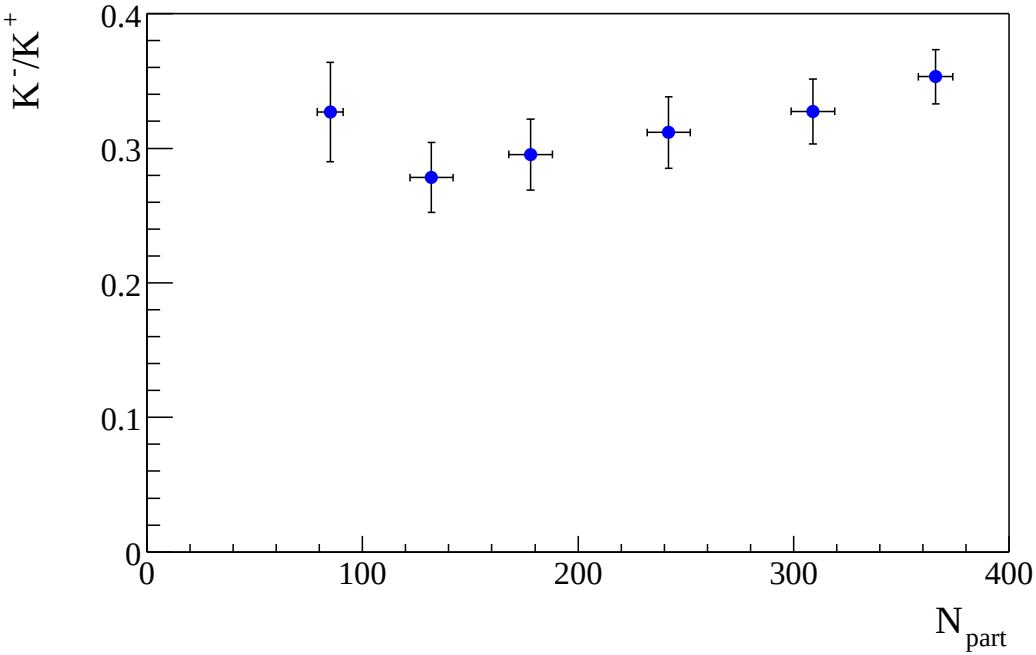


K Yield/Nwound vs. Centrality @ 40 AGeV





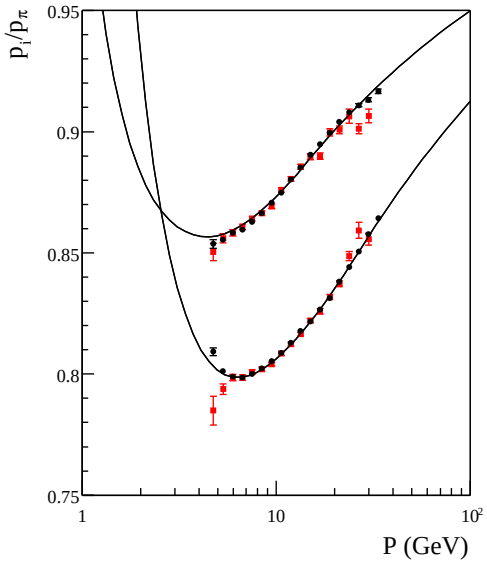
K^-/K^+ Ratio vs. Centrality @ 40 AGeV

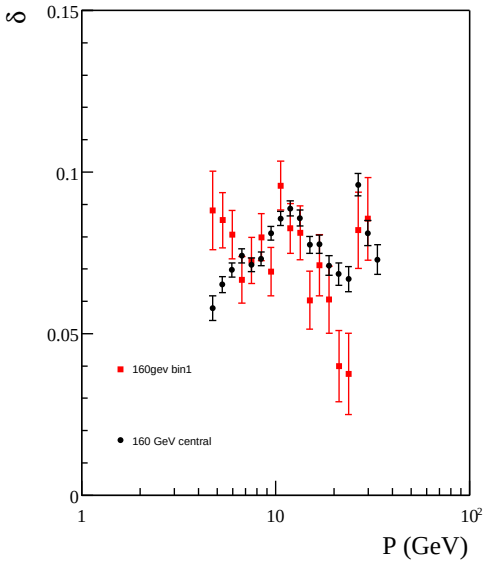


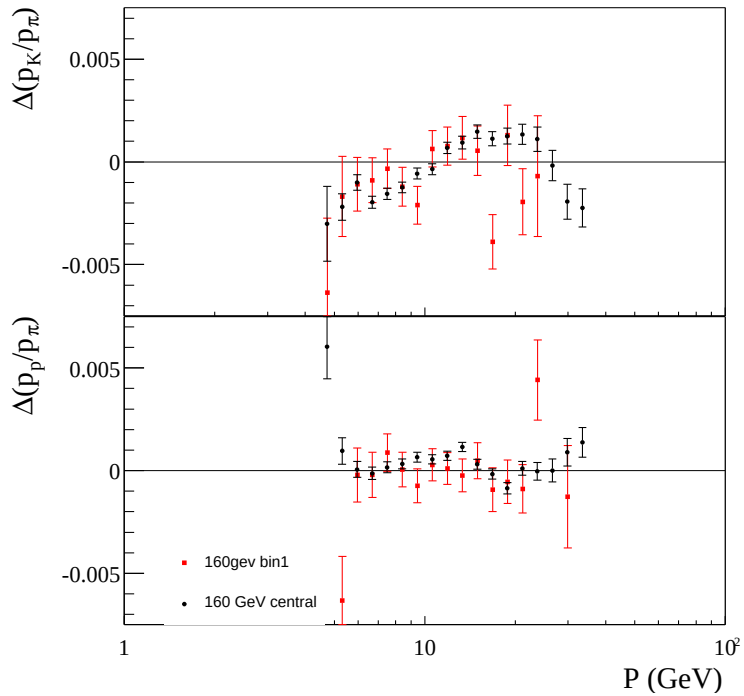
40 GeV looks promising:

