ITTF Evaluation for Spectra

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ITTF Review,
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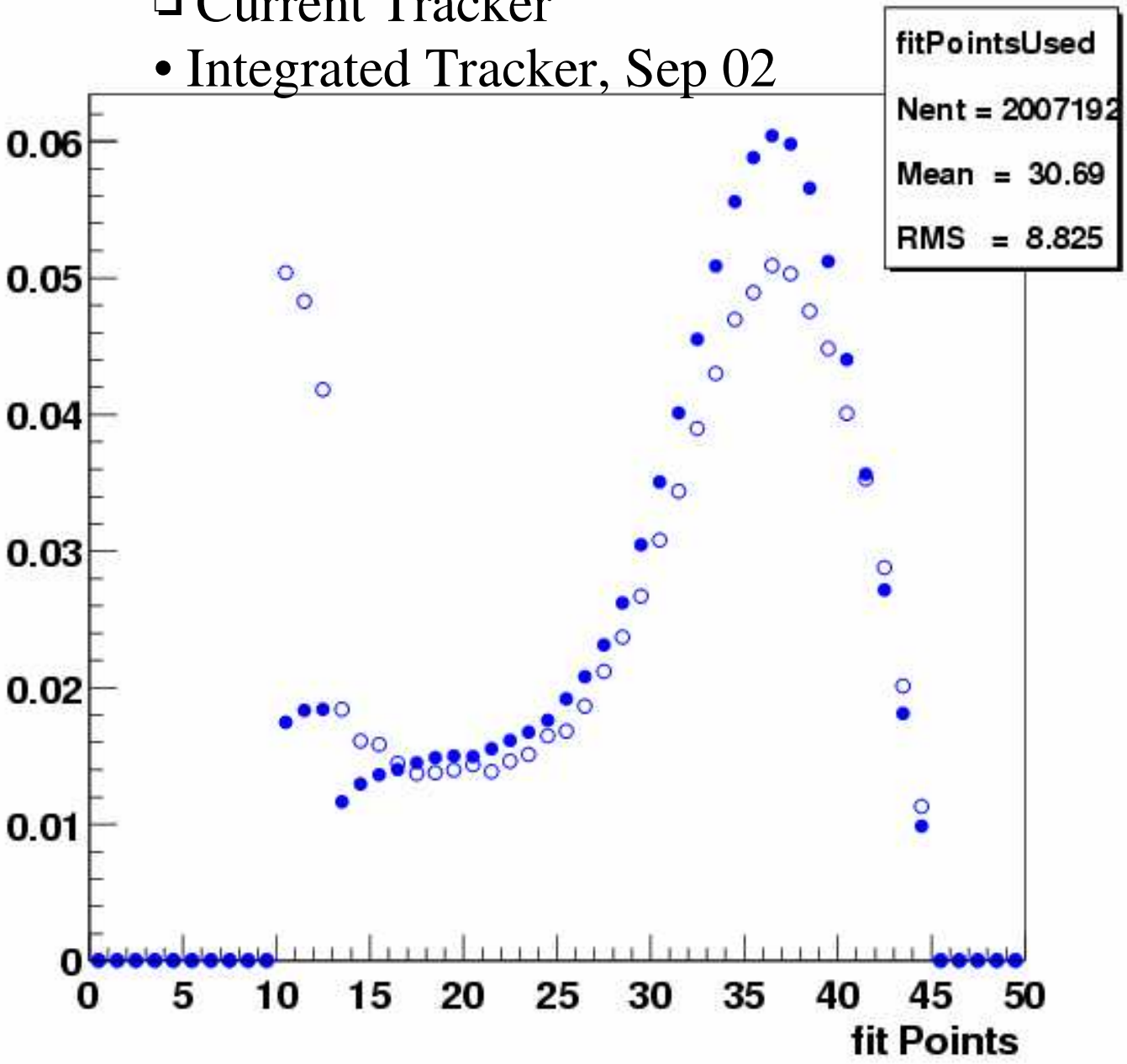
Hit and Tracking

- Data set used:
  - Pythia p+p
  - Hijing b<3 simulations
    - *Usually, absolute value of efficiency is too ideal*
    - *… comparisons between current code & IT*
- From loose to tight cuts
  - Look at midrapidity (|eta|<0.5) mainly
  - Accepted MC tracks == 10 MC Hits at least
  - Reconstructed track cuts:
    - *Fit Points >= 10, no dca cut (3 cm for primaries)*
    - *Fit Points >=10, dca < 1 cm*
    - *Fit Points >= 24, dca < 1cm*

Fit Points, Last Review

Loose cuts:
All mult,
|eta|<1.5,
dca<3,
Fit Pts>9

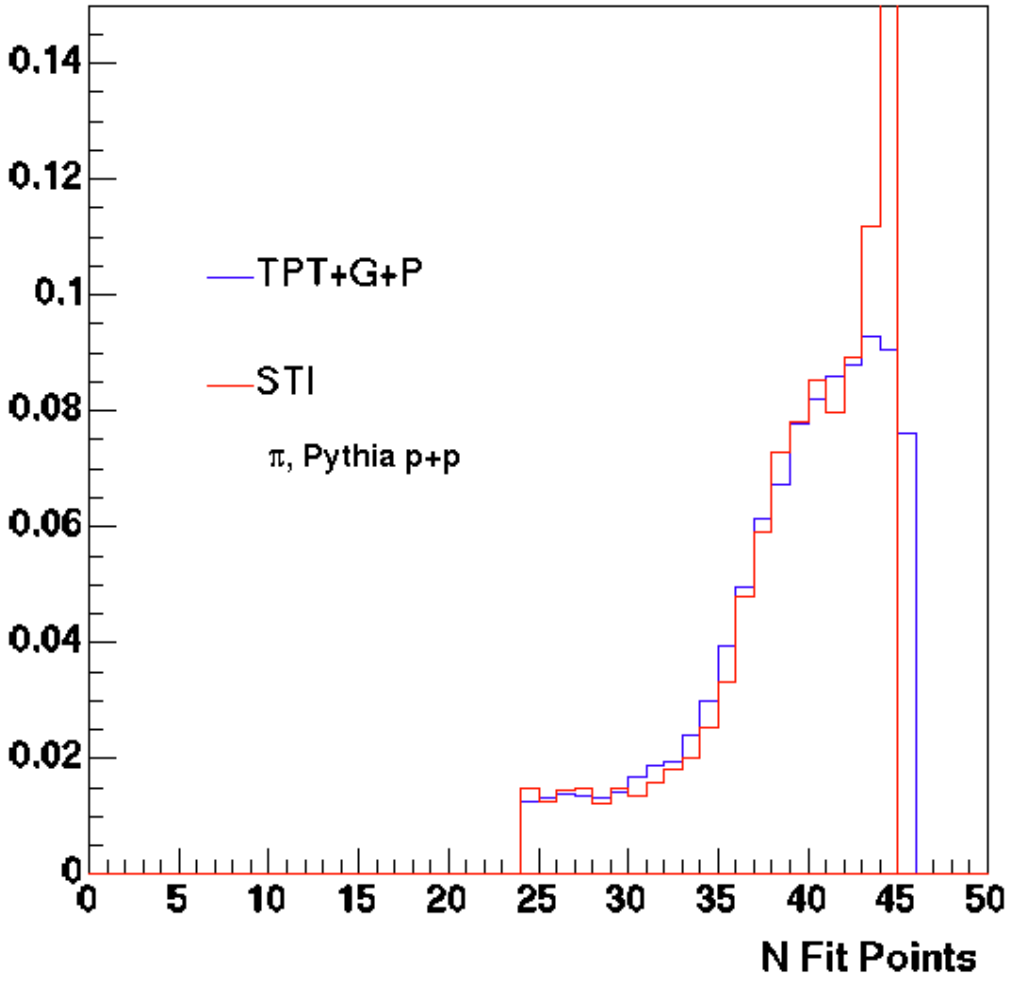
- Current Tracker
- Integrated Tracker, Sep 02



