PIONS AT 20 A·GEV

M.G.

- FIRST RESULTS
- NEXT STEPS

DATA SET

- CENTRAL (7%) PB+PB COLLISIONS AT 20 A·GEV ($\langle N_W \rangle \approx 349$)

- 20 A·GEV:

  $\sqrt{s} = 6.27$ GEV, $F = 1.92\ \mathrm{GEV}^{1/2}$, $y_{CMS} = 1.88$

- NUMBER OF ANALYZED EVENTS
  5000 OUT OF 364K

  RUN 4890

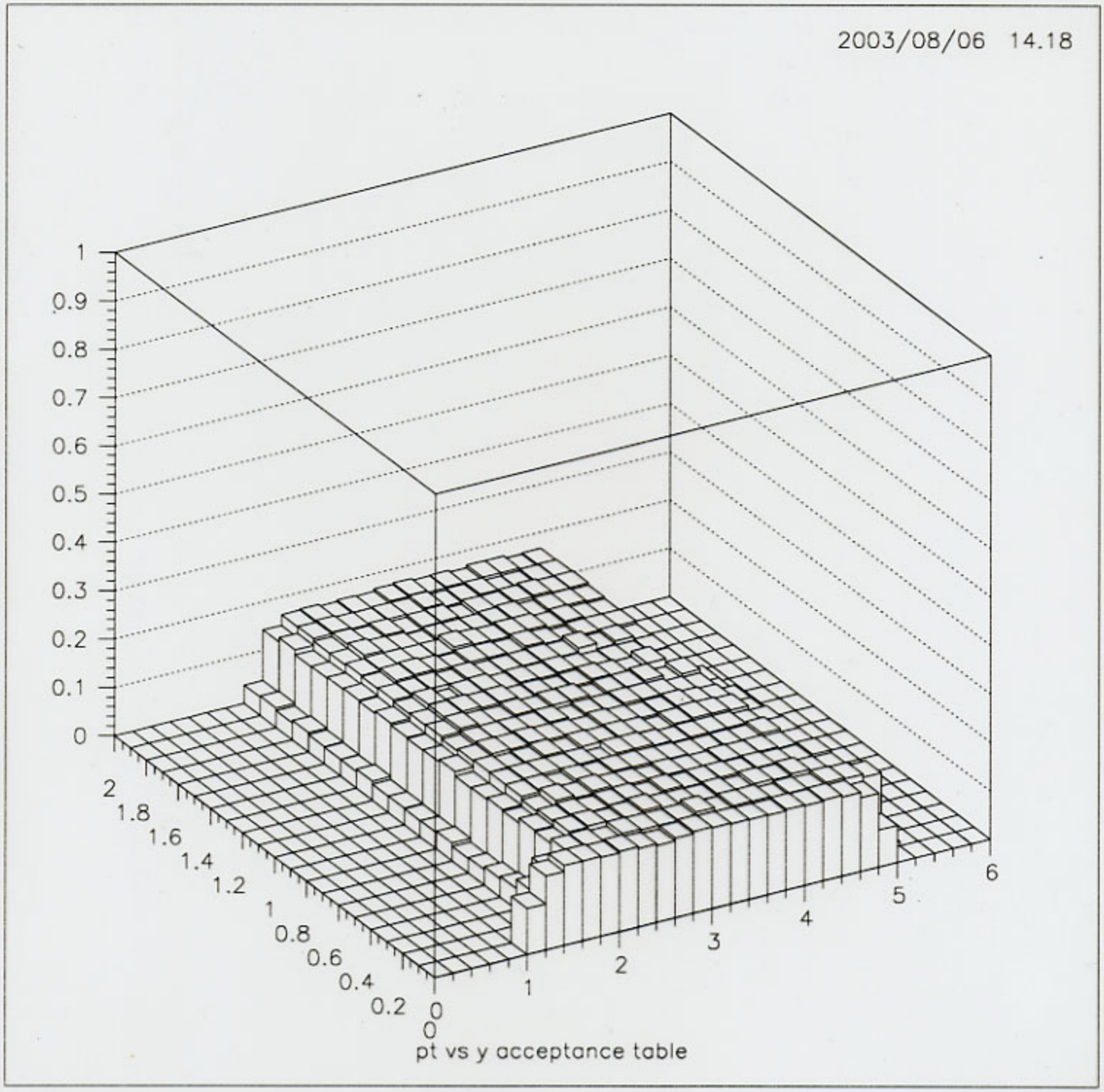
ANALYSIS

- PROCEDURE (PROGRAMS) AND CUTS THE SAME AS FOR 30/40/80/160 AGEV

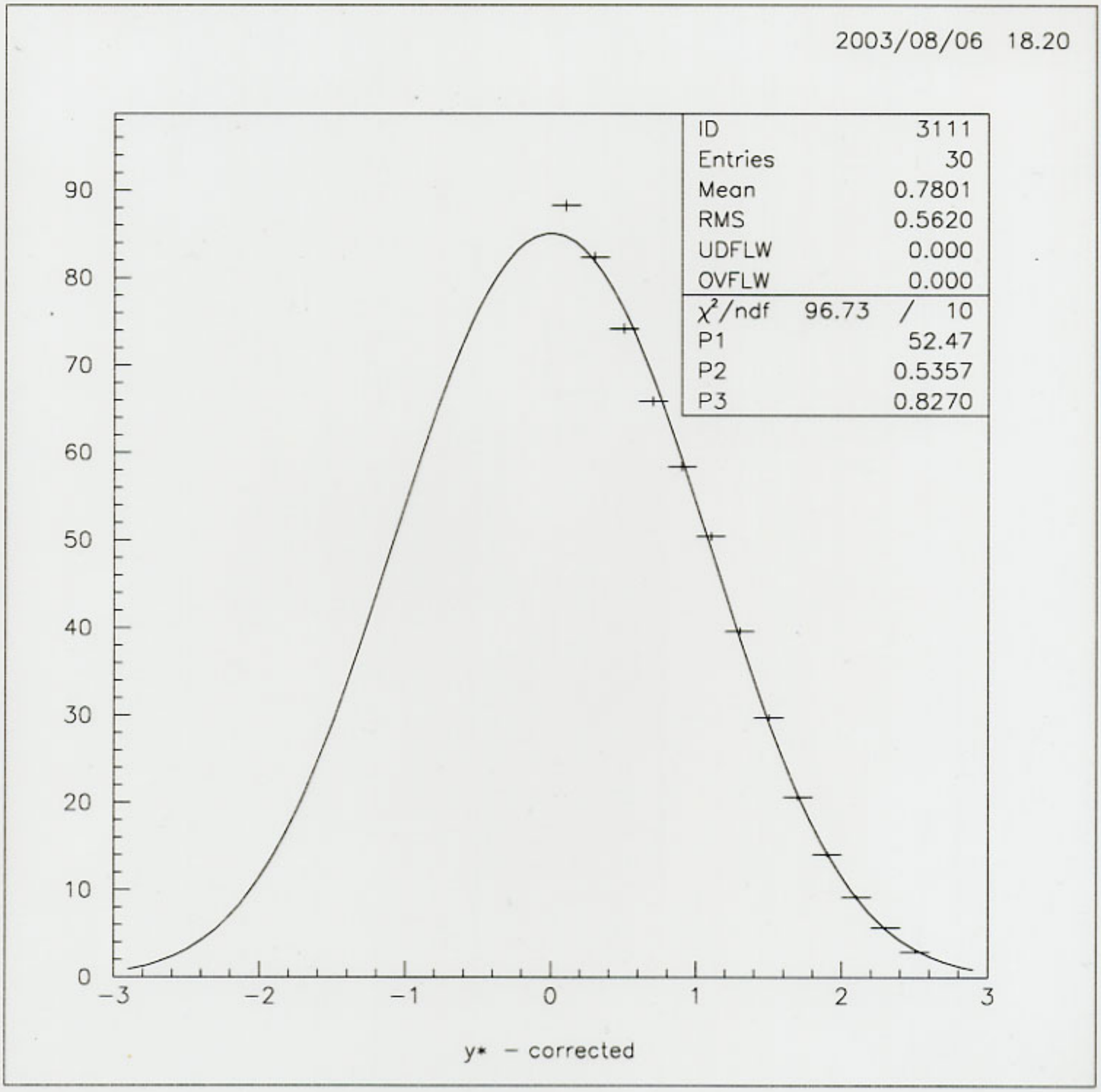
- CORRECTIONS:
  - GEO ACC FOR 20 A GEV
  - VENUS FOR 20 A·GEV
  - EFF. AS FOR 40 A·GEV IN y^*