TOF-Points crucial for reasonable 4 Pi yield

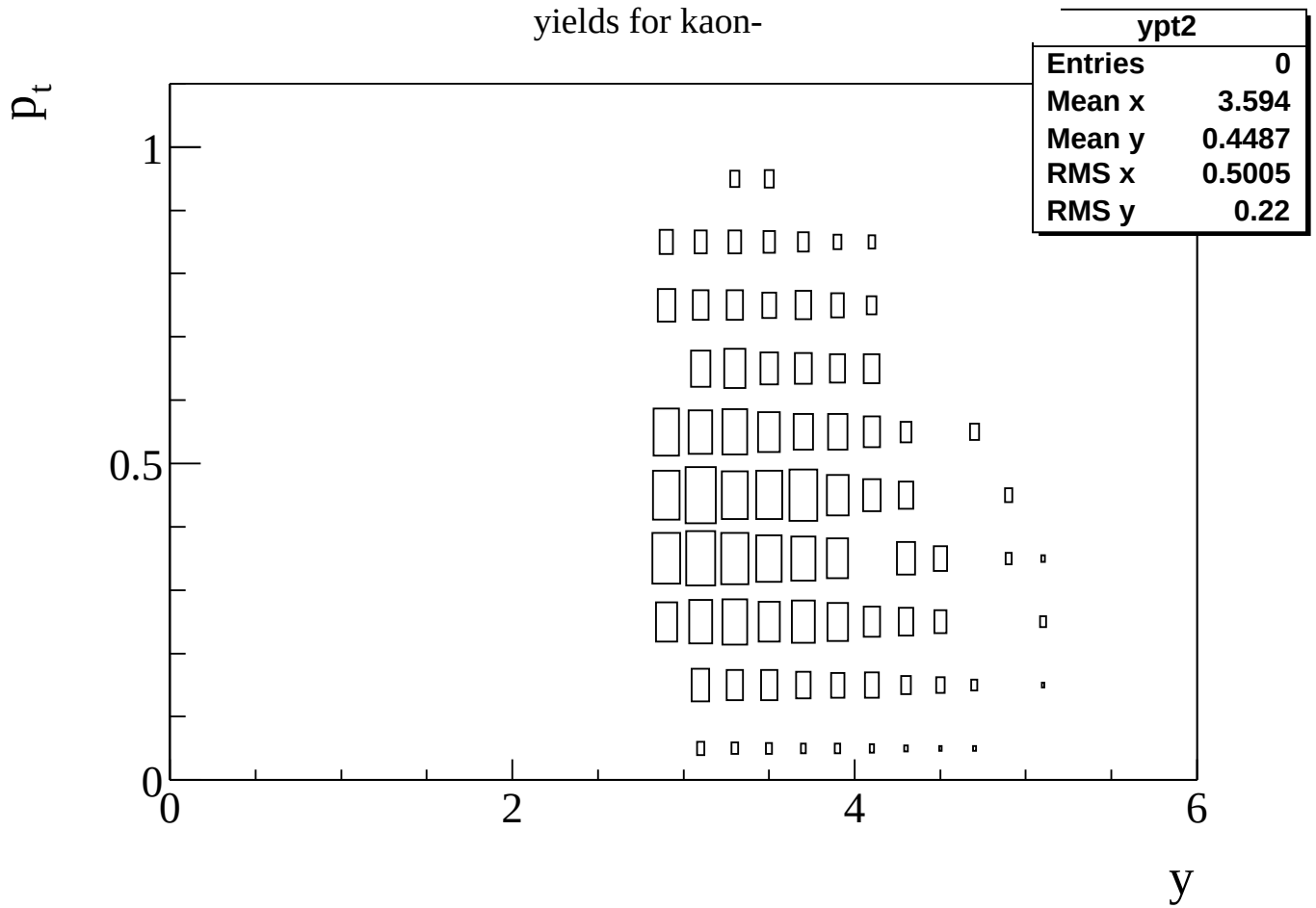
dE/dx Parametrization @ 160 AGeV



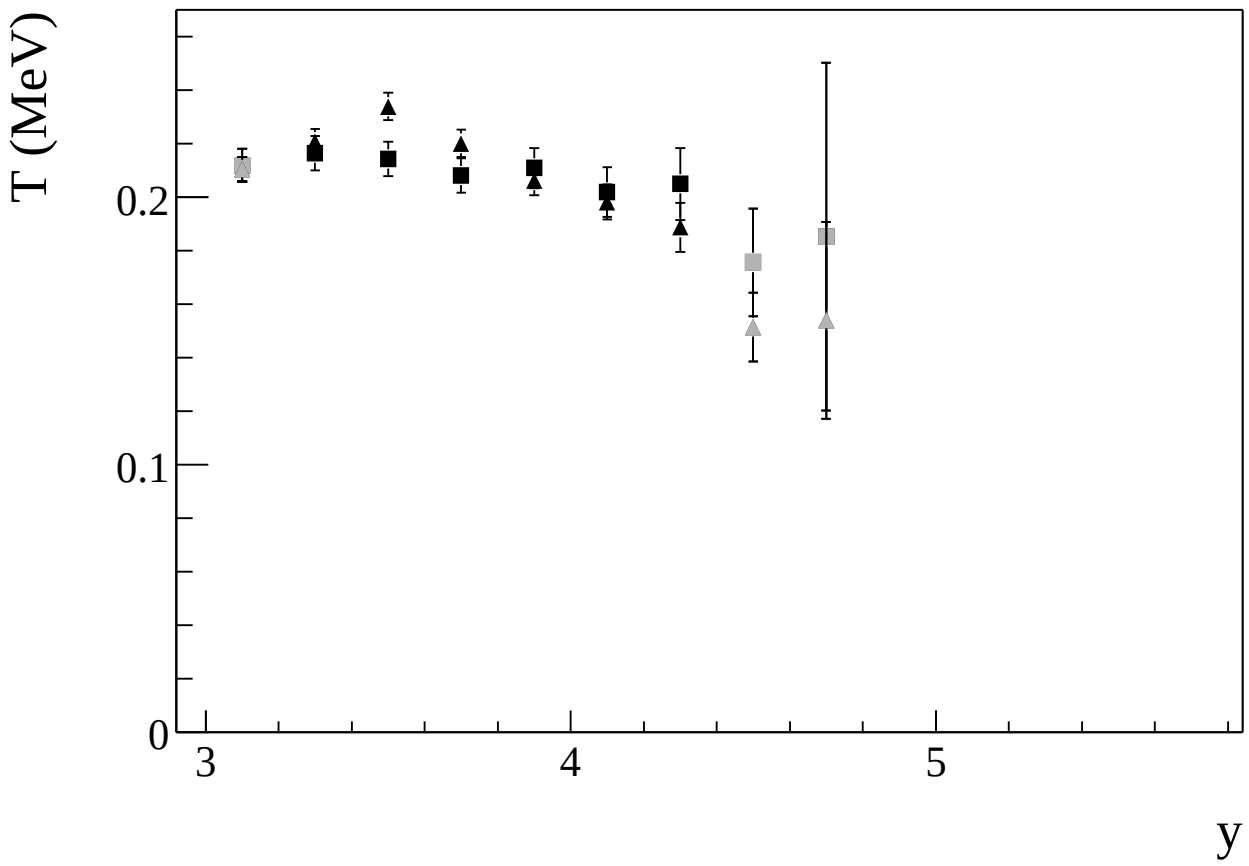




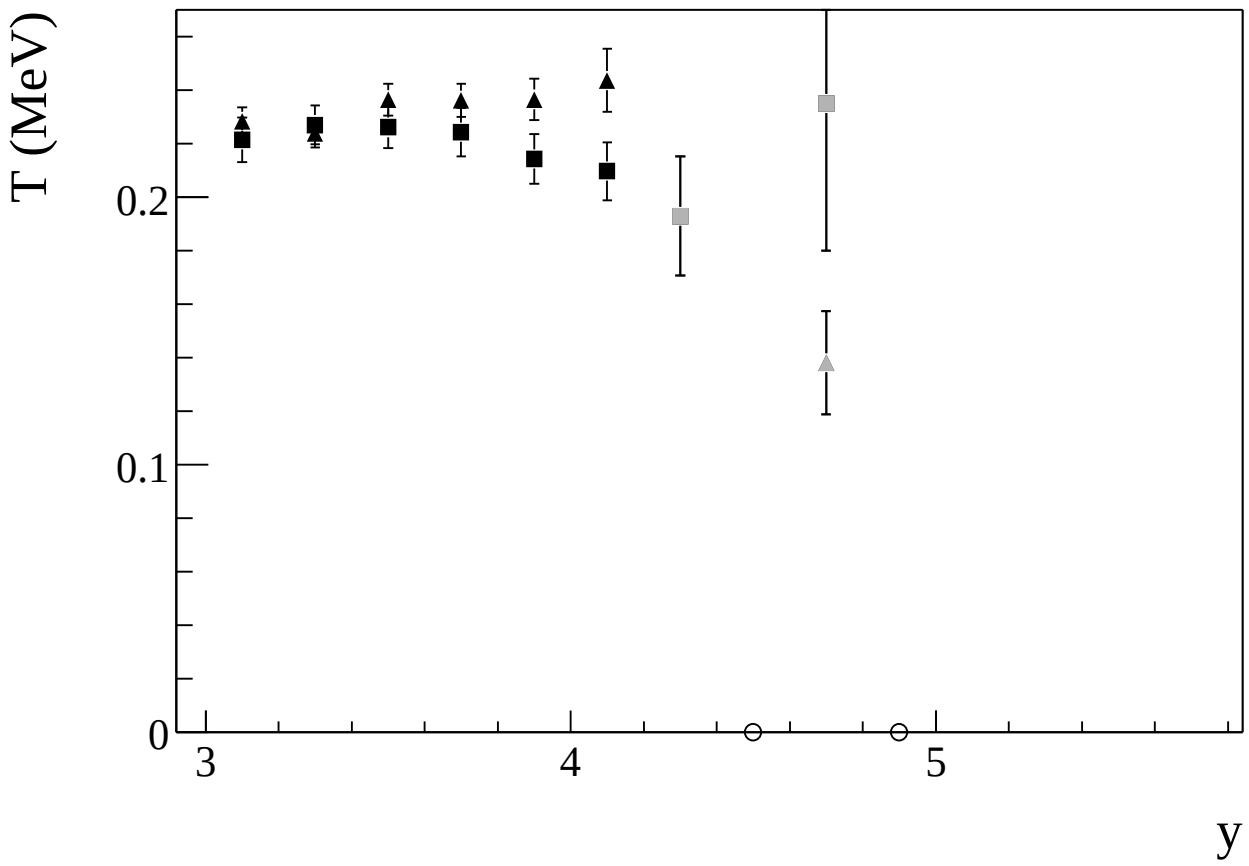
K^- Rapidity - Pt @ 160 AGeV bin 3



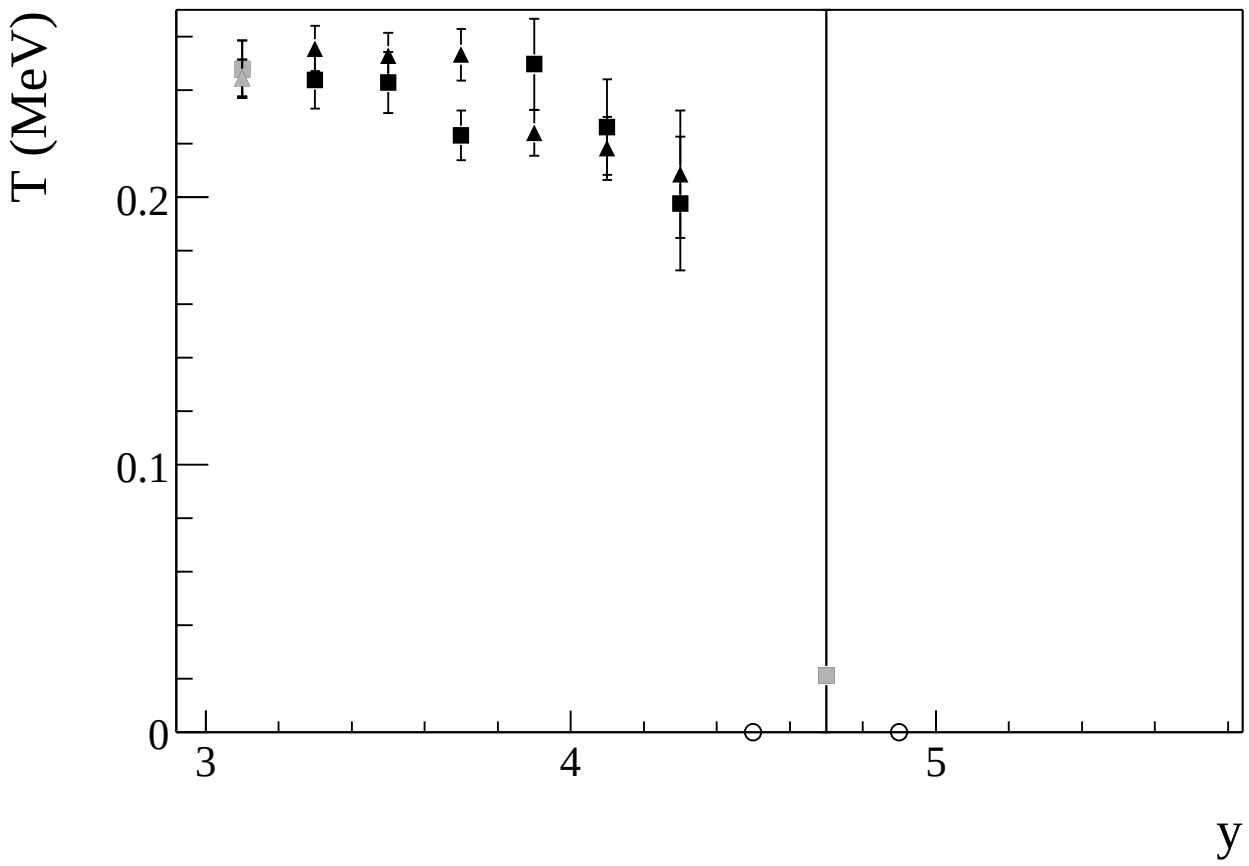