Fit Points, Low Multiplicity

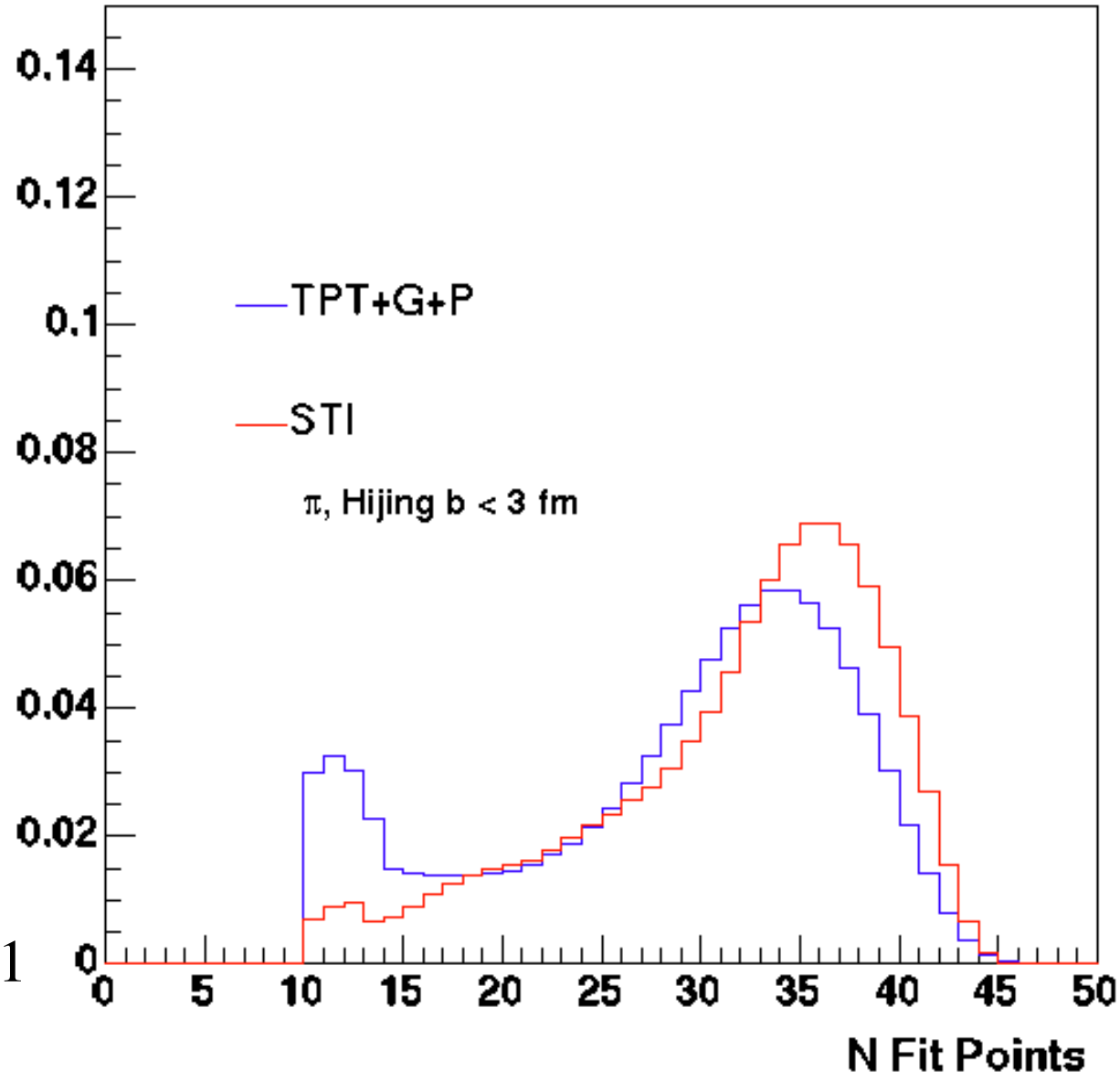
Cuts:

|dca<1,
Fit Pts>=10



Fit Points, Now

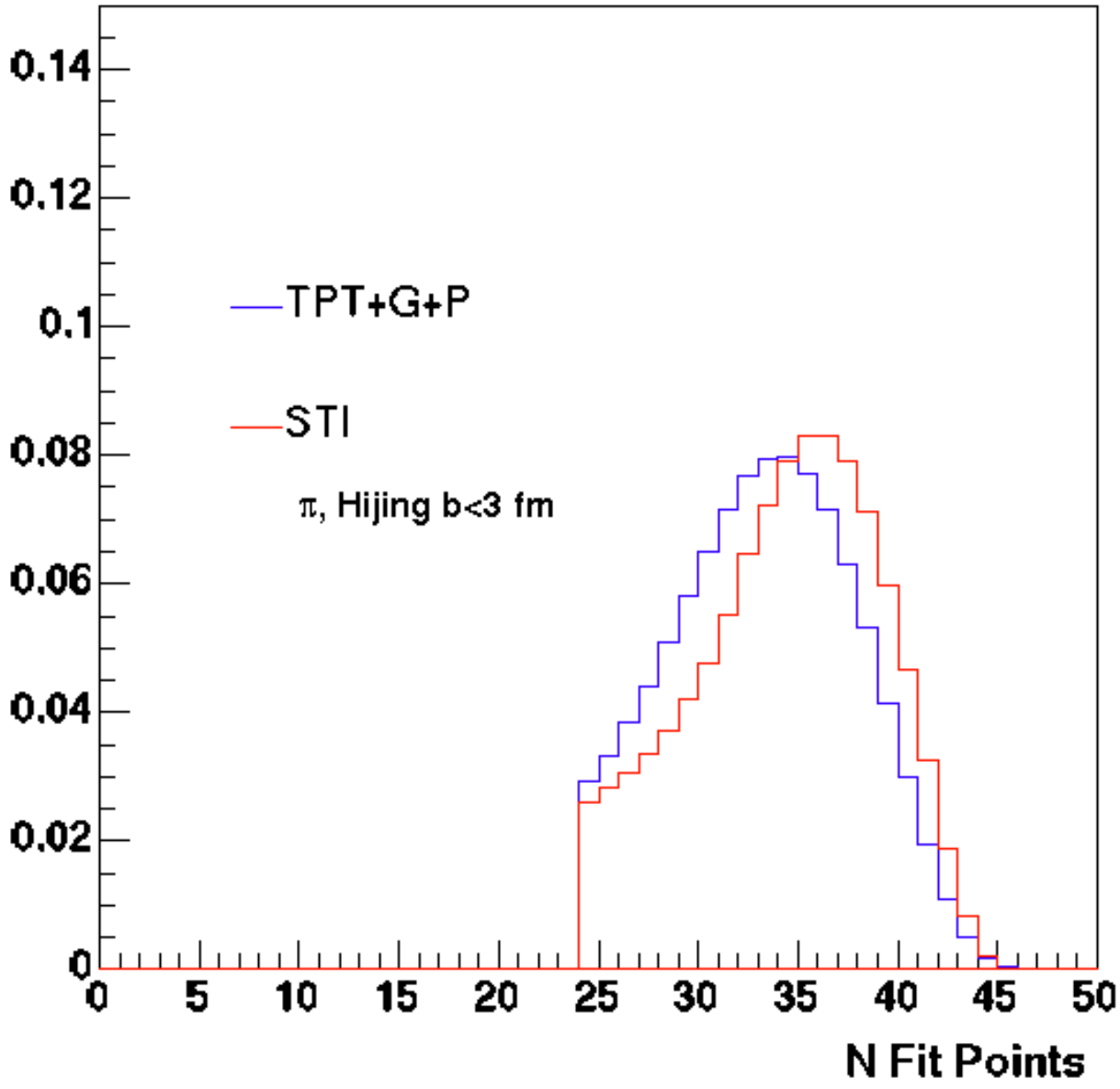
Cuts:
Central Hijing
Global dca<1,
Fit Pts>=10