- RESULTS PRELIMINARY
- LARGE SYS. ERROR

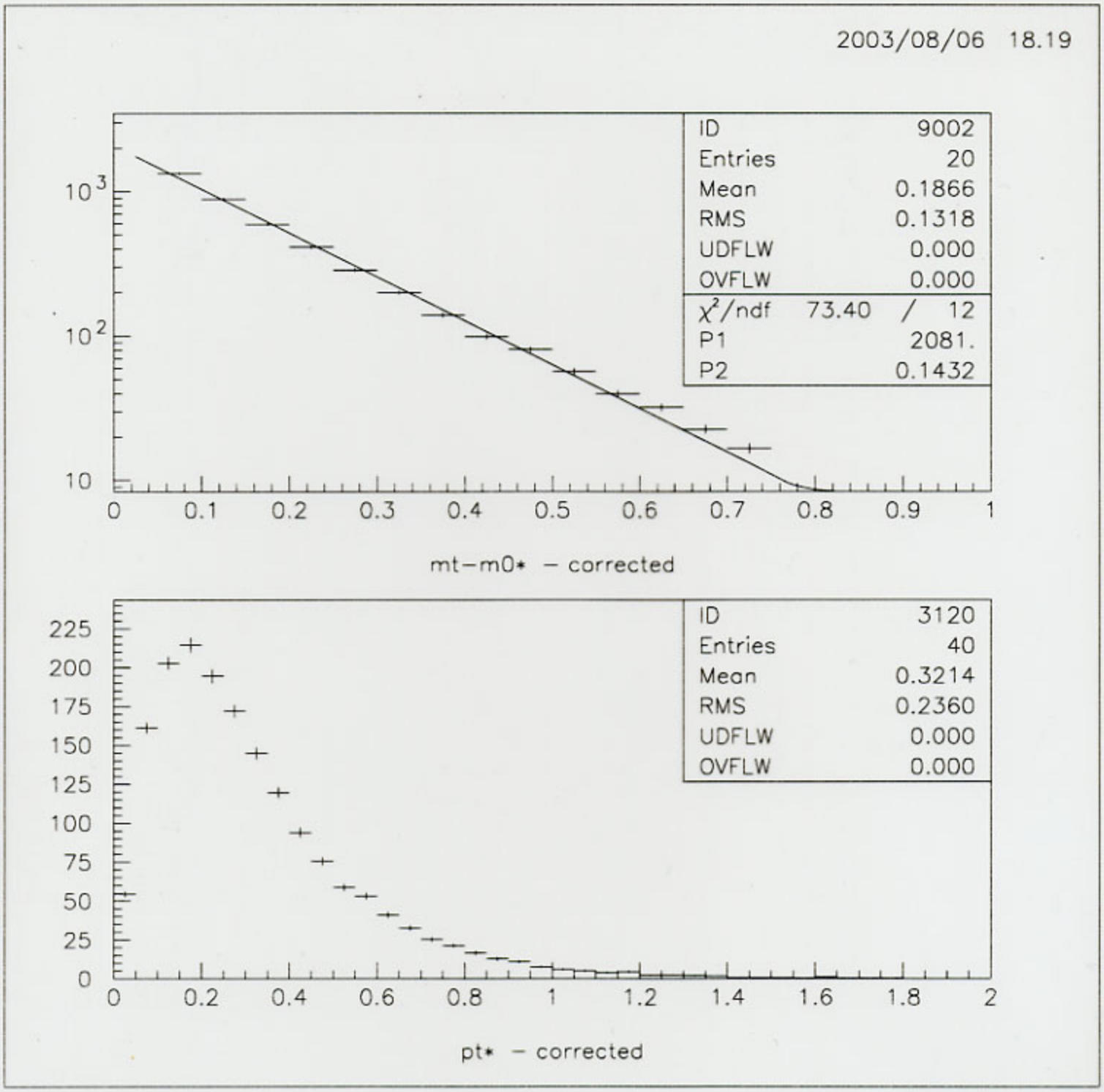
GEOMETRICAL ACCEPTANCE



RAPIDITY


2003/08/06 18.20
ID 3111
Entries 30
Mean 0.7801
RMS 0.5620
UDFLW 0.000
OVFLW 0.000
χ²/ndf 96.73 / 10
P1 52.47
P2 0.5357
P3 0.8270
90
80
70
60
50
40
30
20
10
0
−3
−2
−1
0
1
2
3
y* − corrected

p_T/m_T SPECTRA



FIRST
SQM 2003

	20 A GEV	30 A GEV	40 AGeV	80 AGeV	158 AGeV
$T(\pi^-)$(MeV)	154 ± 2.6	165 ± 3 ± 15 (?) 165 ± 3 ±	169 ± 2 ± 10	179 ± 3 ± 10	180 ± 3 ± 10
$T(K^+)$(MeV)			232 ± 3 ± 6	230 ± 5 ± 6	232 ± 4 ± 6
$T(K^-)$(MeV)			226 ± 3 ± 6	217 ± 3 ± 6	226 ± 9 ± 6
$dn/dy(\pi^-)$	84 ± 8	92 ± 9	106.1 ± 0.4 ± 6	140.4 ±0.5 ± 7	175.4 ± 0.7 ± 9
$dn/dy(\pi^+)$	72.3	(80 ± 8)	96.6 ± 0.4 ± 6	132.0 ±0.5 ± 7	170.1 ± 0.7 ± 9
$dn/dy(K^+)$			20.1 ± 0.3 ± 1.0	24.6 ± 0.2 ± 1.2	29.6 ± 0.3 ± 1.5
$dn/dy(K^-)$			7.58 ± 0.12 ± 0.4	11.7 ± 0.10 ± 0.6	16.8 ± 0.2 ± 0.8
$\langle\pi^-\rangle$	217 ± 3 ± 15	270 ± 3 ± 27 275 ± 3	322 ± 3 ± 16	474 ± 5 ± 23	639 ± 17 ± 31
$\langle\pi^+\rangle$	184.5	(235 ± 23)	293 ± 3 ± 15	446 ± 5 ± 22	619 ± 17 ± 31
$\langle K^+\rangle$			59.1 ± 1.9 ± 3	76.9 ± 2 ± 4	103.0 ± 5 ± 5
$\langle K^-\rangle$			19.2 ± 0.5 ± 1.0	32.4 ± 0.6 ± 1.6	51.9 ± 1.9 ± 3

