HIJET for e A
Old Dog N Sheep Clothing

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Figure 1:

HIJET an Old Dog

1. HIJET. A Monte Carlo Event Generator For P Nucleus
   And Nucleus Nucleus Collisions. T.W. Ludlam, A. Pfoh,
   A. Shor (Brookhaven) . 1986.BNL-37196 (REC.FEB.86) 9p,
   IN BROOKHAVEN 1985, PROCEEDINGS *EXPERIMENTS
   FOR A RELATIVISTIC HEAVY ION COLLIDER*, 373-381.

2. Effects of Secondary Interactions in Proton-Nucleus
   and Nucleus-Nucleus Collisions using the HIJET Event
   Generator, A. Shor and R.L. Brookhaven Nat. Lab. Upton.
   Phys. Lett B 218 (1989) 100.

Figure 2:

Hadrons or Color Fields that interact in the next Collision
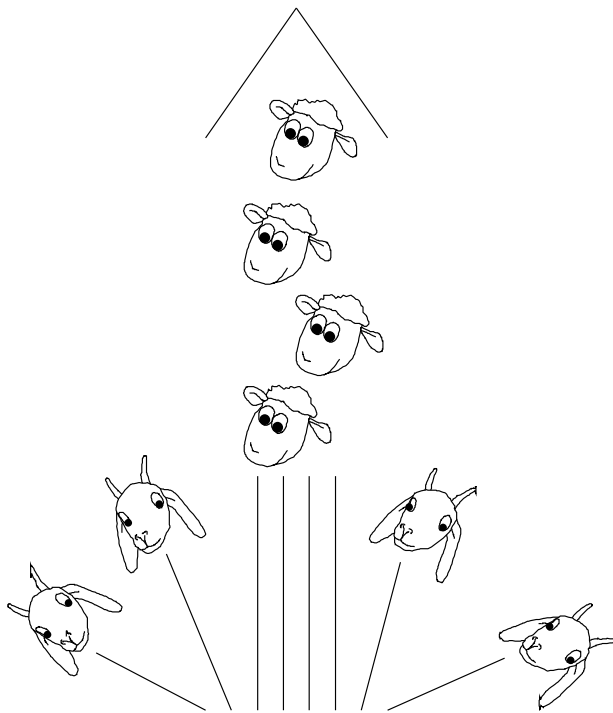# Separate Sheep from Goats

Figure 3:

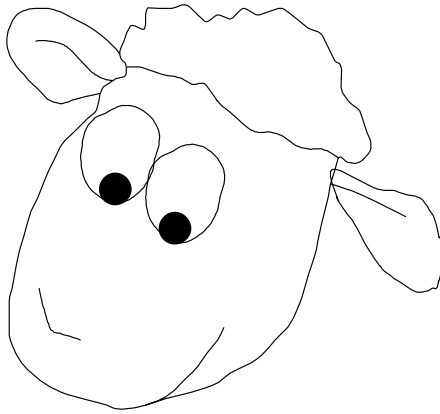# Sheep array leading Fragmentation Hadrons
1 - 4 Hadrons ΔY 1 - 3

Figure 4:

Compare for p Au
HIJING to HIJET
Consider 0 impact parameter
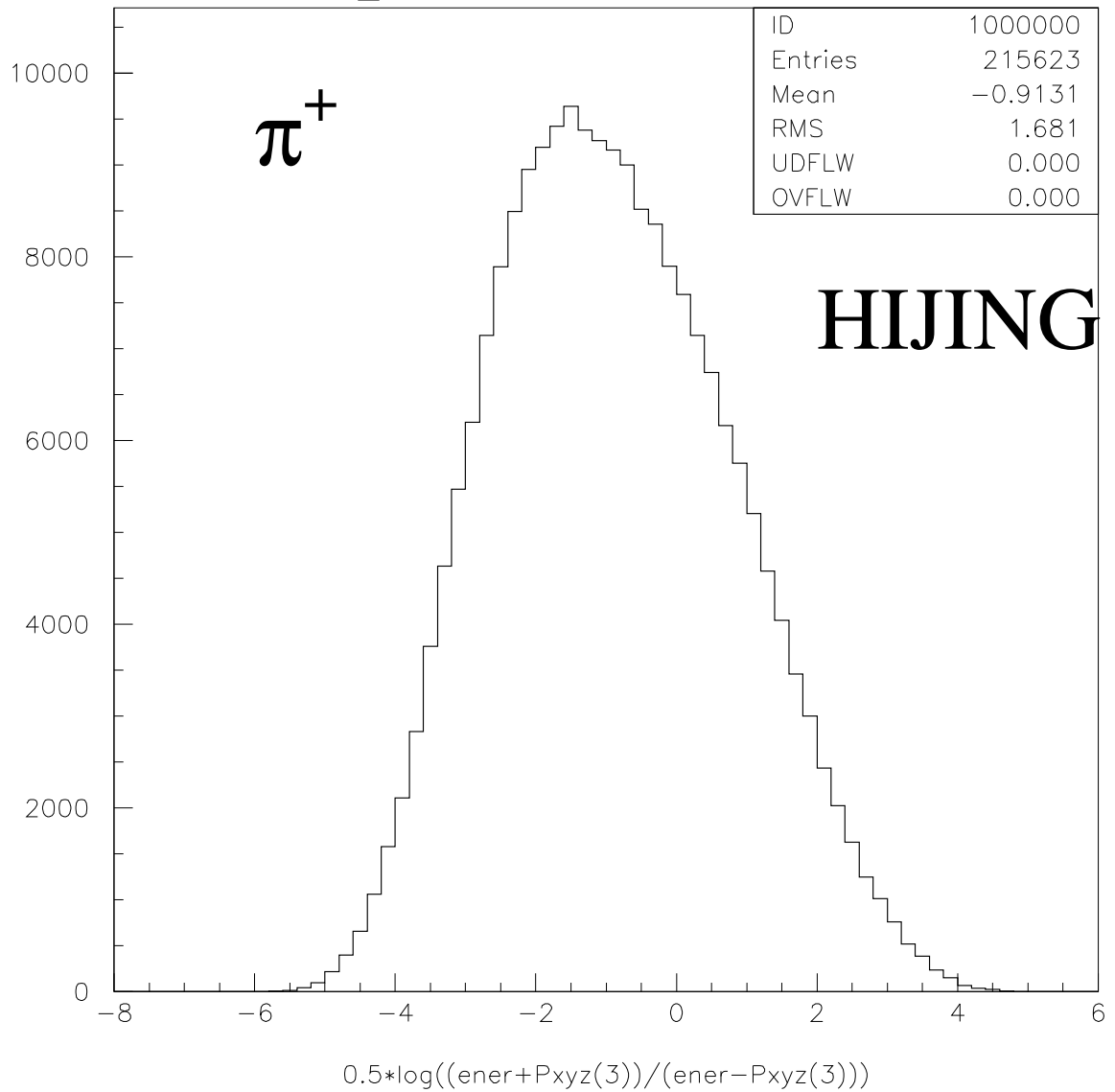N N energy 63 GeV