Integral normalized to 1

Fit Points, Now

Cuts:
Central Hijing,
|eta|<1.5,
Global dca<1,
Fit Pts>=24



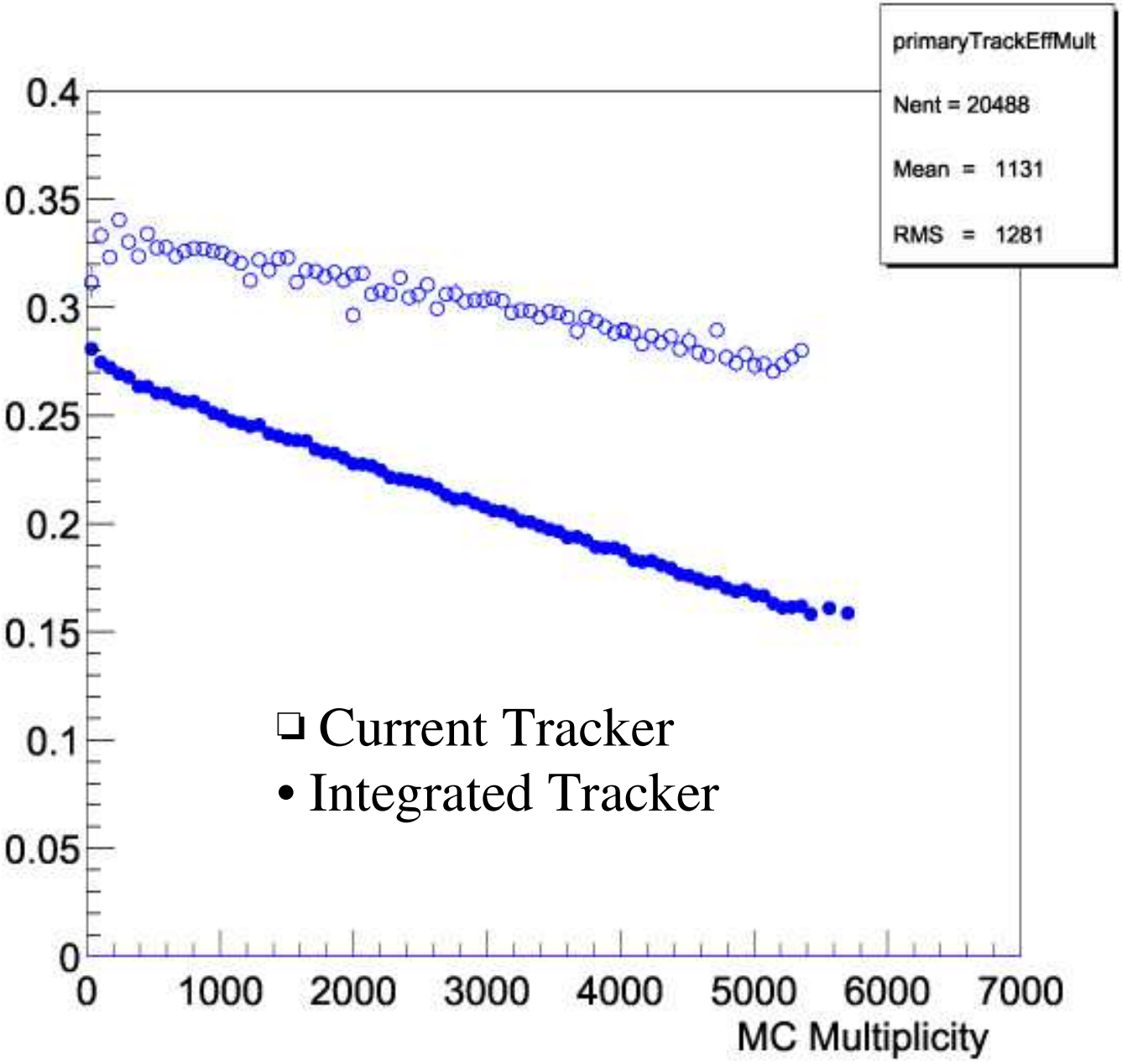
“Efficiency” vs Multiplicity, last review

Here, efficiency is:

<u>All Matched Tracks</u>
All MC Tracks

(even MC tracks
Not in acceptance)

So, absolute scale
Much worse than
True efficiency.



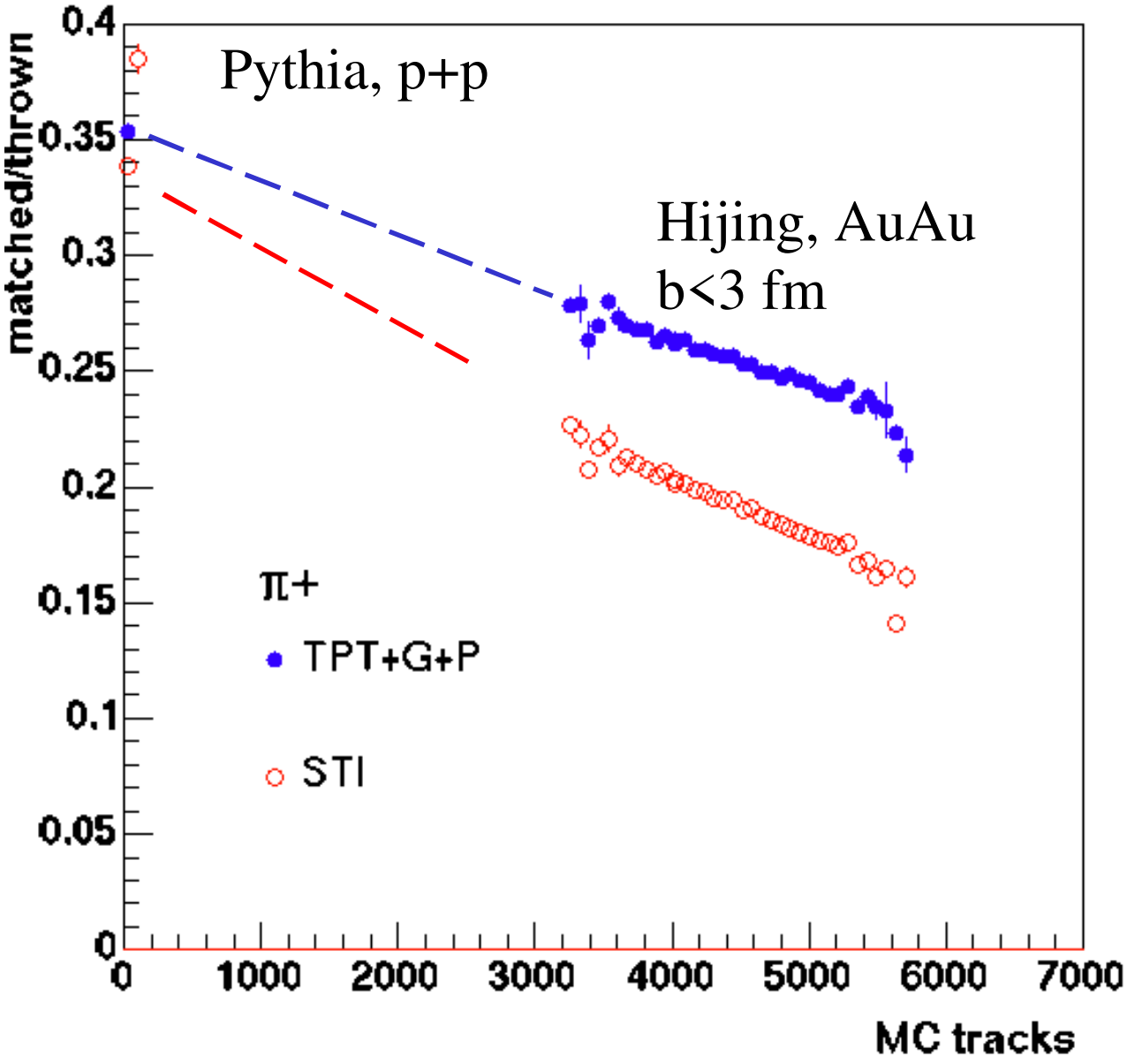
“Efficiency” vs Multiplicity, Pions

Here, efficiency is:

Matched Tracks
Thrown MC Tracks

(even MC tracks
Not in acceptance)

So, really
Effic*accept.



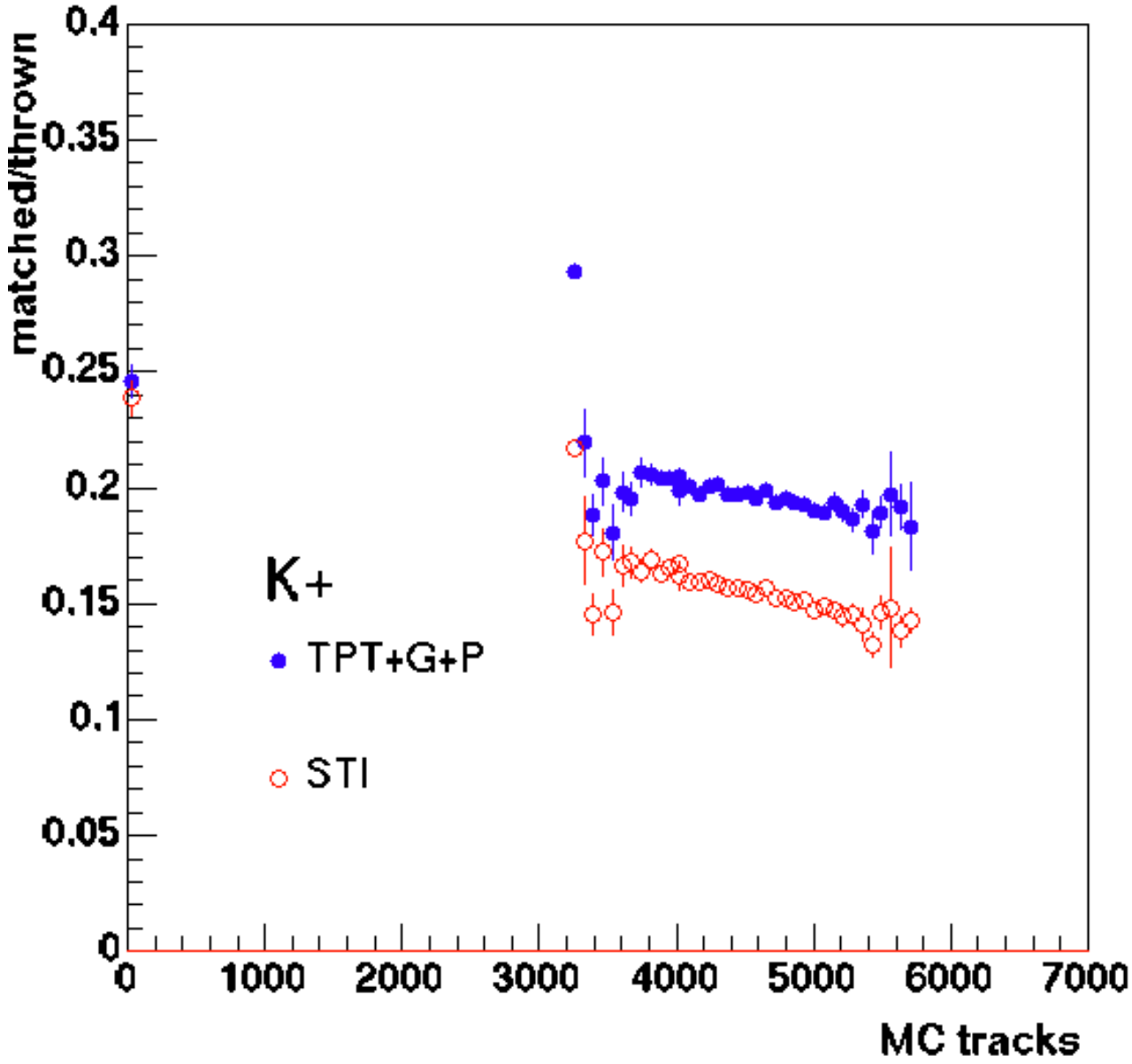
“Efficiency” vs Multiplicity, Kaons

Here, efficiency is:

Matched Tracks
Thrown MC Tracks

(even MC tracks
Not in acceptance)

So, really
Effic*accept.



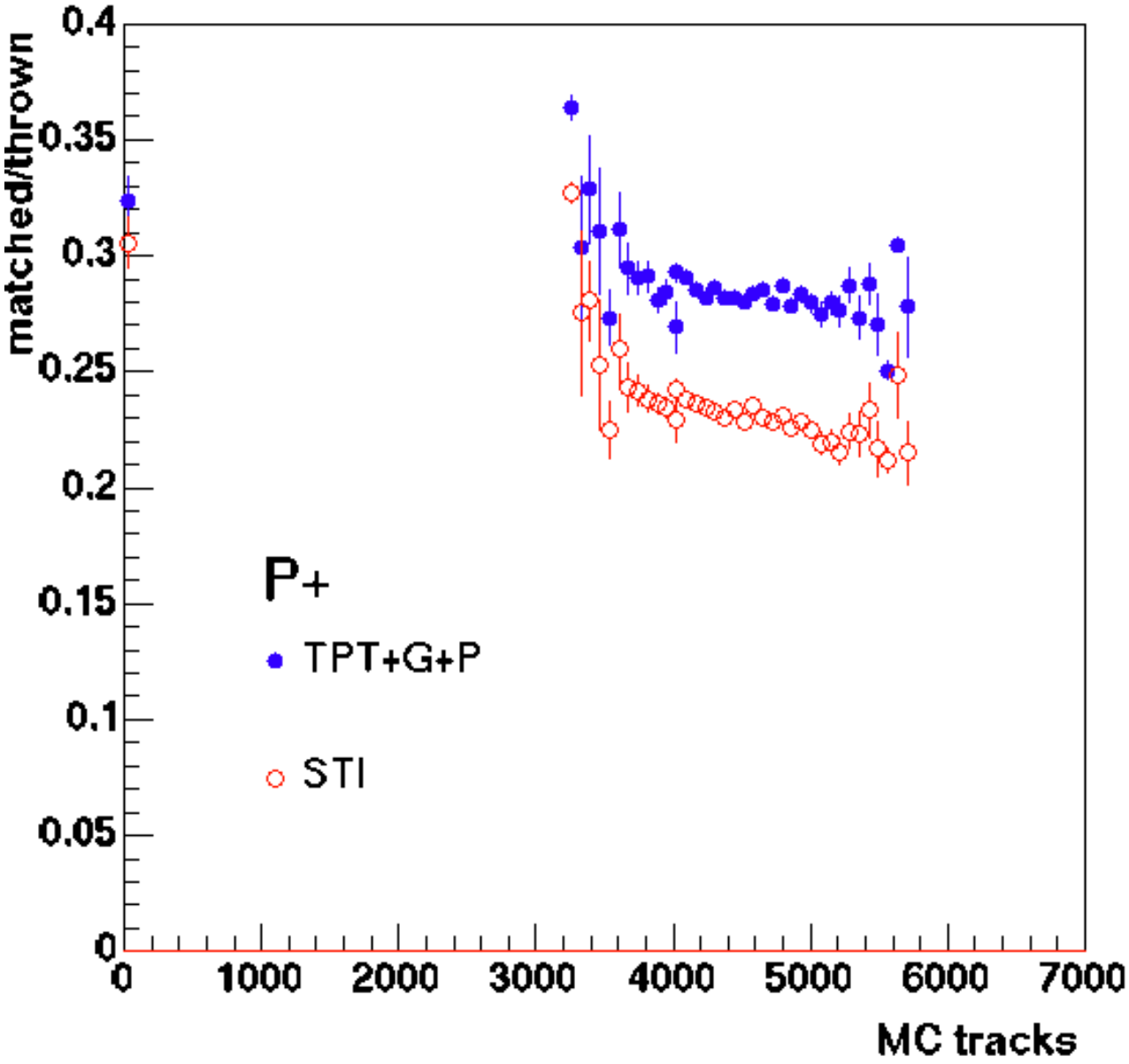
“Efficiency” vs Multiplicity, Protons

Here, efficiency is:

Matched Tracks
Thrown MC Tracks

(even MC tracks
Not in acceptance)

So, really
Effic*accept.

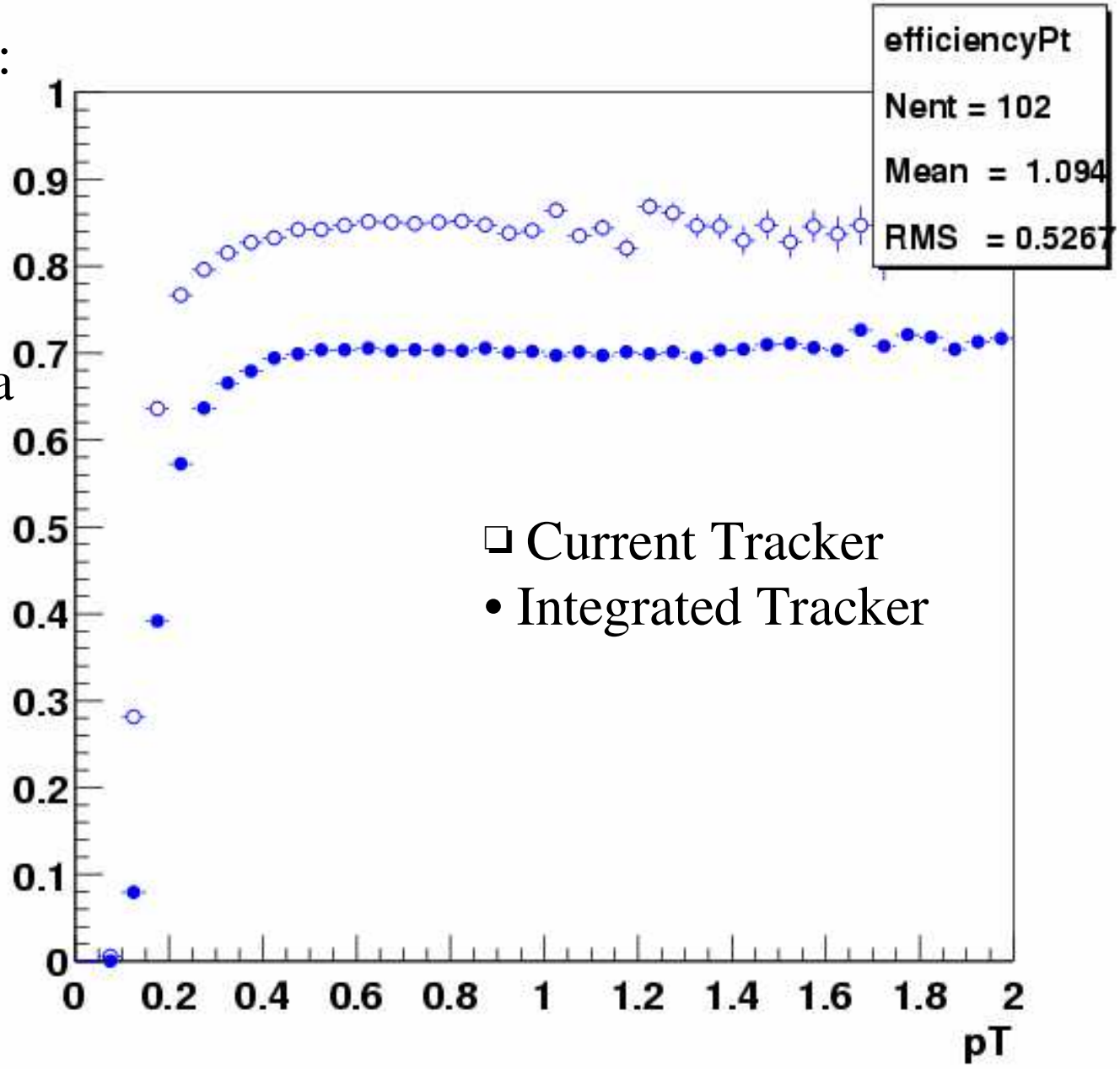


Efficiency vs pT, last review

Here, efficiency is:

<u>Found & Matched</u>
MC Accepted

i.e. as in all spectra analyses



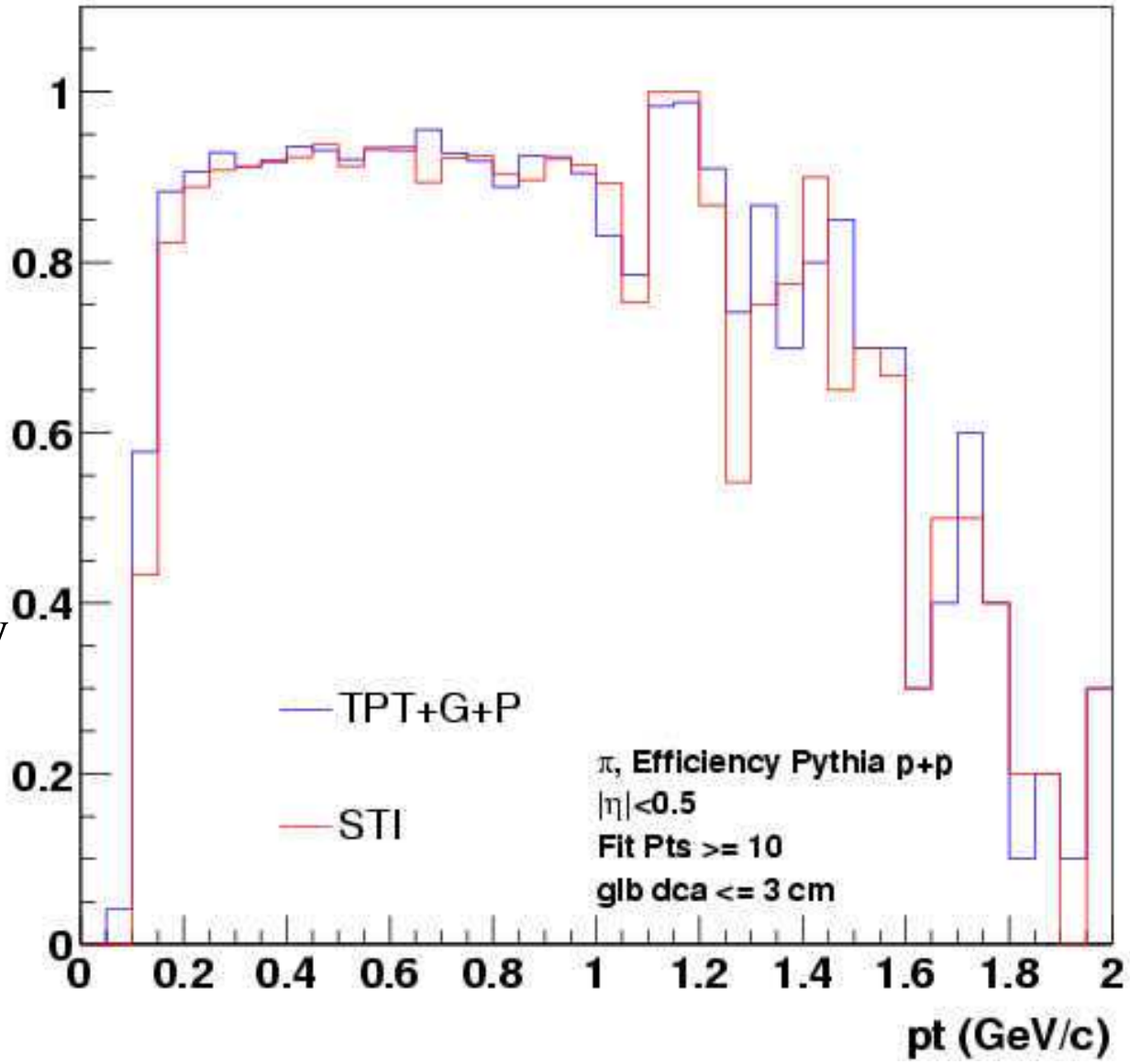
Efficiency vs pT, Low Mult, loose cuts

Here, efficiency is:

<u>Found & Matched</u>
MC Accepted

i.e. as in all spectra analyses

At low multiplicity
Things look OK…

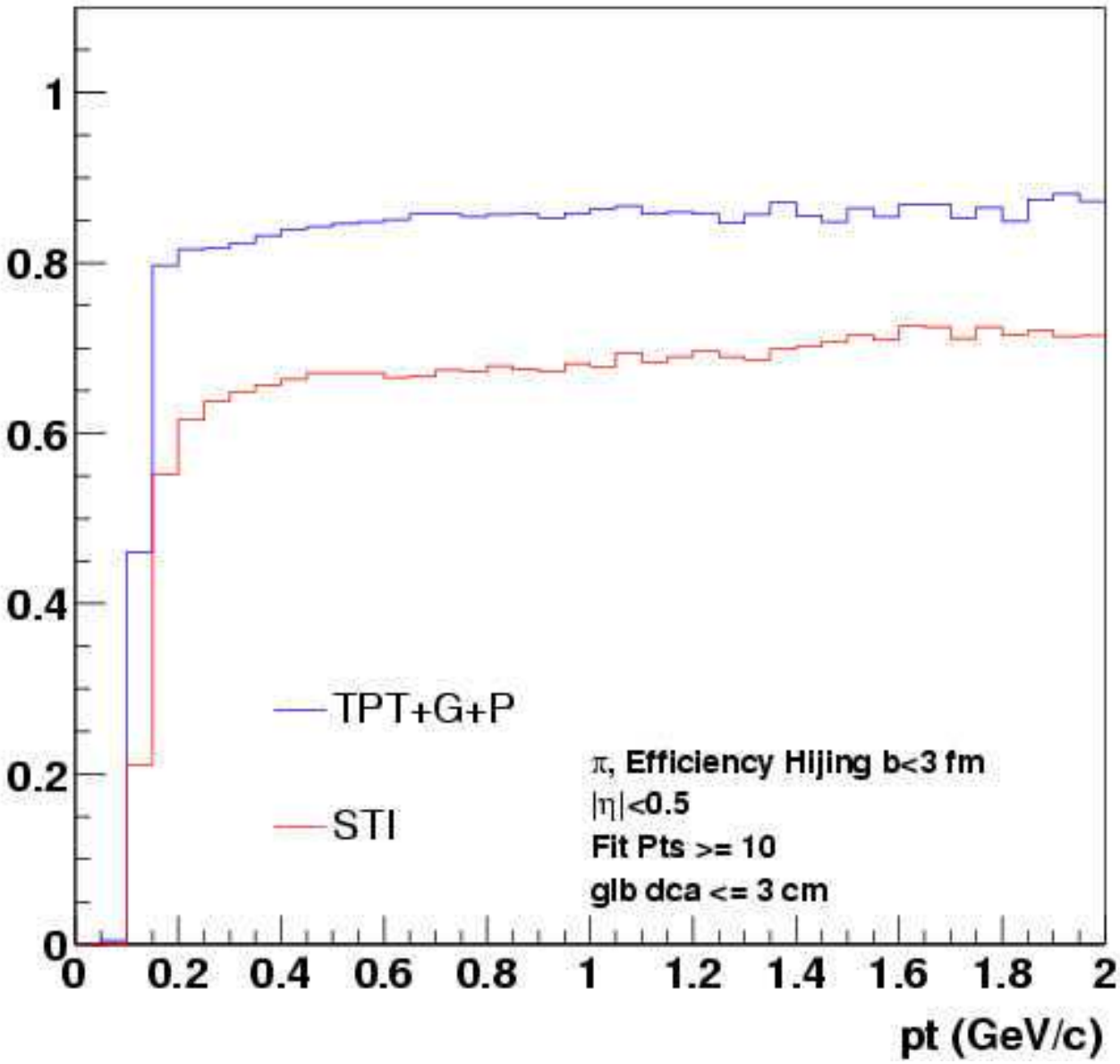


Efficiency vs pT, High Mult, loose cuts

Here, efficiency is:

<u>Found & Matched</u>
MC Accepted

i.e. as in all spectra analyses

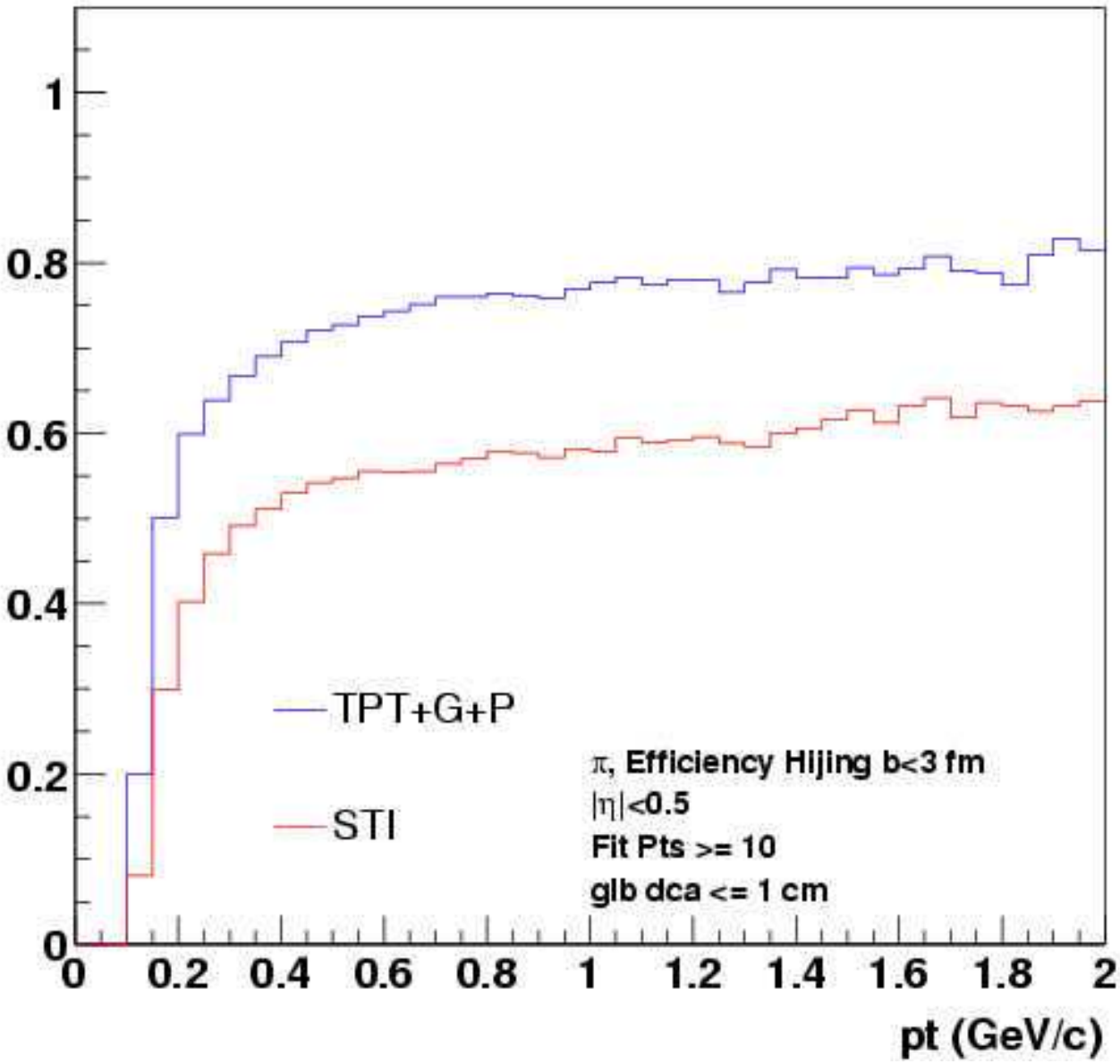


Efficiency vs pT, High Mult, tighter dca

Here, efficiency is:

<u>Found & Matched</u>
MC Accepted

i.e. as in all spectra analyses



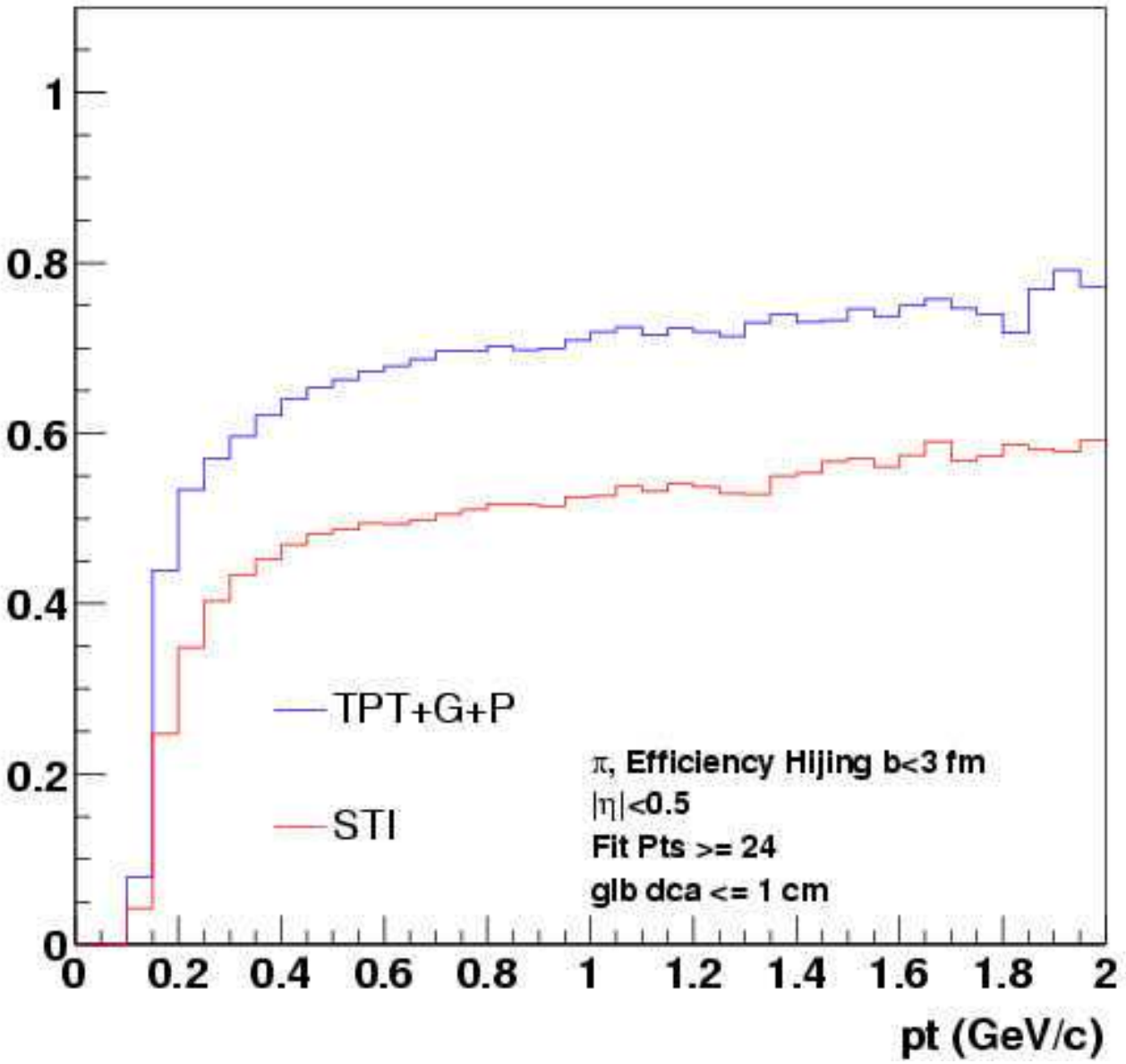
… and tighter fit points

Here, efficiency is:

<u>Found & Matched</u>
MC Accepted

i.e. as in all spectra analyses

Cuts like those used in identified spectra papers



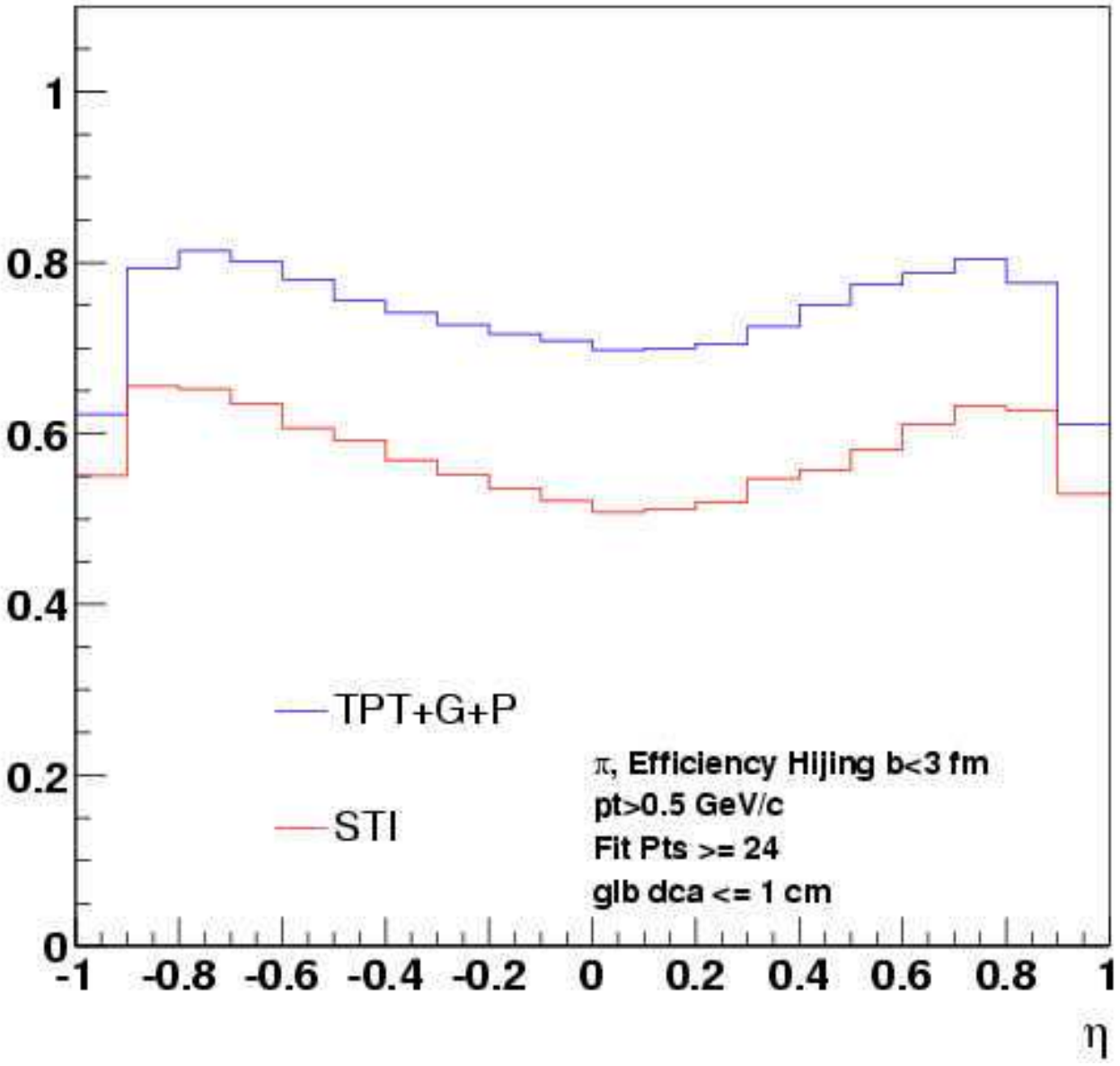
Efficiency vs eta, tight cuts

Here, efficiency is:

<u>Found & Matched</u>
MC Accepted

i.e. as in all spectra analyses

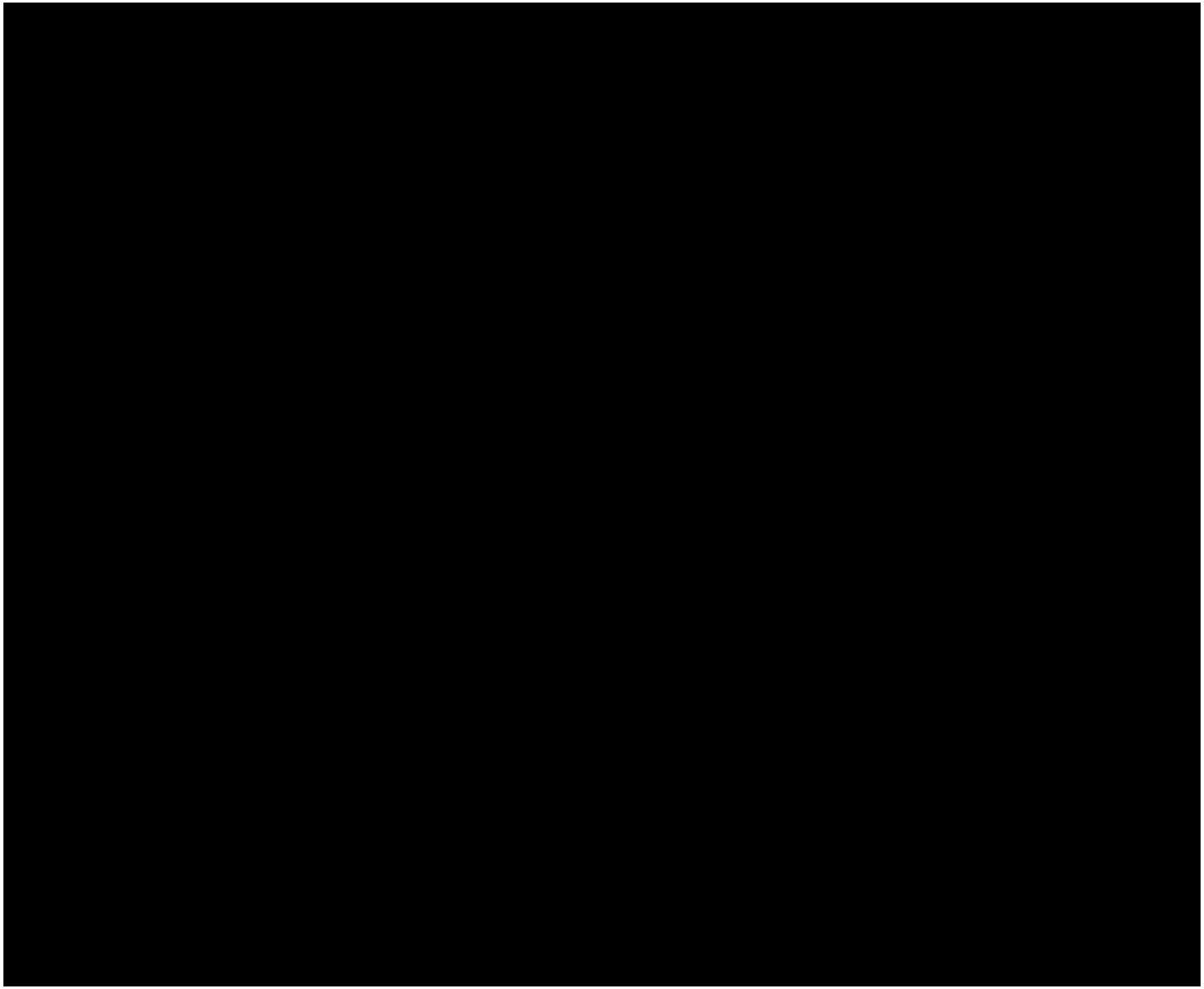
Cuts like those used in identified spectra papers



Data Comparison, ITTF/TPT yields

Here, Zhangbu used:

Fit Points >= 15



For the highest multiplicity, Sti finds ~80% of the tracks found by the old tracker.

Data Comparison, ITTF/TPT yields

Here, Zhangbu

Fit Points >= 15

The ~80%
improves as
η approaches 1
(but then decreases)

Snapshot and Areas to improve

- Shape of distributions are similar to current tracker
  - Mean Fit Points shows similar trends with multiplicity, pt and eta
  - Shape at low fit points shows no bump from the large eta
- Efficiency is still low comparted to current tracker
  - New tracker shows stronger multiplicity dependence
  - Large eta tracking needs tuning (see also Andrew's talk)