K Slope Parameter @ 160 AGeV bin 5



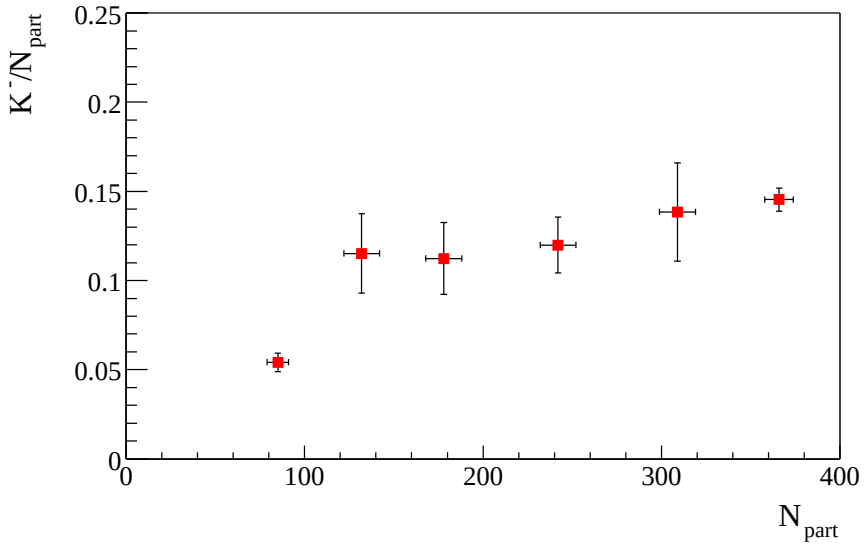
K Slope Parameter @ 160 AGeV bin 3

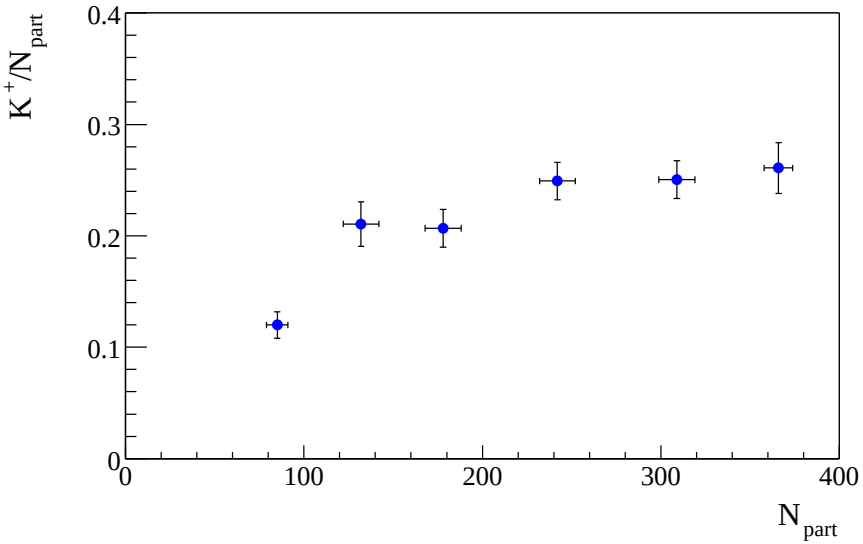


K Slope Parameter @ 160 AGeV bin 1

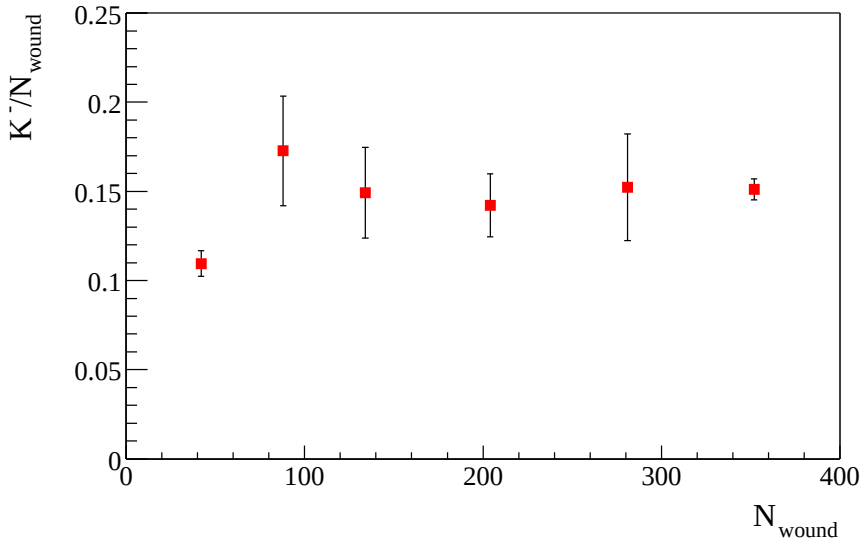


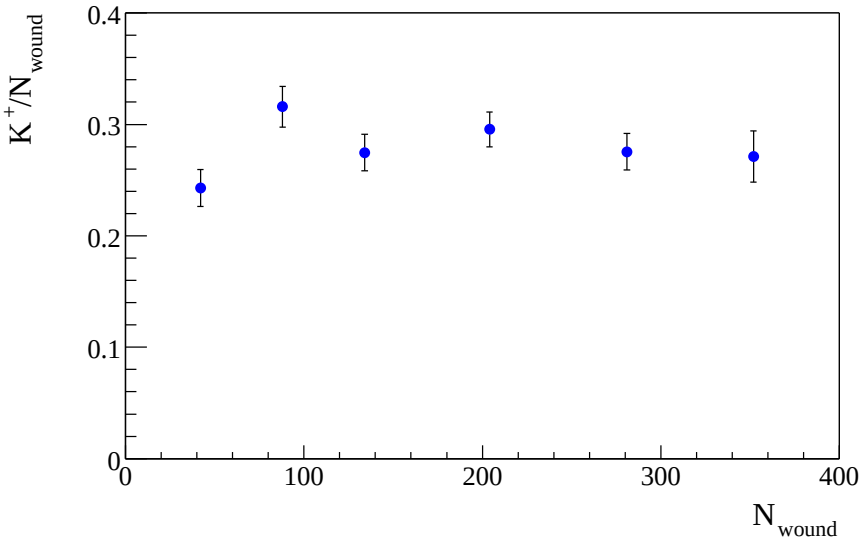
K Yield/Npart vs. Centrality @ 160 AGeV



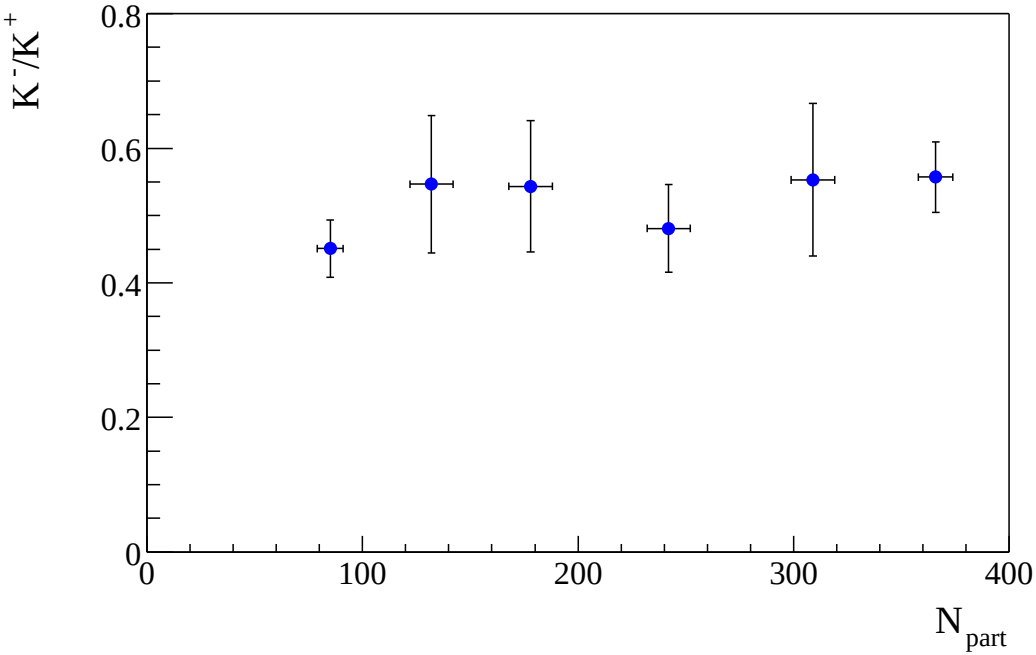


K Yield/Nwound vs. Centrality @ 160 AGeV

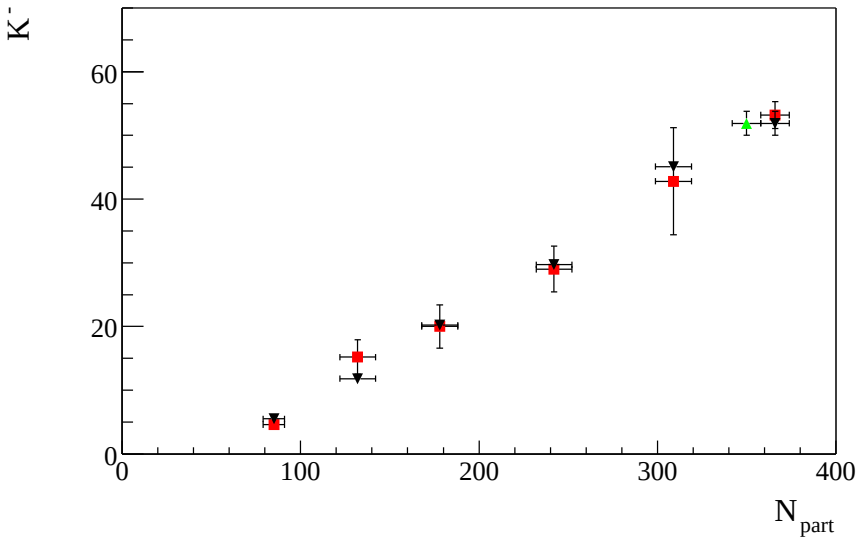




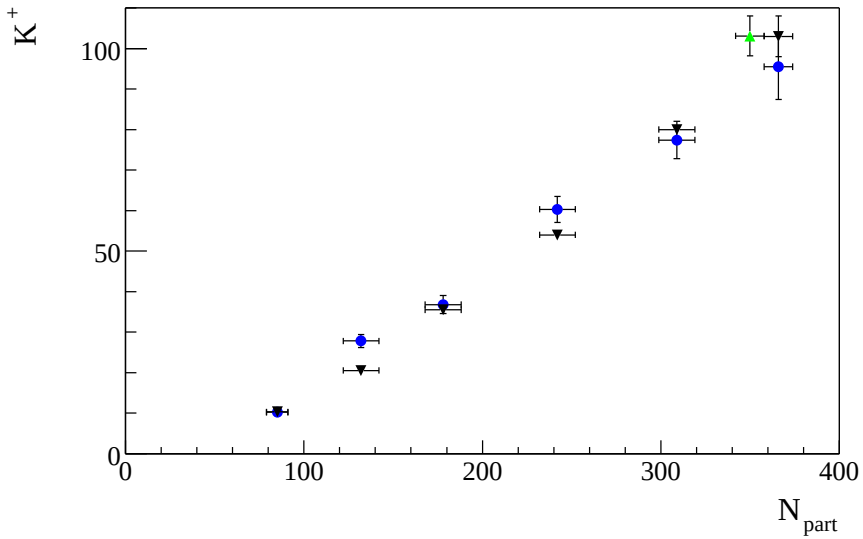
K^-/K^+ Ratio vs. Centrality @ 160 AGeV