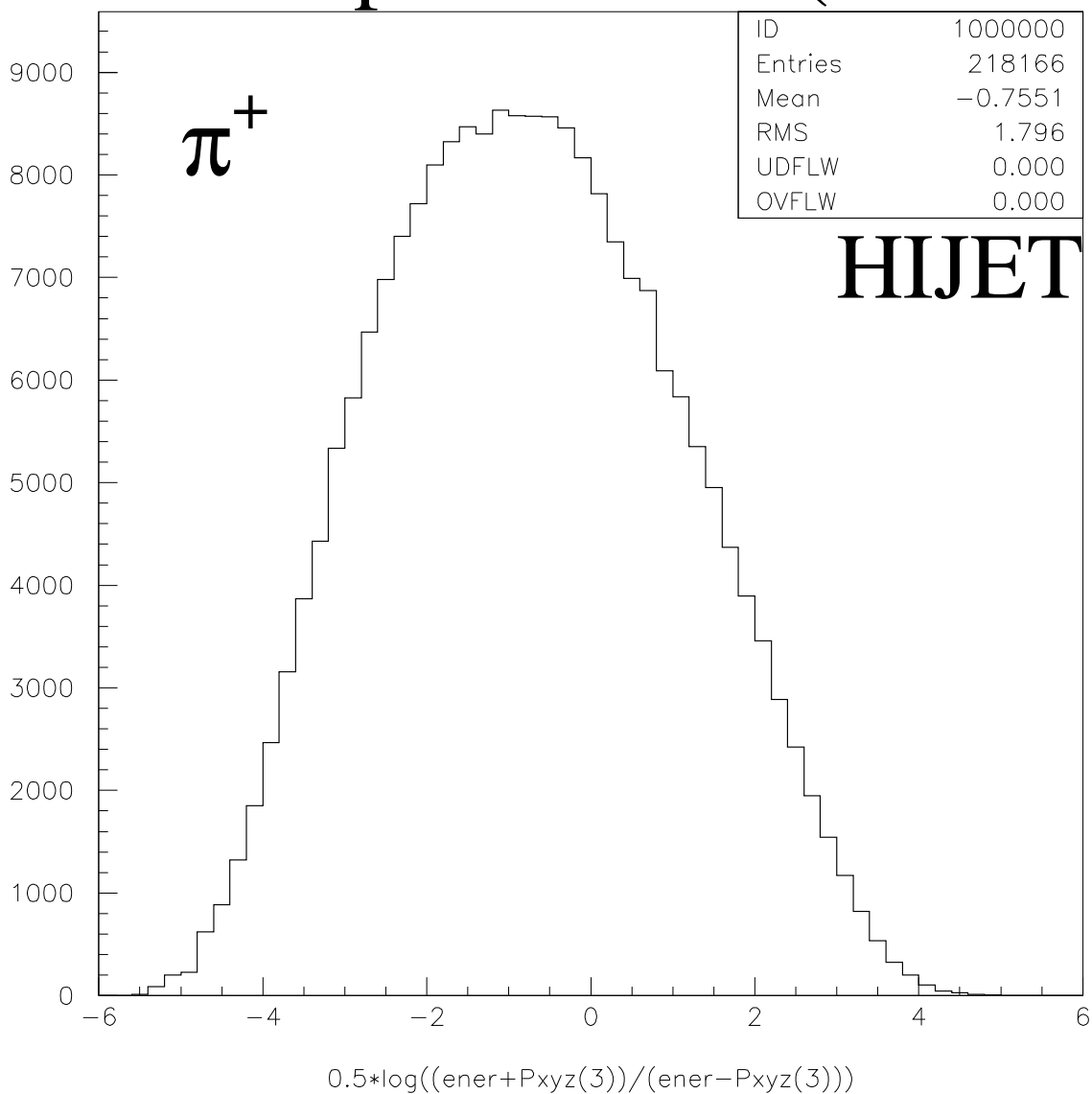Figure 5:

10000 pAu events (63 GeV)

π^+

ID	1000000
Entries	215623
Mean	−0.9131
RMS	1.681
UDFLW	0.000
OVFLW	0.000

HIJING

0.5*log((ener+Pxyz(3))/(ener−Pxyz(3)))

Figure 6:

Figure 7:

10000 pAu events (63 GeV)

π^-

ID	1000000
Entries	220786
Mean	−1.007
RMS	1.688
UDFLW	0.000
OVFLW	0.000

HIJING

0.5*log((ener+Pxyz(3))/(ener−Pxyz(3)))
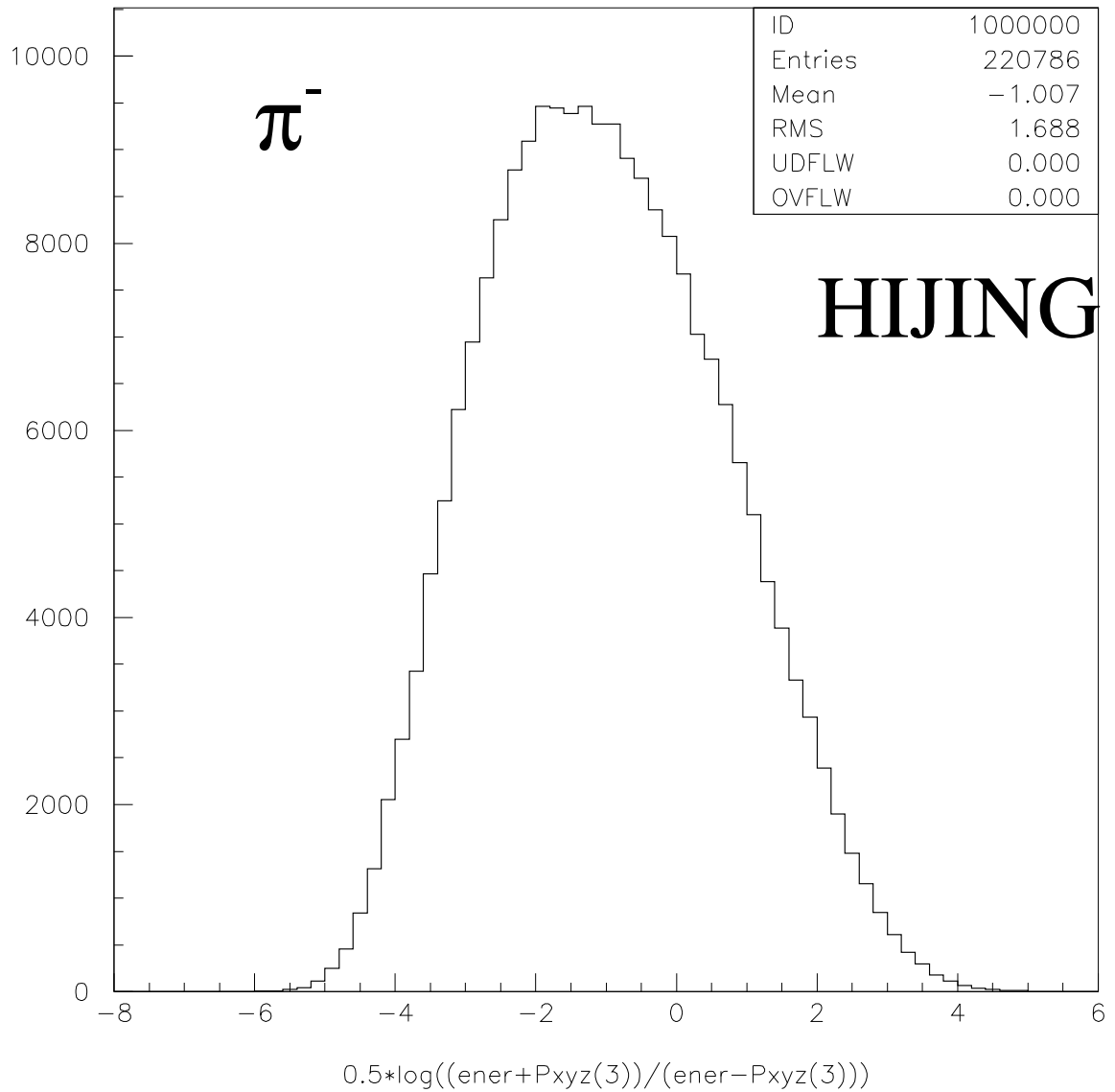
Figure 8:

10000 pAu events (63 GeV)

ID	1000000
Entries	221670
Mean	−0.8771
RMS	1.759
UDFLW	0.000
OVFLW	0.000

π^{-}

HIJET

$0.5*\log((ener+Pxyz(3))/(ener-Pxyz(3)))$
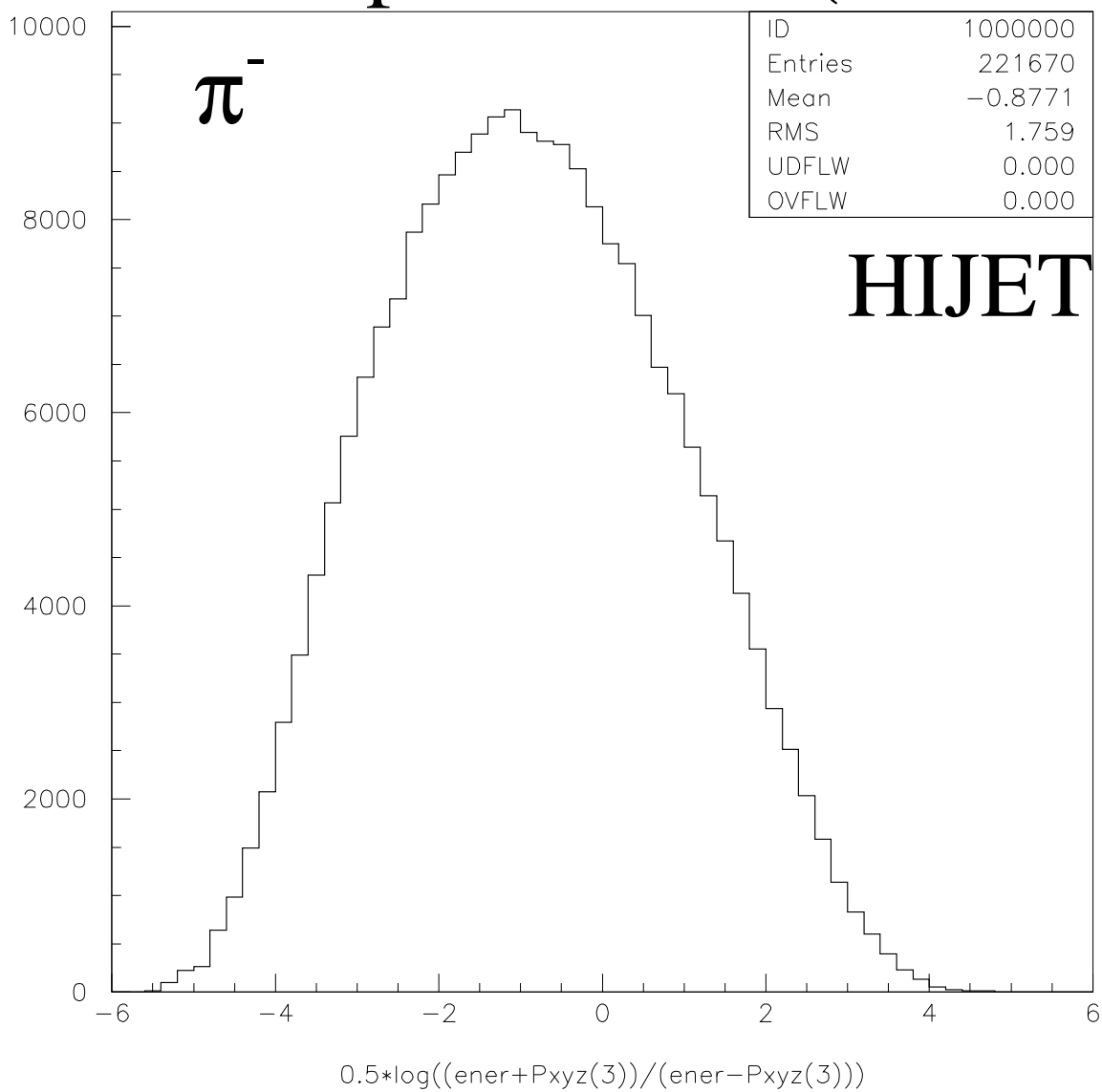
Figure 9:

10000 pAu events (63 GeV)

k$^+$

ID	1000000
Entries	22338
Mean	-0.7492
RMS	1.464
UDFLW	0.000
OVFLW	0.000

HIJING

0.5*log((ener+Pxyz(3))/(ener−Pxyz(3)))
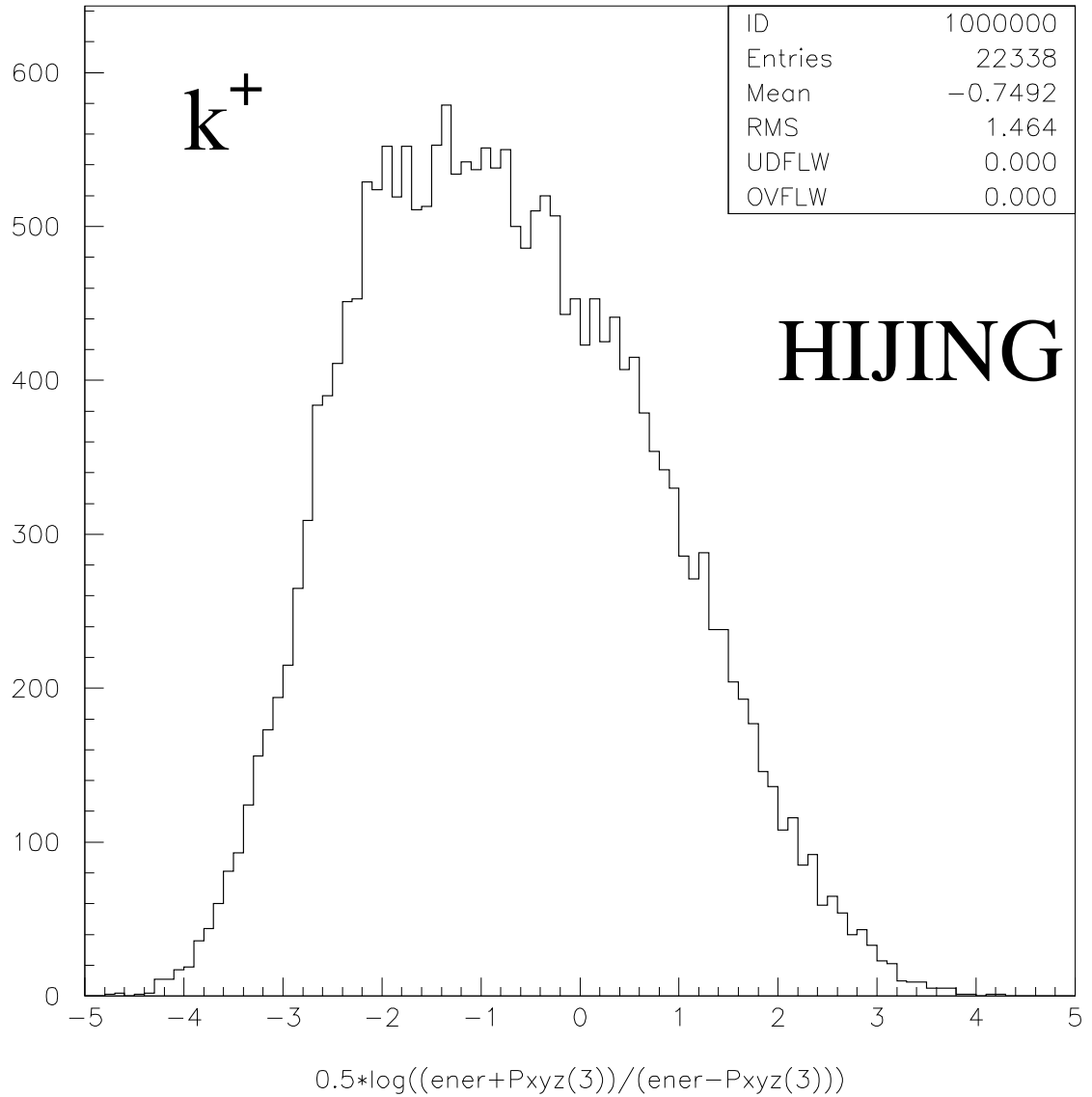
Figure 10:

10000 pAu events (63 GeV)

k$^+$

ID	1000000
Entries	18511
Mean	−0.5006
RMS	1.628
UDFLW	0.000
OVFLW	0.000

HIJET

0.5*log((ener+Pxyz(3))/(ener−Pxyz(3)))
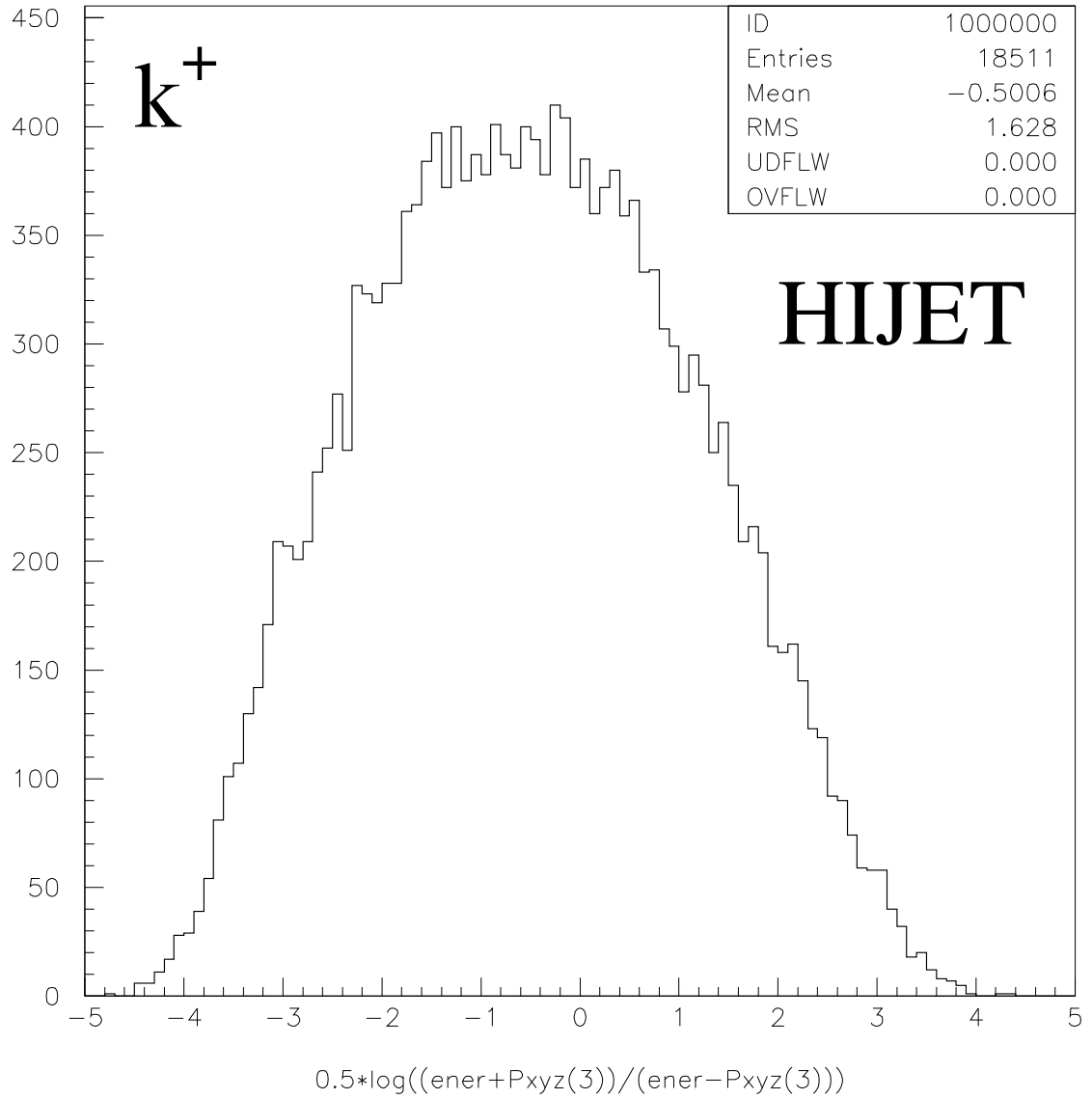
Figure 11:

10000 pAu events (63 GeV)

ID	1000000
Entries	18459
Mean	−0.9701
RMS	1.453
UDFLW	0.000
OVFLW	0.000

k⁻

HIJING

0.5*log((ener+Pxyz(3))/(ener−Pxyz(3)))
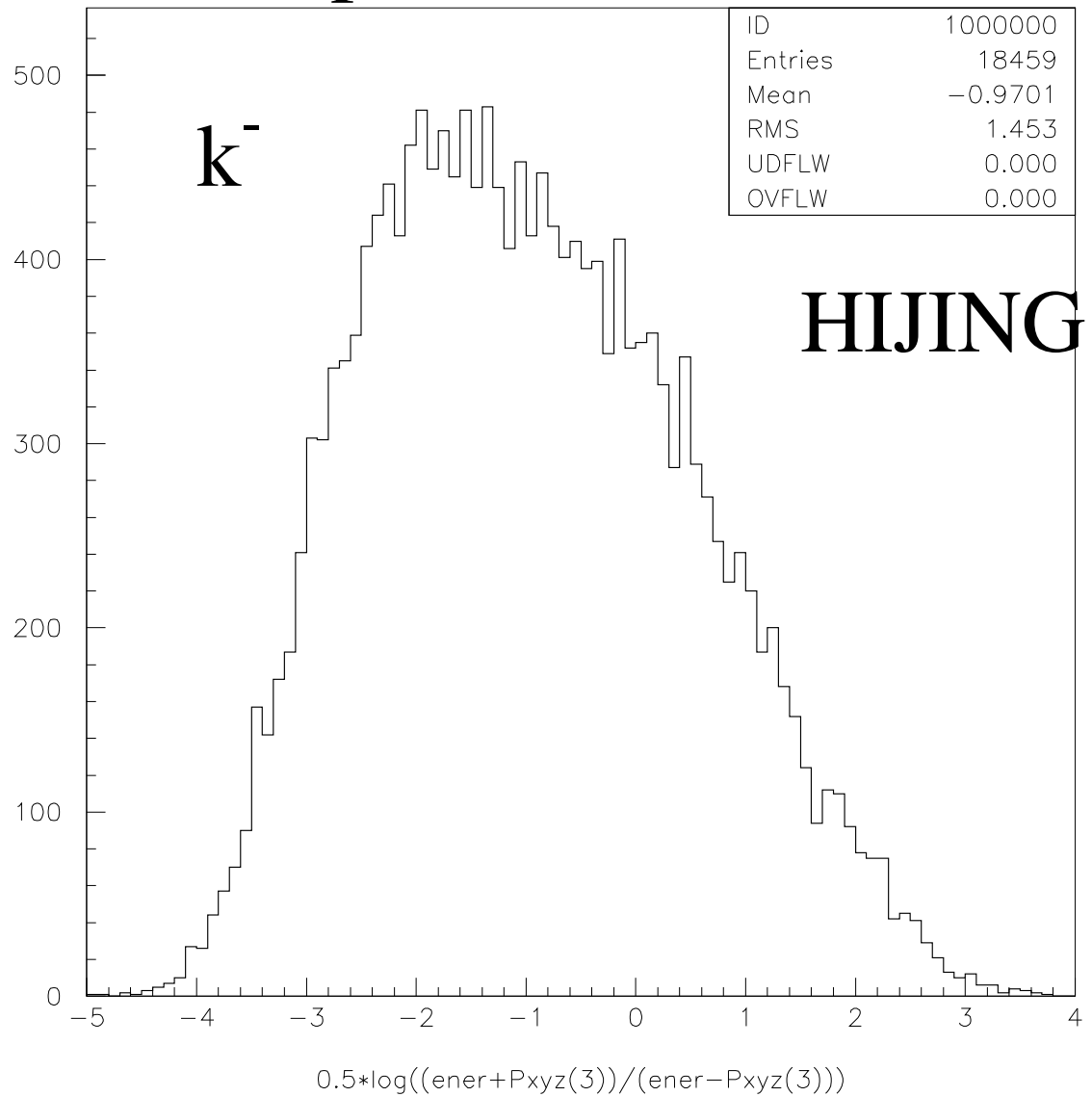
Figure 12:

10000 pAu events (63 GeV)

k⁻

ID	1000000
Entries	15751
Mean	−0.7441
RMS	1.563
UDFLW	0.000
OVFLW	0.000

HIJET

0.5*log((ener+Pxyz(3))/(ener−Pxyz(3)))
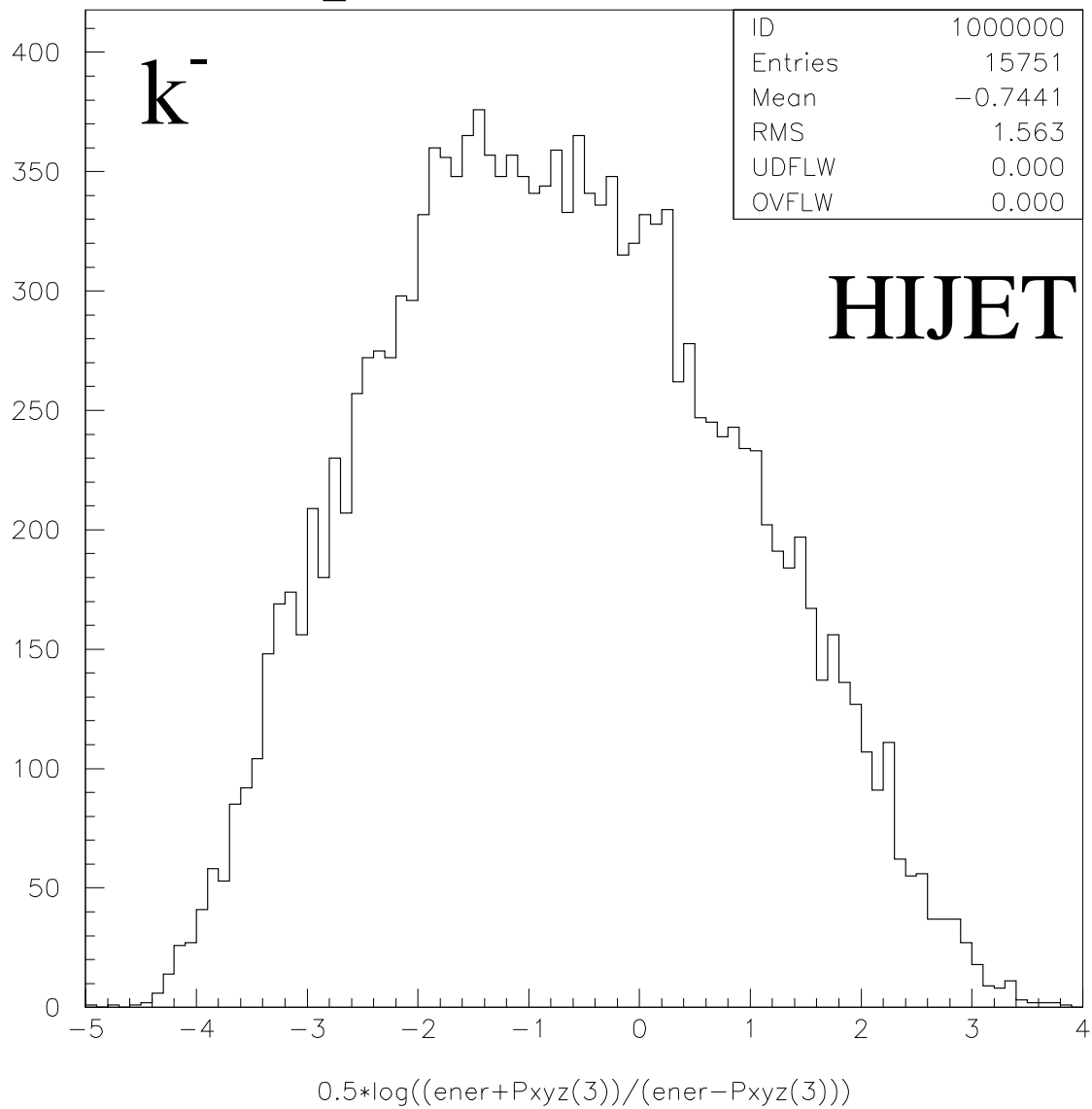
Figure 13:

10000 pAu events (63 GeV)