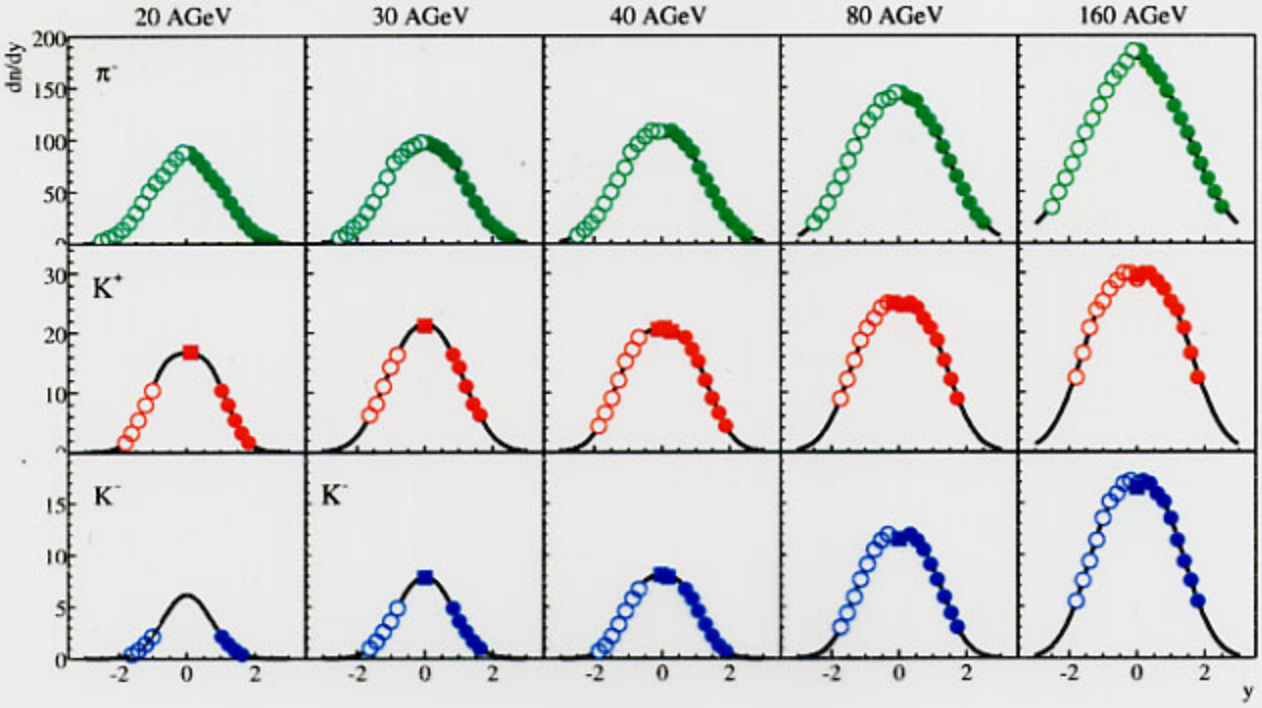
$$\frac{dn}{m_T\, dm_T\, dy} = C\, e^{-m_T/T}$$

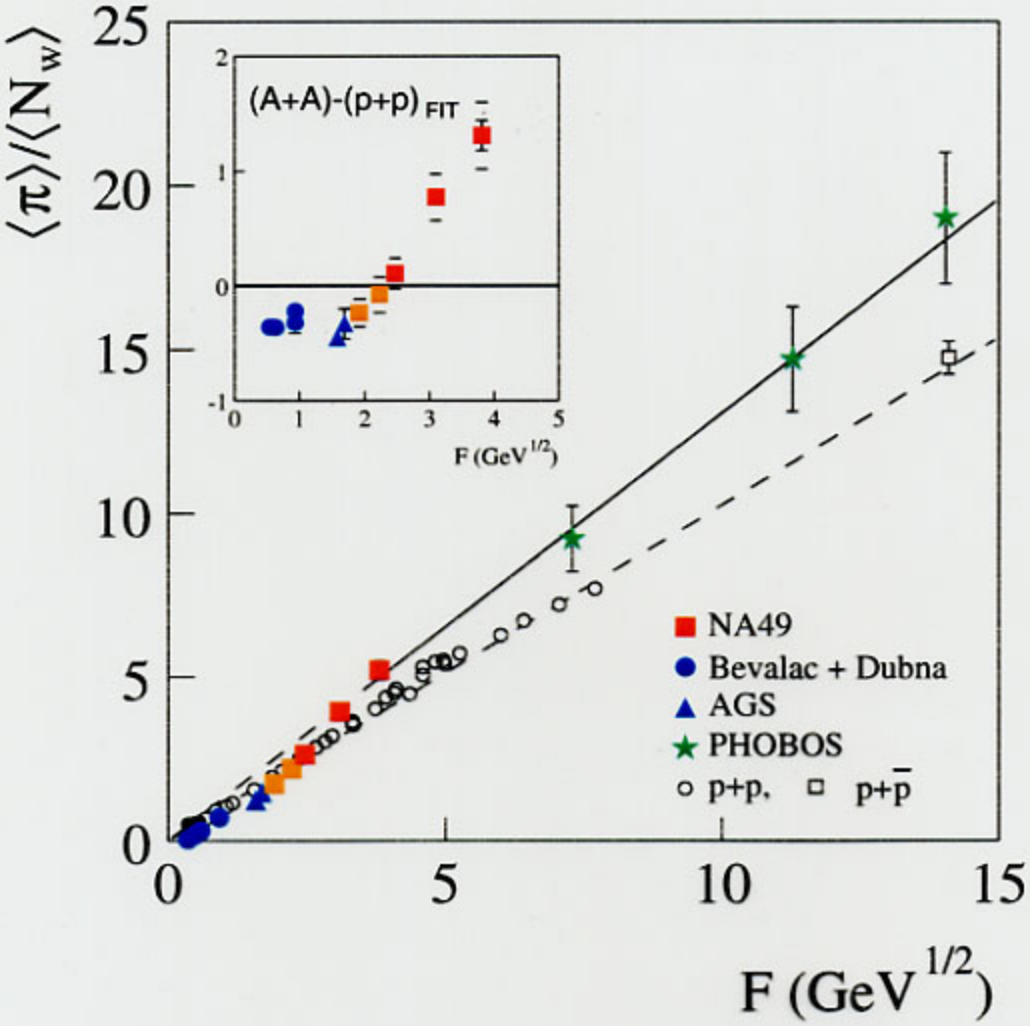
FIRST

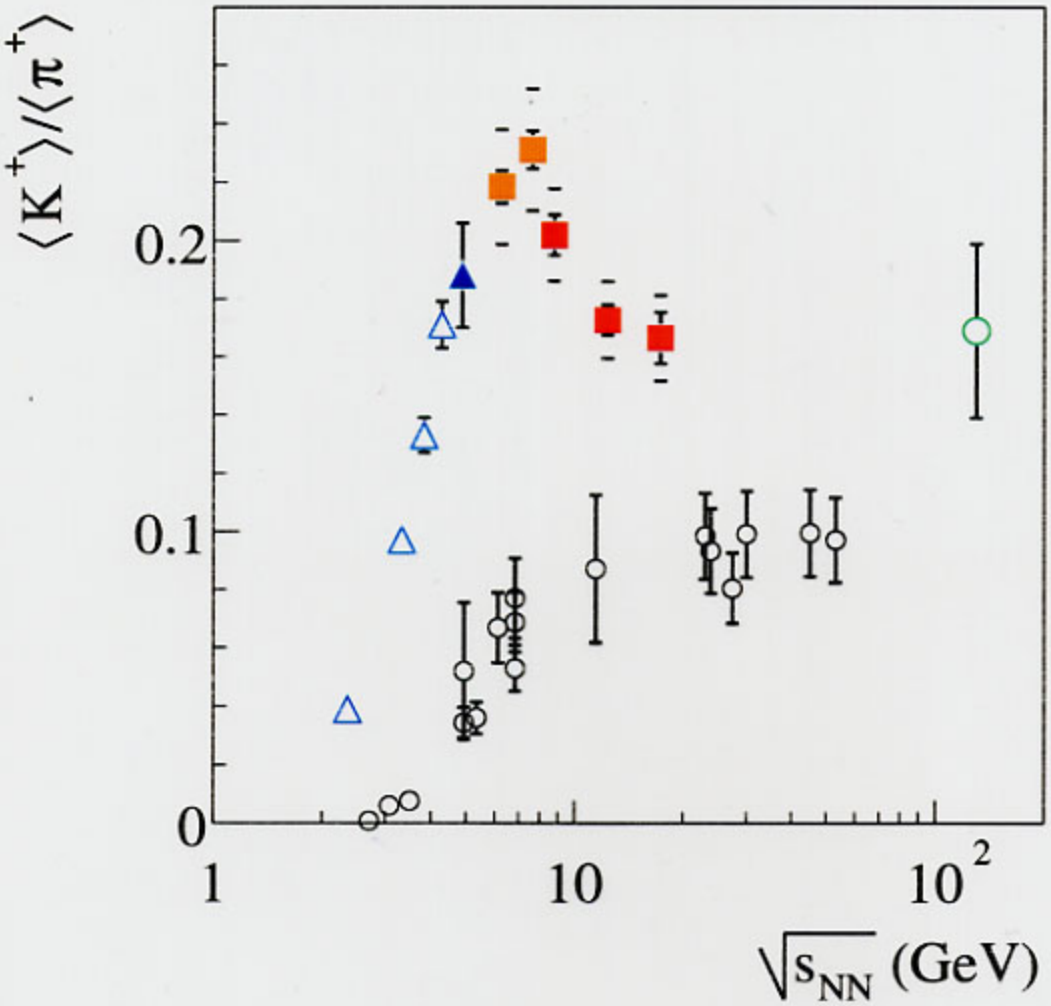
SQM 2003

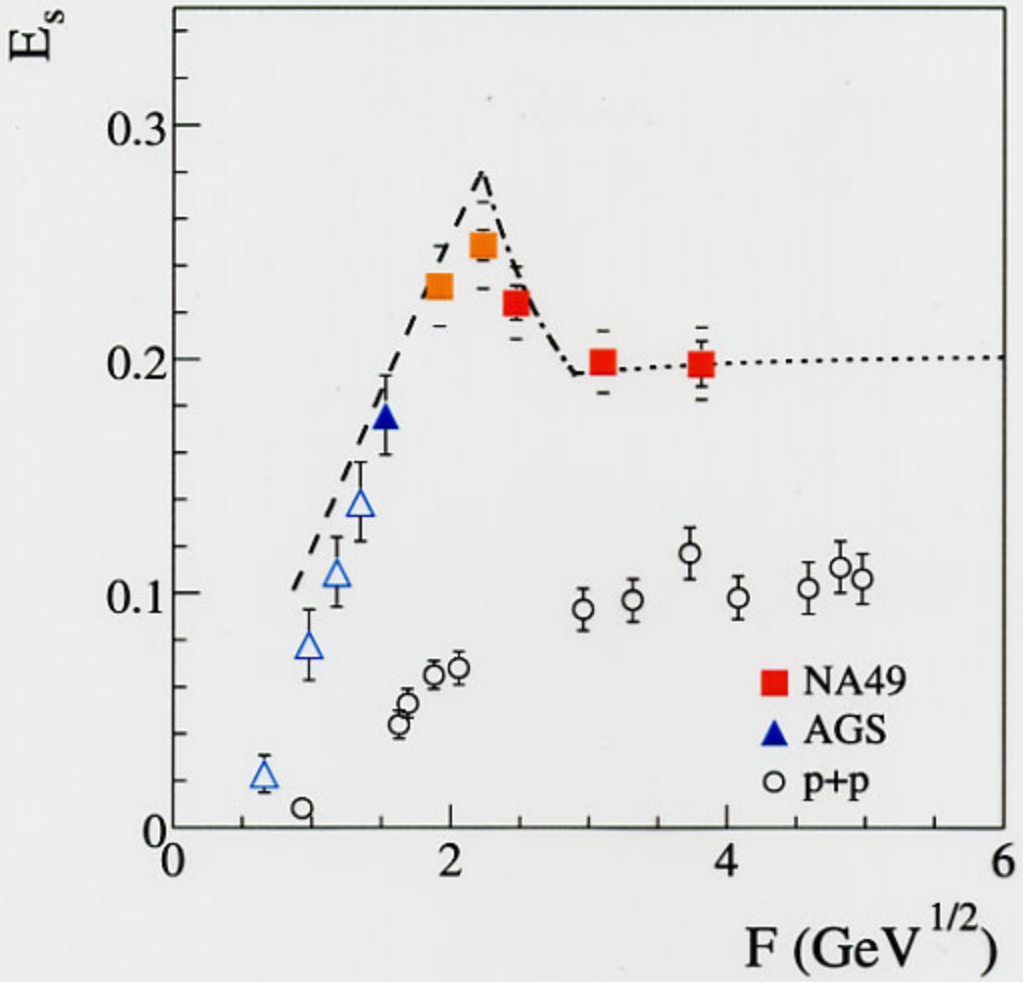
	20 A·GEV	30 A·GEV	40 AGeV	80 AGeV	158 AGeV
$N(\pi^-)$	52.5 ± 0.5	64.1 ± 0.5 65.7 ± 0.5	74.0 ± 0.5	97.0 ± 0.7	107.6 ± 1.8
$N(K^+)$			16.2 ± 0.4	19.3 ± 0.3	23.4 ± 0.6
$N(K^-)$			6.03 ± 0.13	9.16 ± 0.12	12.8 ± 0.3
$\sigma(\pi^-)$	0.827 ± 0.008	0.841 ± 0.005 0.835 ± 0.006	0.872 ± 0.005	0.974 ± 0.007	1.18 ± 0.02
$\sigma(K^+)$			0.725 ± 0.016	0.792 ± 0.018	0.88 ± 0.04
$\sigma(K^-)$			0.635 ± 0.011	0.705 ± 0.010	0.81 ± 0.02
$y_0(\pi^-)$	0.536 ± 0.011	0.636 ± 0.006 0.640 ± 0.006	0.666 ± 0.006	0.756 ± 0.006	0.72 ± 0.02
$y_0(K^+)$			0.694 ± 0.008	0.742 ± 0.008	0.839 ± 0.012
$y_0(K^-)$			0.569 ± 0.010	0.668 ± 0.005	0.727 ± 0.010