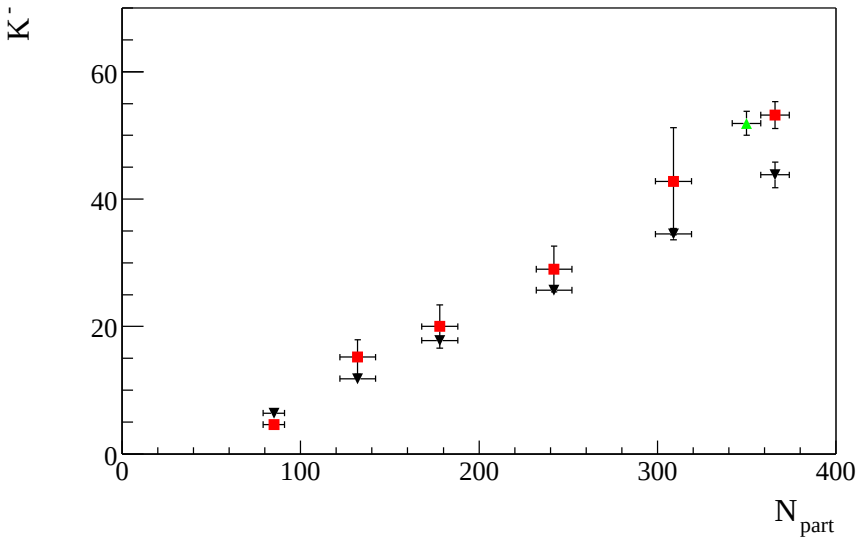
K Yield vs. Centrality @ 160 AGeV



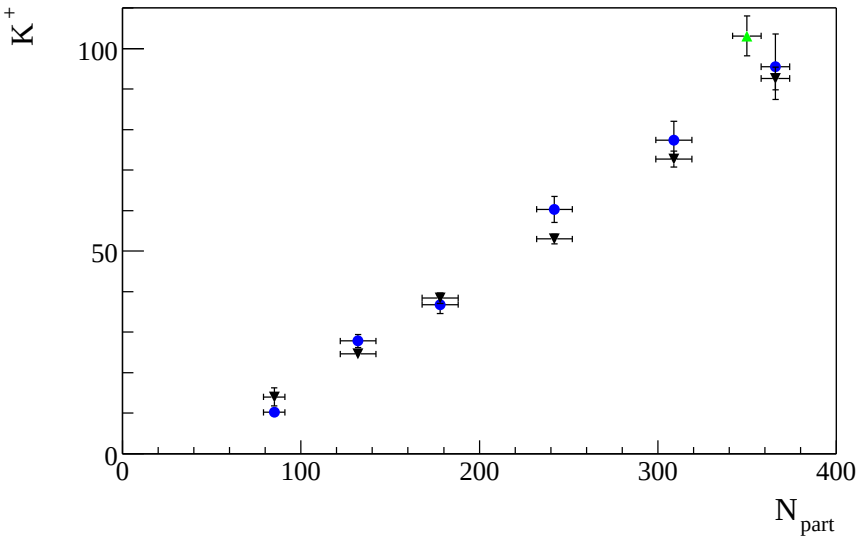
Ference old results



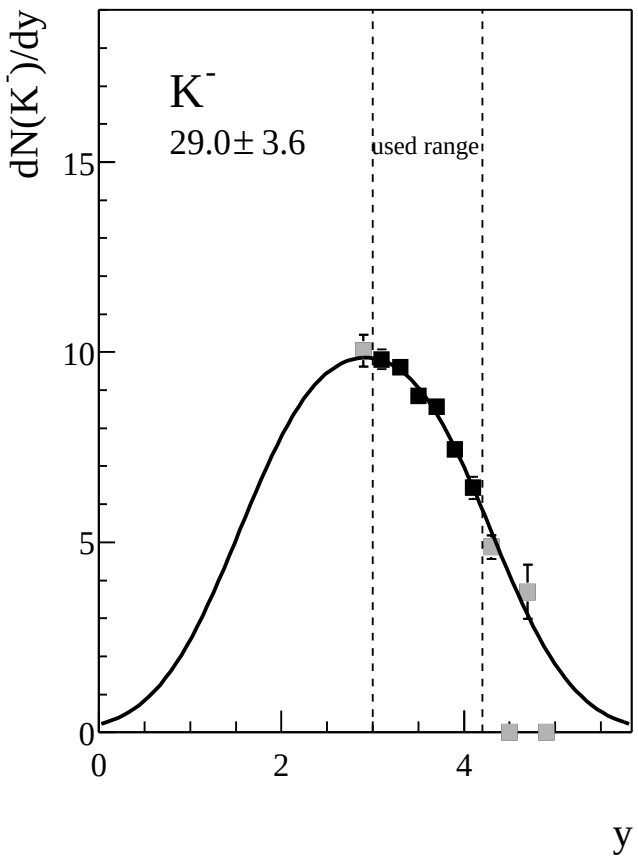
K Yield vs. Centrality @ 160 AGeV

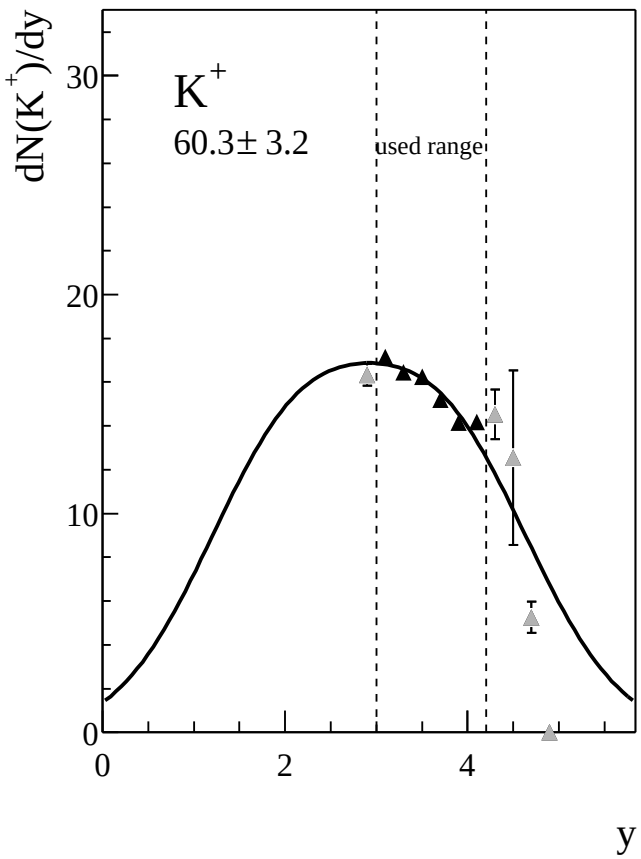