ID	1000000
Entries	20164
Mean	−0.8545
RMS	1.462
UDFLW	0.000
OVFLW	0.000

k_s

HIJING

$0.5*\log((ener+Pxyz(3))/(ener-Pxyz(3)))$
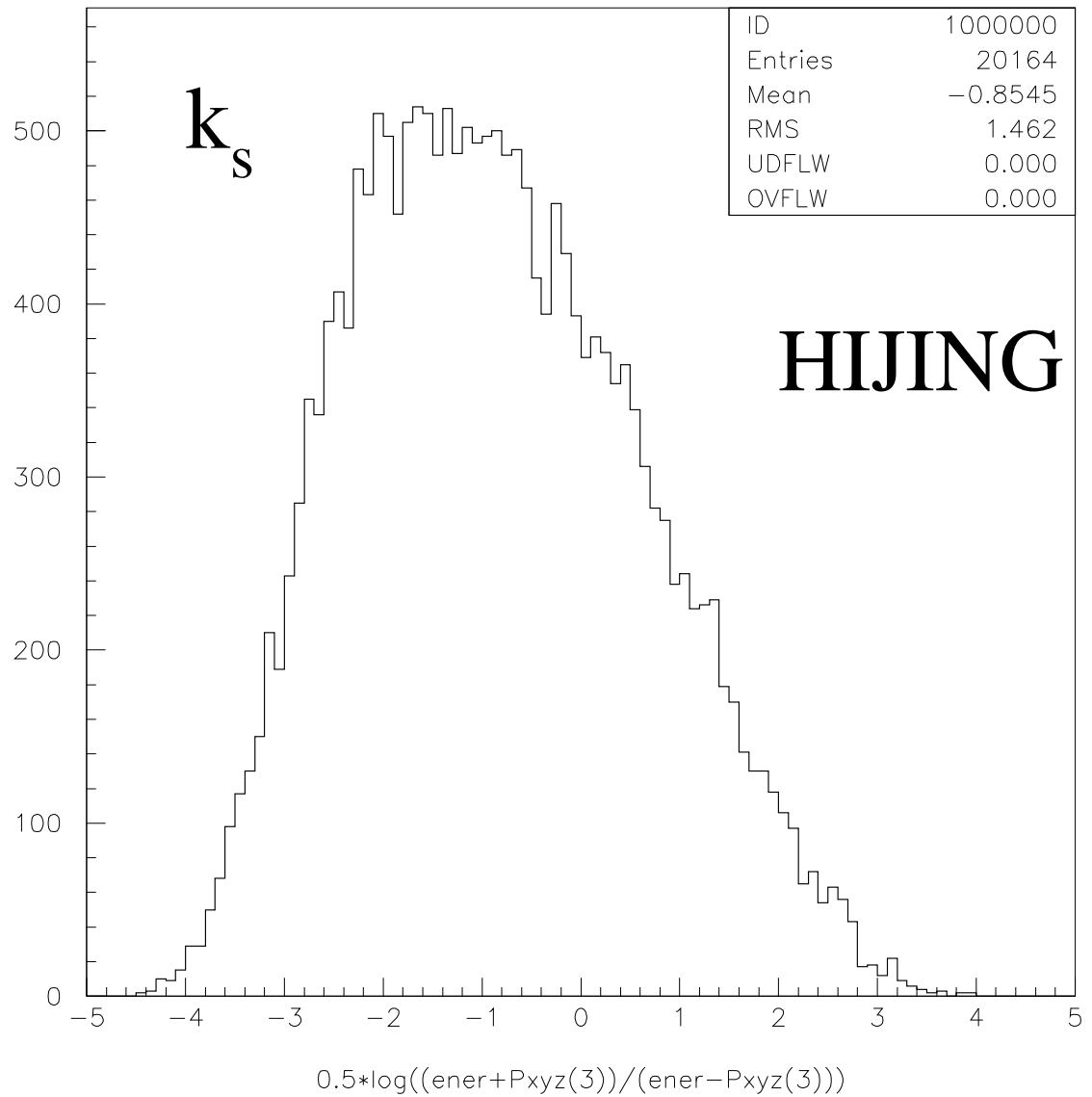
Figure 14:

10000 pAu events (63 GeV)

k$_s$

ID	1000000
Entries	19359
Mean	−0.5542
RMS	1.631
UDFLW	0.000
OVFLW	0.000

HIJET

0.5*log((ener+Pxyz(3))/(ener−Pxyz(3)))
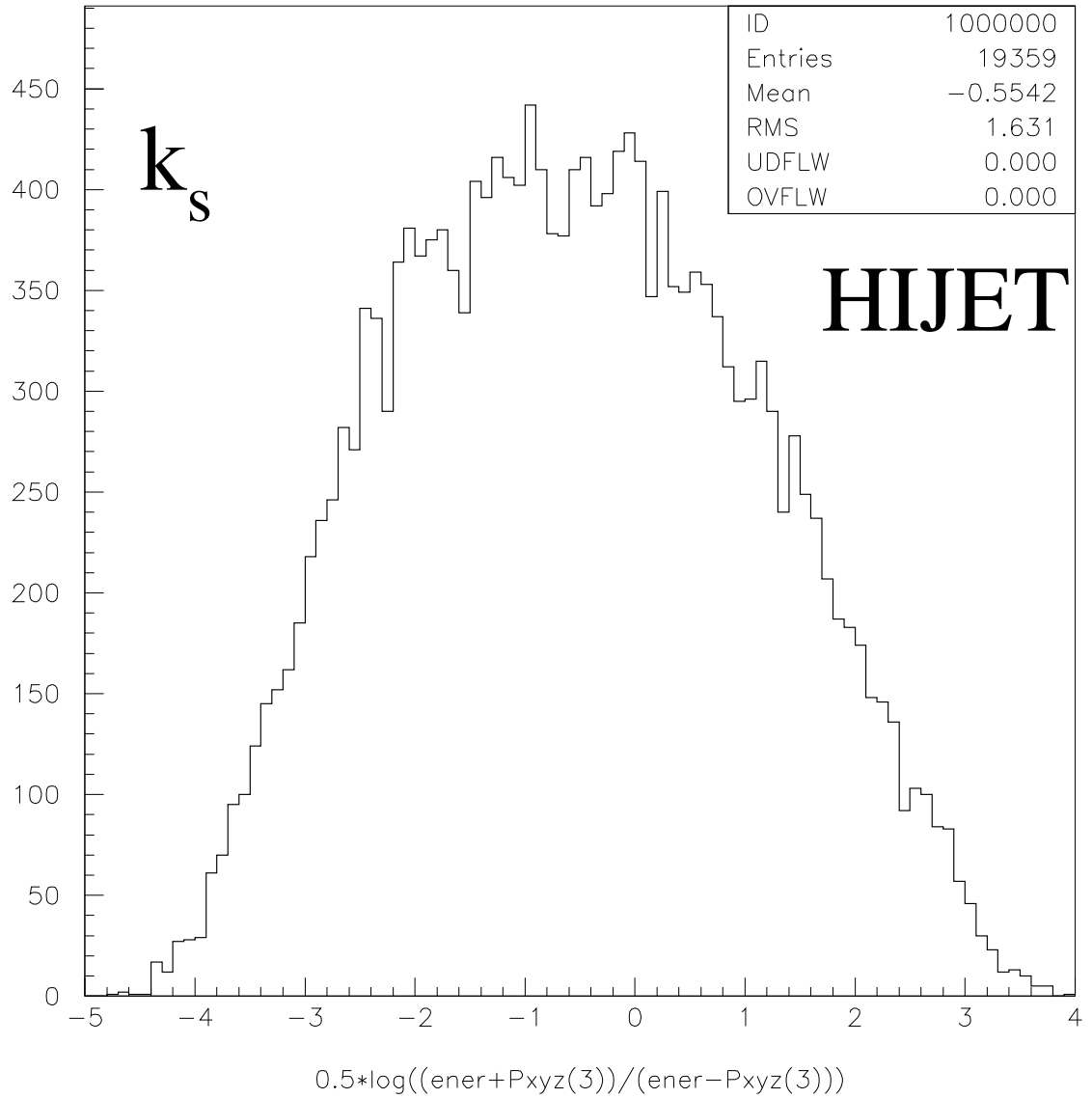
Figure 15:

10000 pAu events (63 GeV)