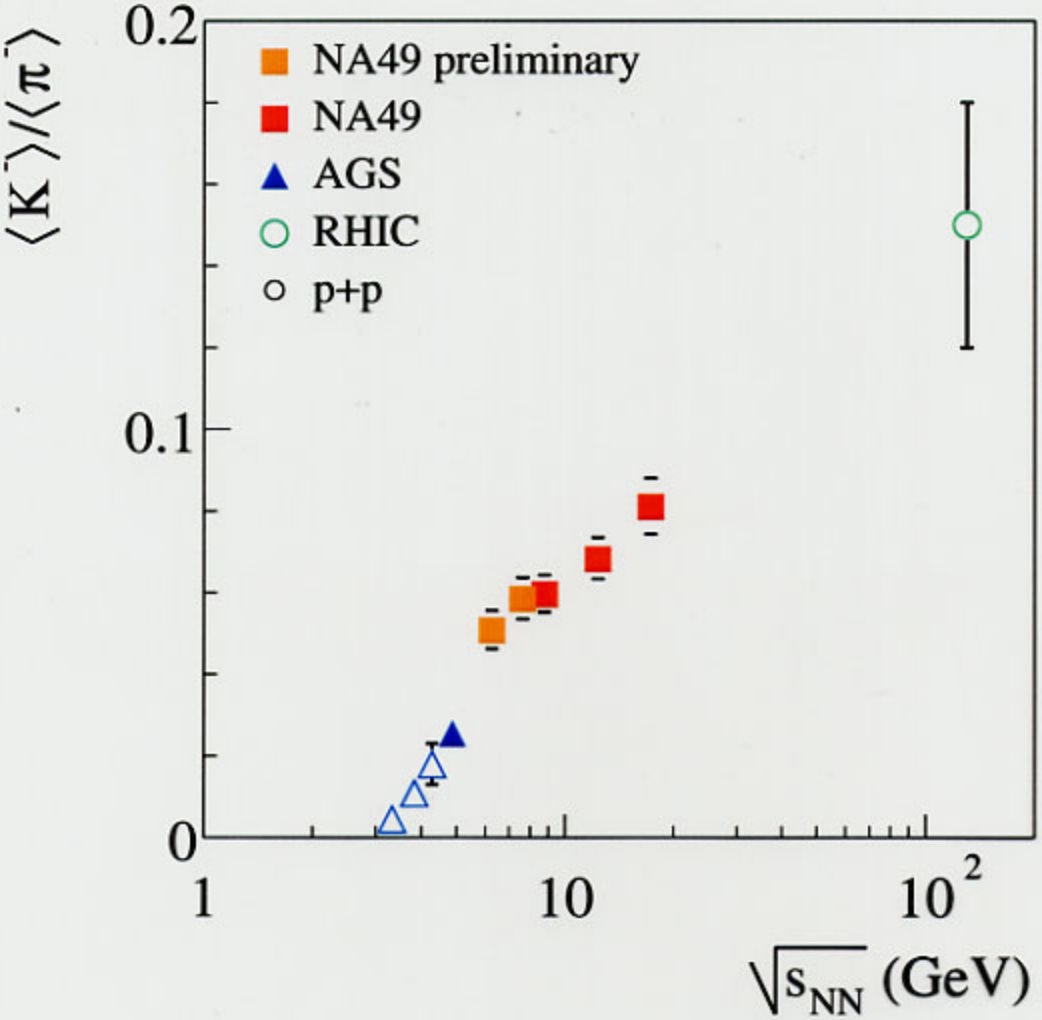
$$\frac{dn}{dy} = N\left[e^{-(y-y_0)^2/(2\sigma^2)} + e^{-(y+y_0)^2/(2\sigma^2)}\right]$$

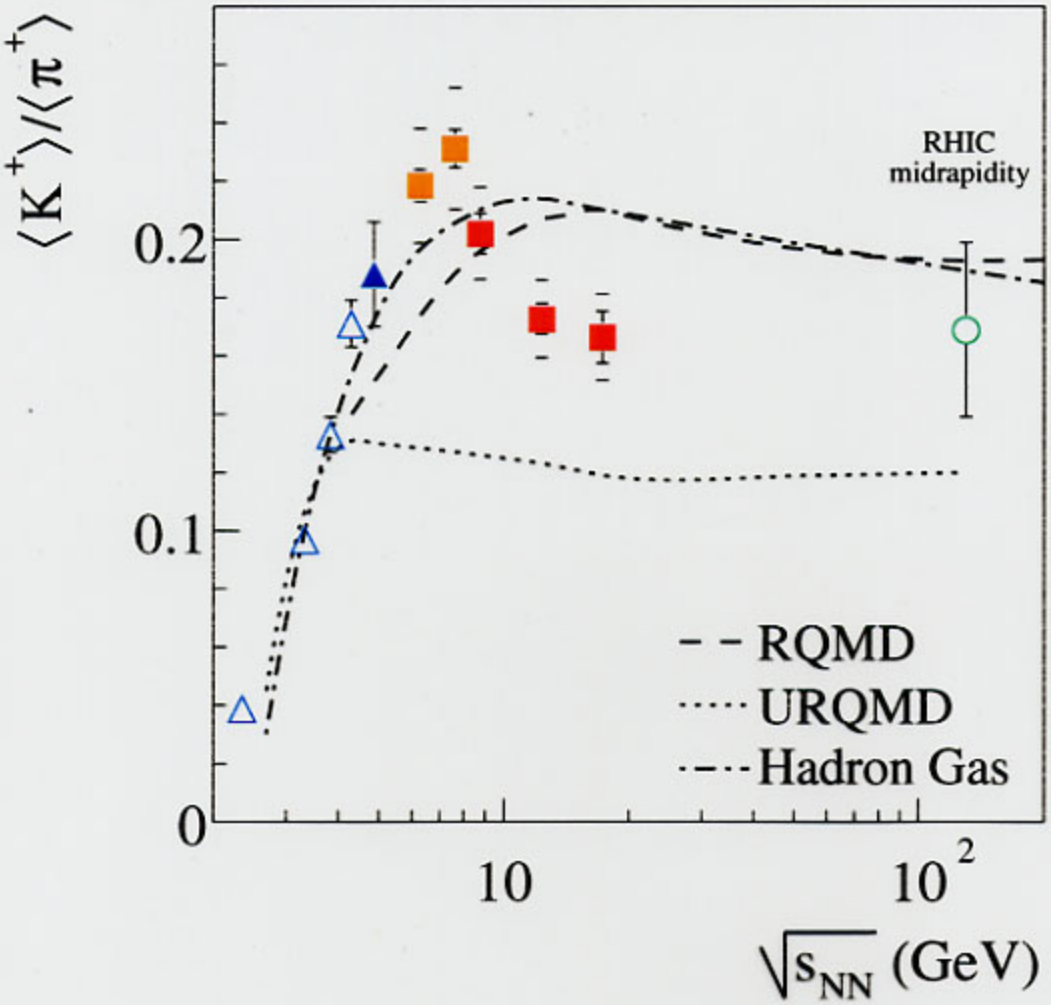

20 AGeV
30 AGeV
40 AGeV
80 AGeV
160 AGeV
dn/dy
π⁻
K⁺
K⁻
K⁻
y


⟨π⟩/⟨N_w⟩
F (GeV^1/2)
(A+A)-(p+p) FIT
F (GeV^1/2)
NA49
Bevalac + Dubna
AGS
PHOBOS
p+p, p+p̄


$\langle K^+ \rangle / \langle \pi^+ \rangle$
0.2
0.1
0
1
10
10^2
$\sqrt{s_{NN}}$ (GeV)


E_s
0.3
0.2
0.1
0
0
2
4
6
F (GeV$^{1/2}$)
NA49
AGS
p+p


0.2
0.1
0
1
10
10 2
NA49 preliminary
NA49
AGS
RHIC
p+p
⟨K⁻⟩/⟨π⁻⟩
√sNN (GeV)


$\langle K^+\rangle/\langle\pi^+\rangle$
0.2
0.1
0
10
10^2
$\sqrt{s_{NN}}$ (GeV)
RHIC
midrapidity
RQMD
URQMD
Hadron Gas

NEXT STEPS

- FINAL dE/dx SPECTRA
- FINAL EFF. CORRECTIONS (EMBEDDING)
- VENUS AT 80, 158 A GEV
- P_T/m_T SPECTRA VS Y
- π^+/π^- RATIO FROM TOF AT 20, 30 A GEV
- PUBLICATION