Ference new results

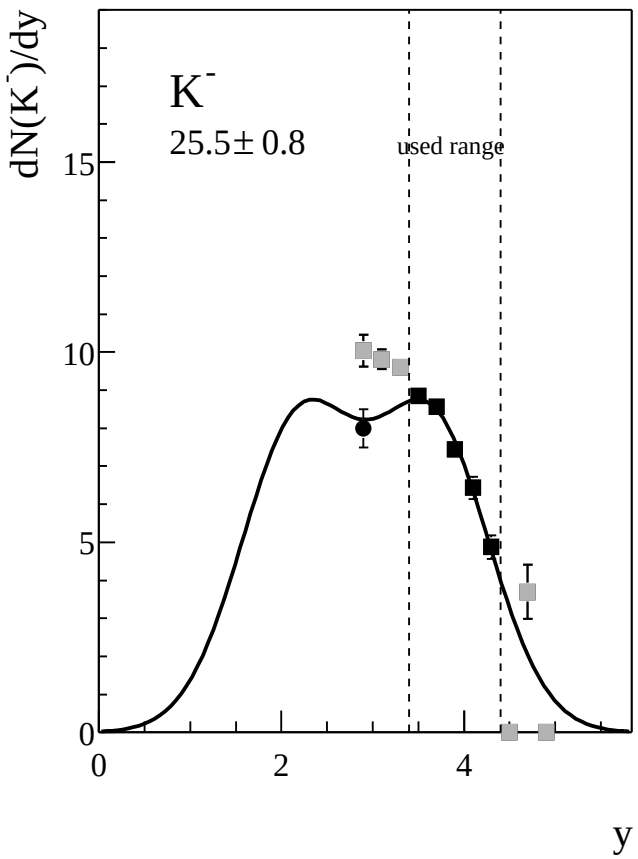


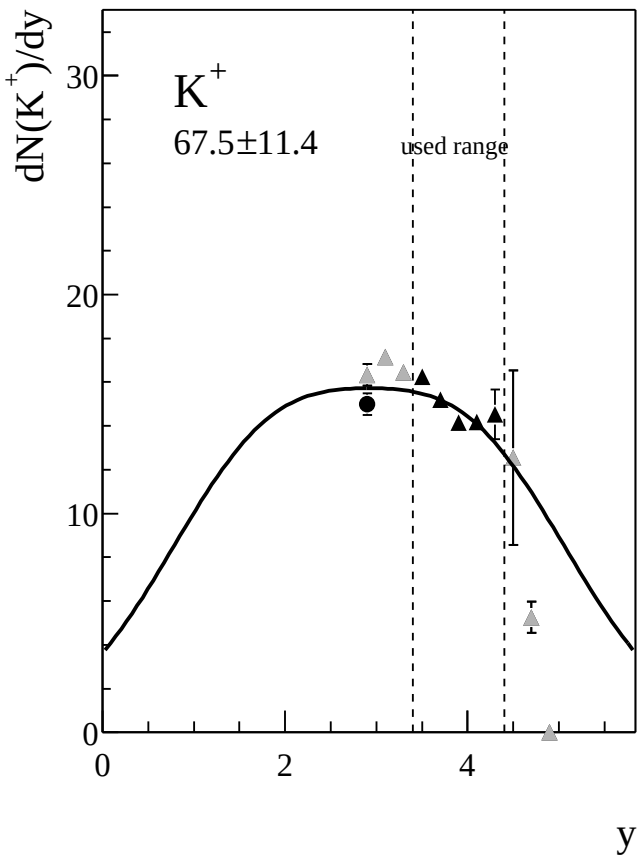
K Rapidity Spectra @ 160 AGeV bin 3



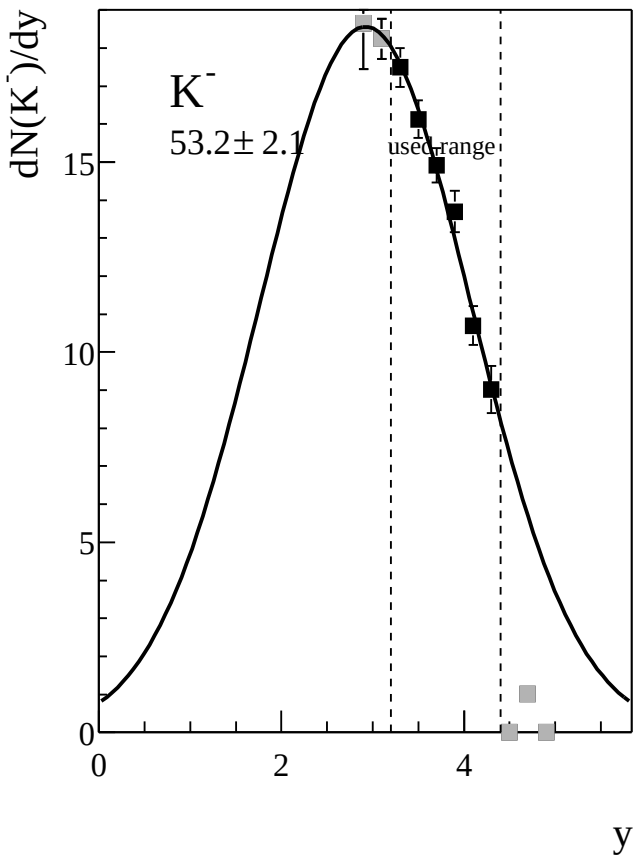


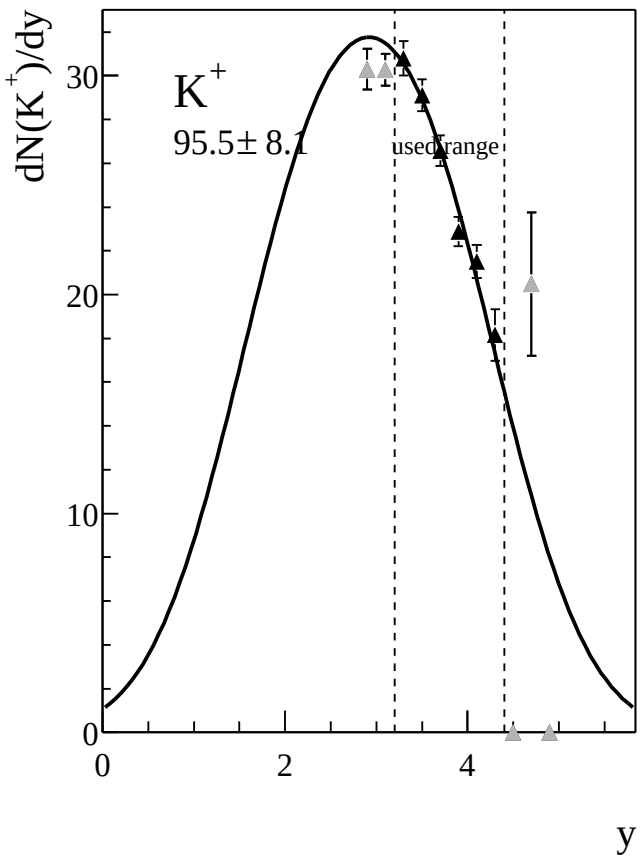
K Rapidity Spectra @ 160 AGeV bin 3 + TOF



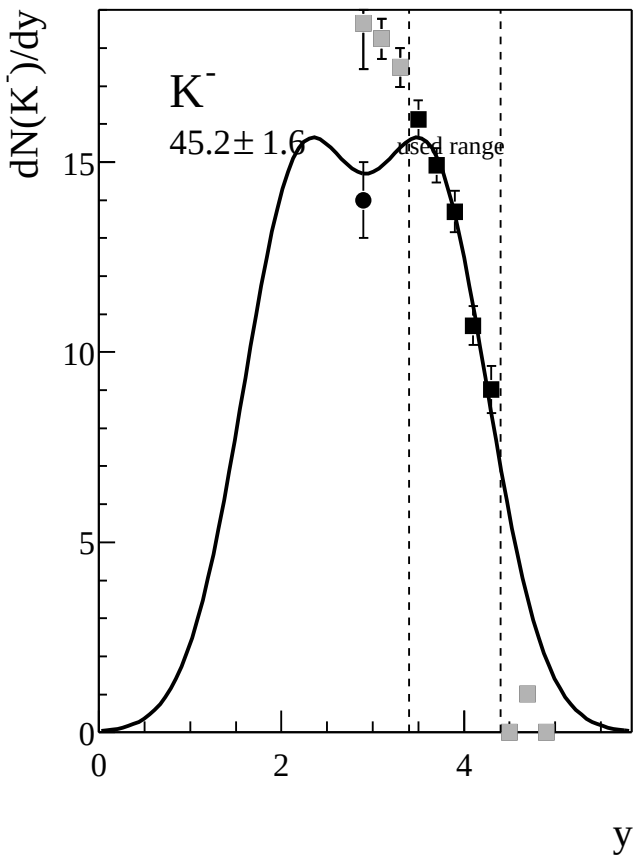


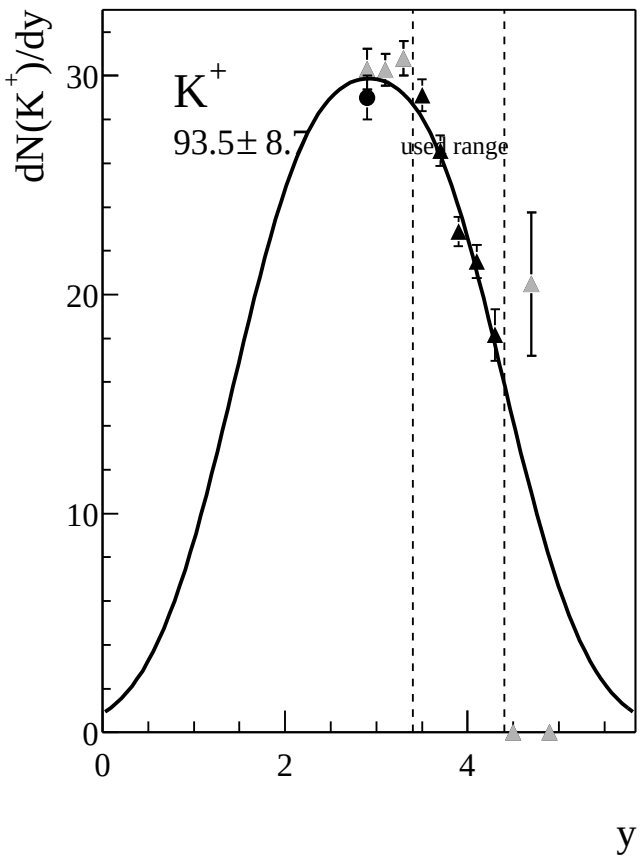
K Rapidity Spectra @ 160 AGeV bin 1



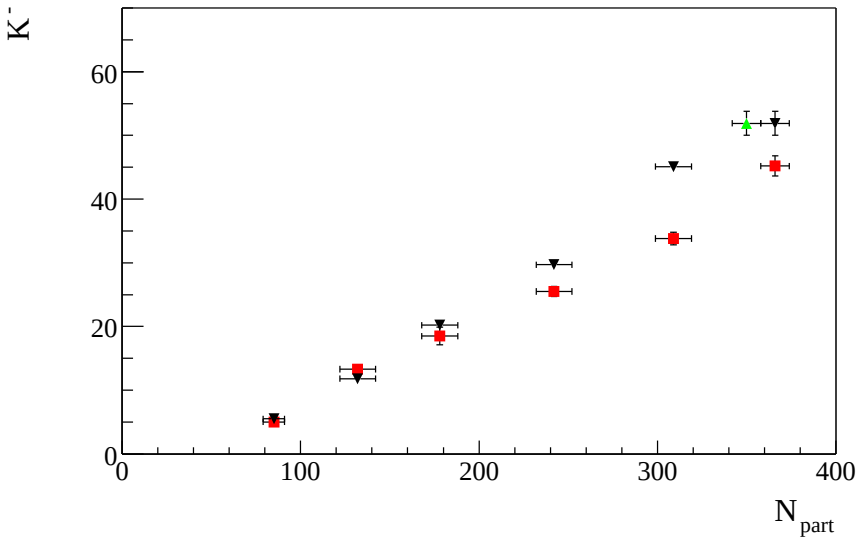


K Rapidity Spectra @ 160 AGeV bin 1 + TOF

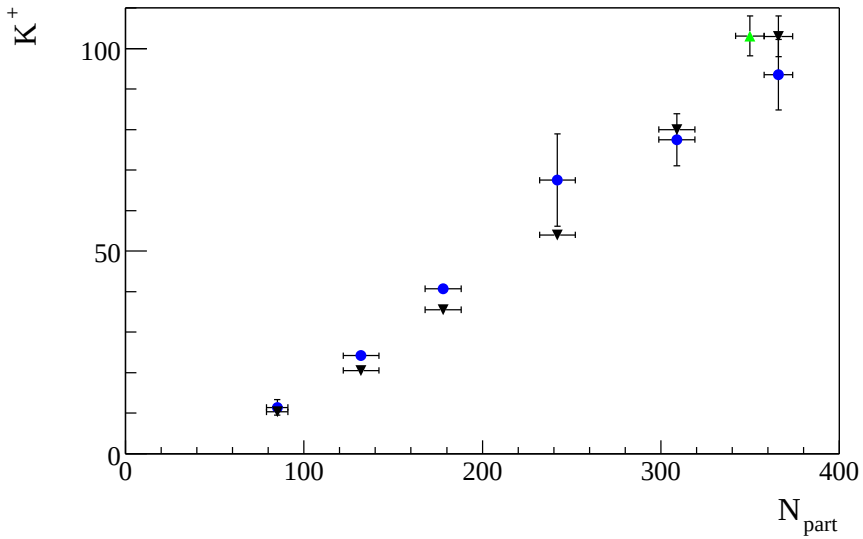




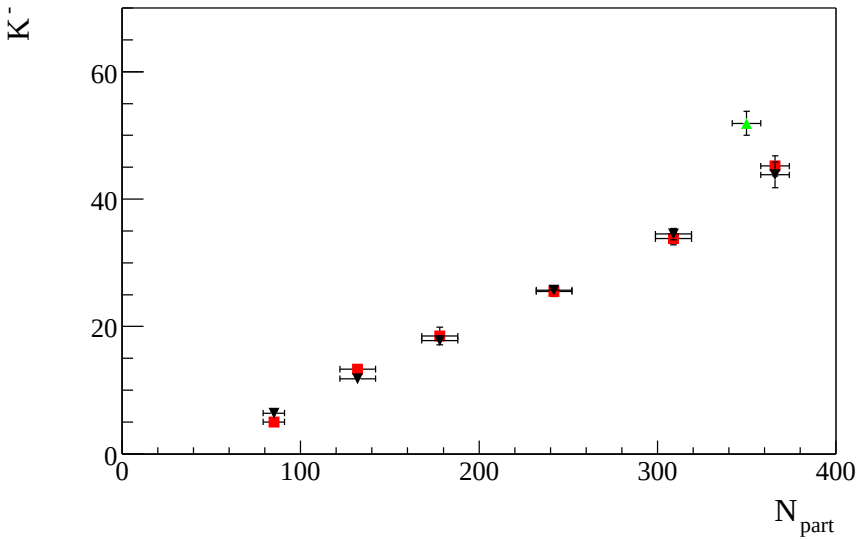
K Yield vs. Centrality @ 160 AGeV + TOF



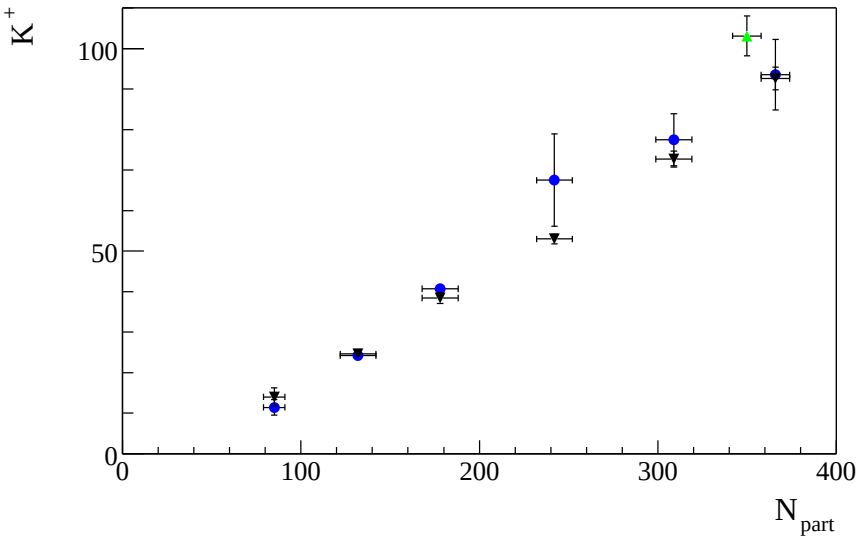
Ference old results



K Yield vs. Centrality @ 160 AgeV + TOF



Ference new results



Summary & To-Do

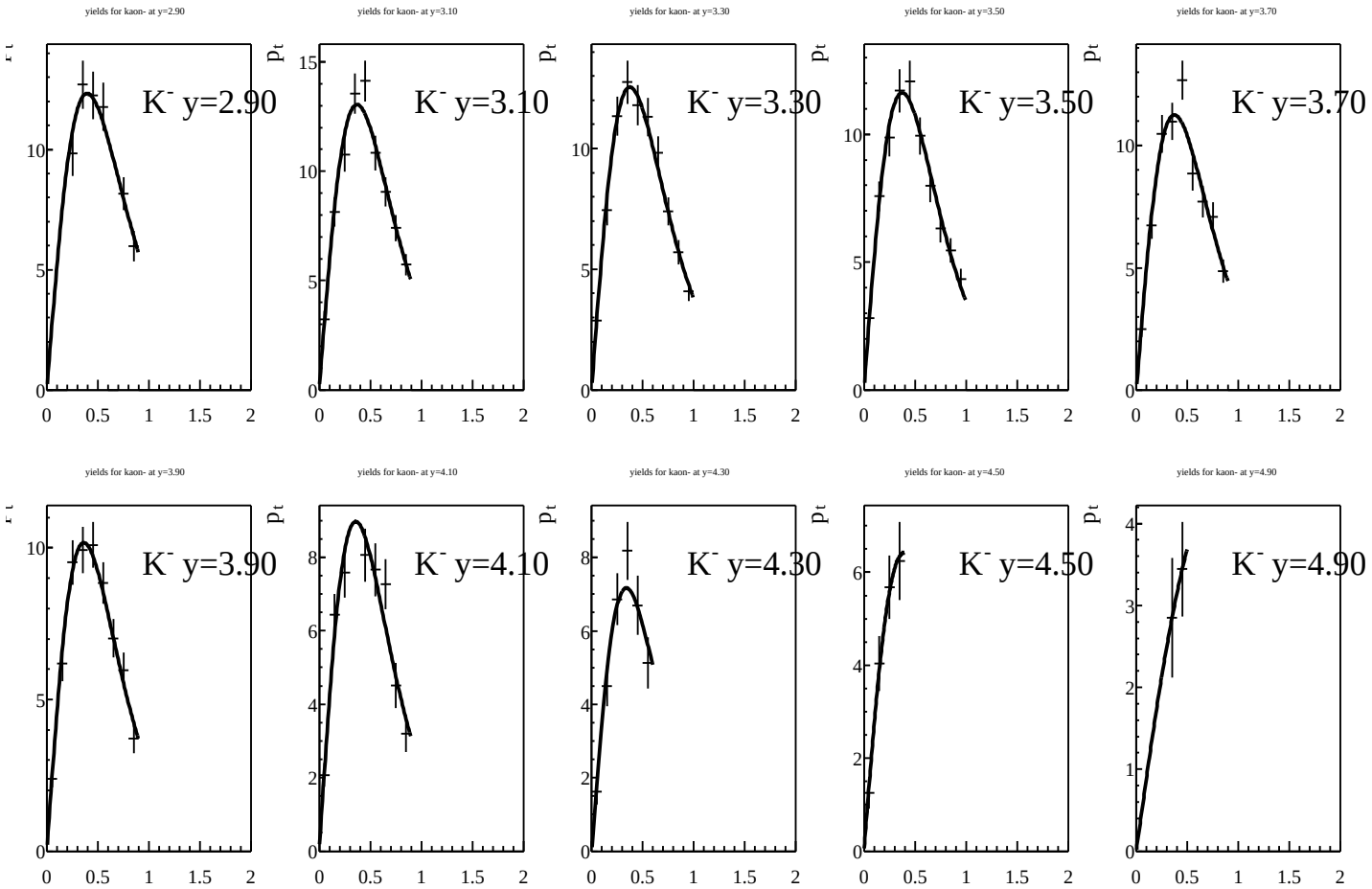
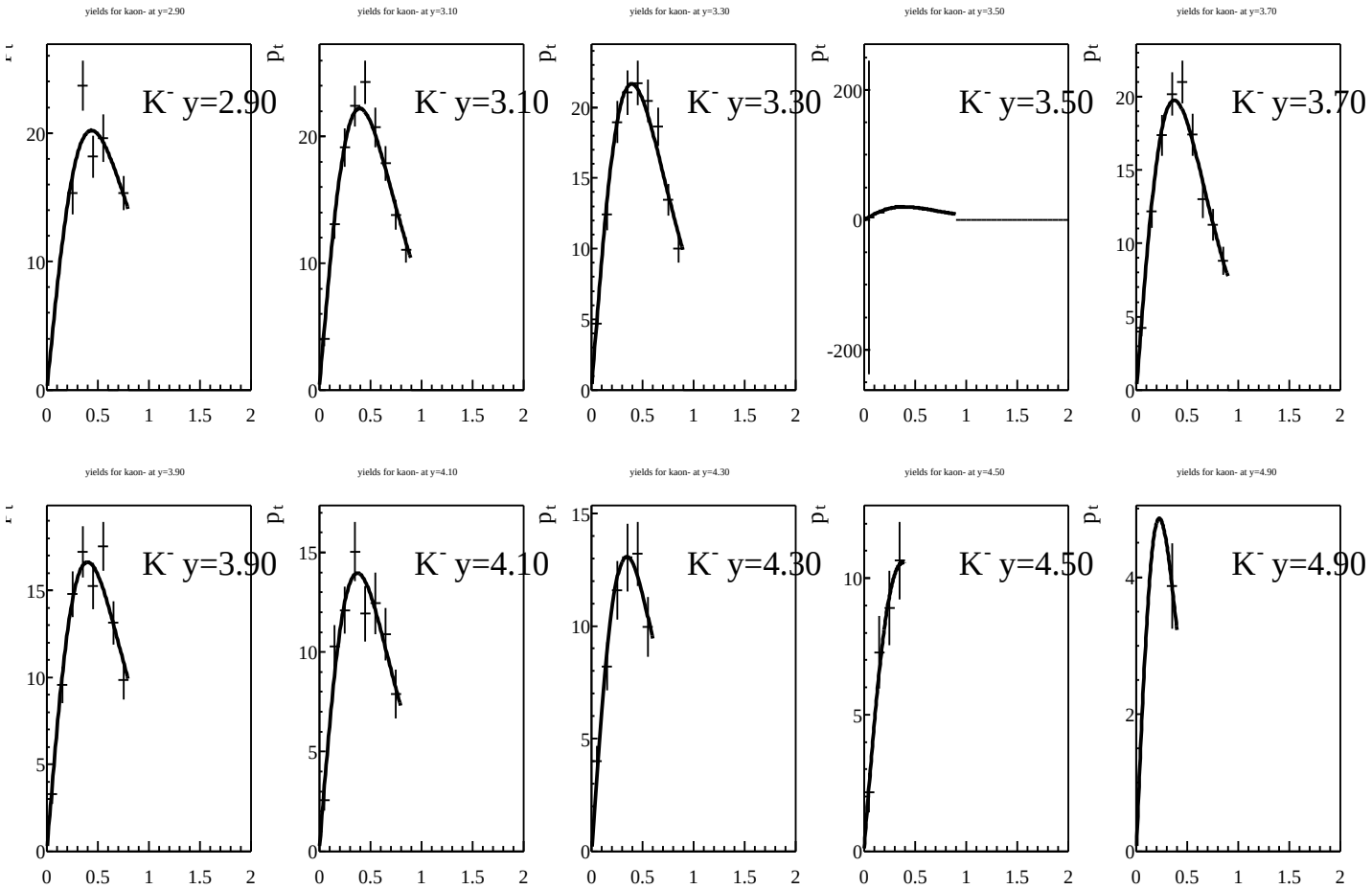
At 158 AGeV mid-rapidity dE/dx and TOF values not in good agreement

Old min. bias TOF values changed by central analysis
(bin 1: from 14 to 16.4)

To-Do:

- Current efficiency corrections for K's based on central events
- Pions @ 40 and 158 GeV including embedding
- Systematical checks (with and without TOF...)
- If possible, parallel check of TOF points

K⁻ @ 160 AGeV bin 3



K⁻ @ 160 AGeV bin 1