ID	1000000
Entries	62722
Mean	−2.280
RMS	1.994
UDFLW	0.000
OVFLW	0.000

P

HIJING

0.5*log((ener+Pxyz(3))/(ener−Pxyz(3)))
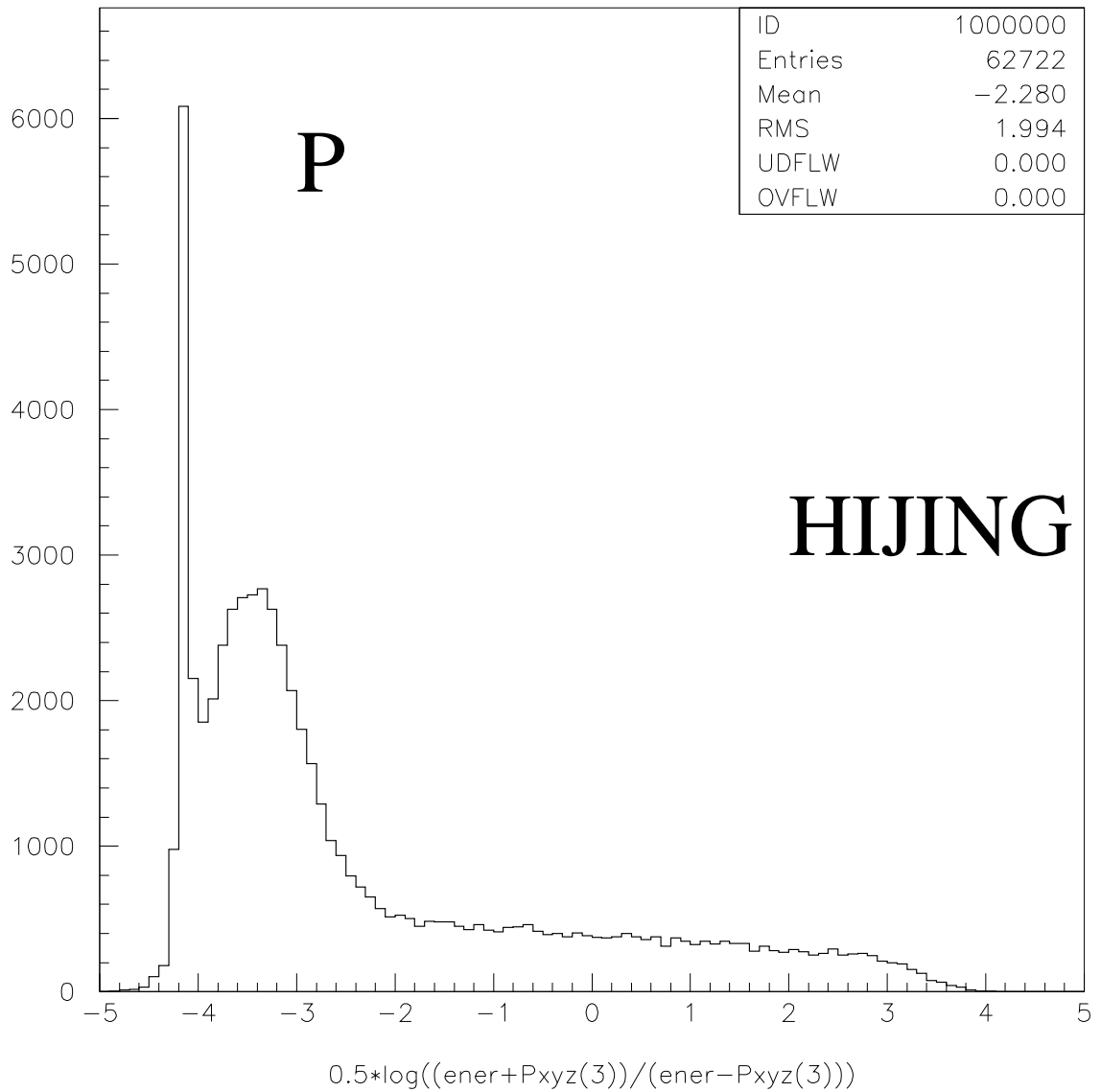
Figure 16:

10000 pAu events (63 GeV)

ID	1000000
Entries	36483
Mean	−2.563
RMS	1.367
UDFLW	0.000
OVFLW	0.000

P

HIJET

0.5*log((ener+Pxyz(3))/(ener−Pxyz(3)))
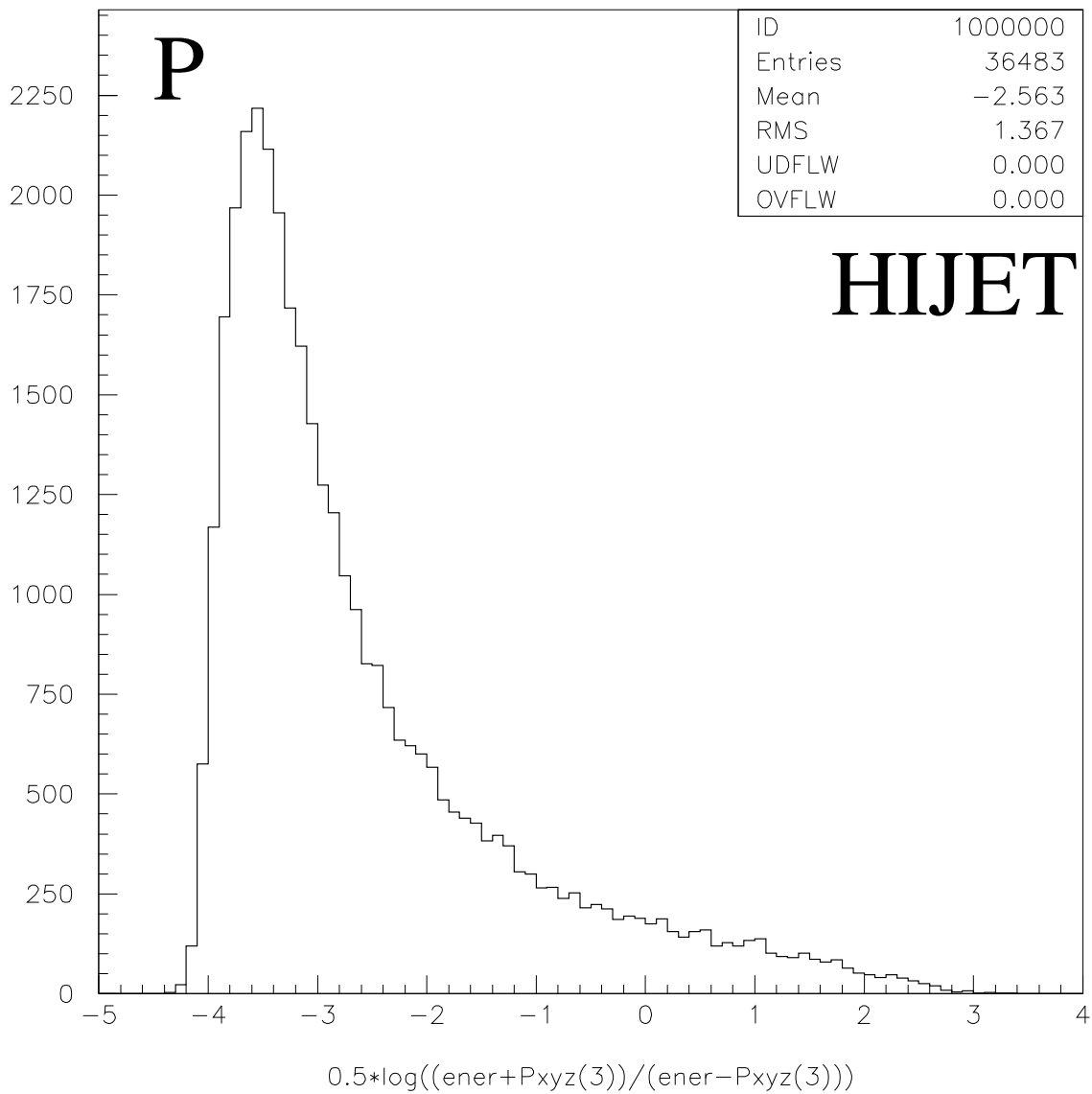
Figure 17:

10000 pAu events (63 GeV)
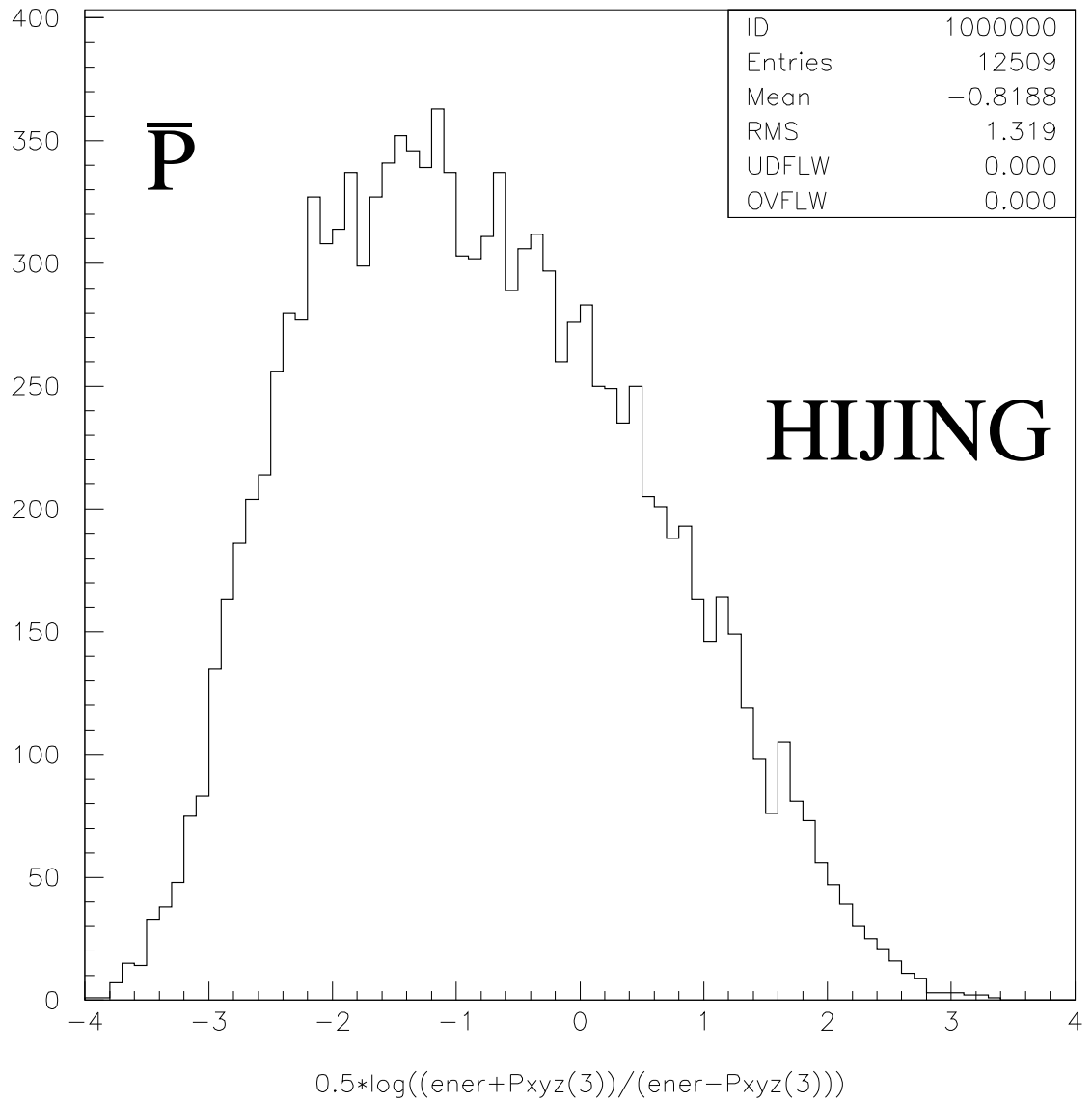
Figure 18:

10000 pAu events (63 GeV)

ID	1000000
Entries	7670
Mean	−0.6077
RMS	1.391
UDFLW	0.000
OVFLW	0.000

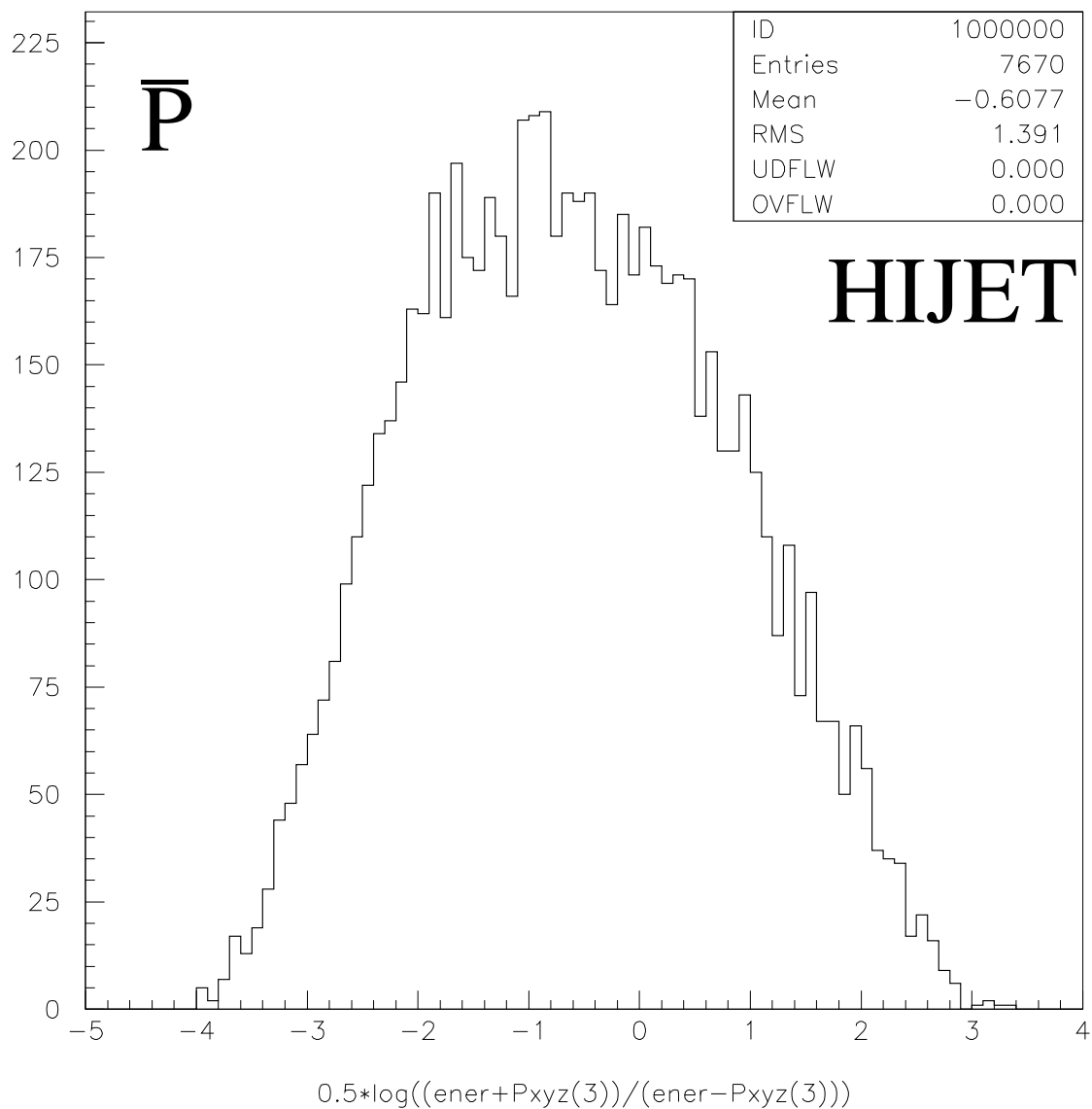$\overline{P}$

HIJET

0.5*log((ener+Pxyz(3))/(ener−Pxyz(3)))

Figure 19:

How to change from
p A   to   e A?

Consider first collision
from Pythia e p collision.

HIJET gives geometry of A.

e p gives cross section
for interaction.

Pythia e p collision gives
Hadron Sheep array for
further soft collisions.

Figure 20:

e Au HIJET results see details in Matt Lamont's talk.

Figure 21: