

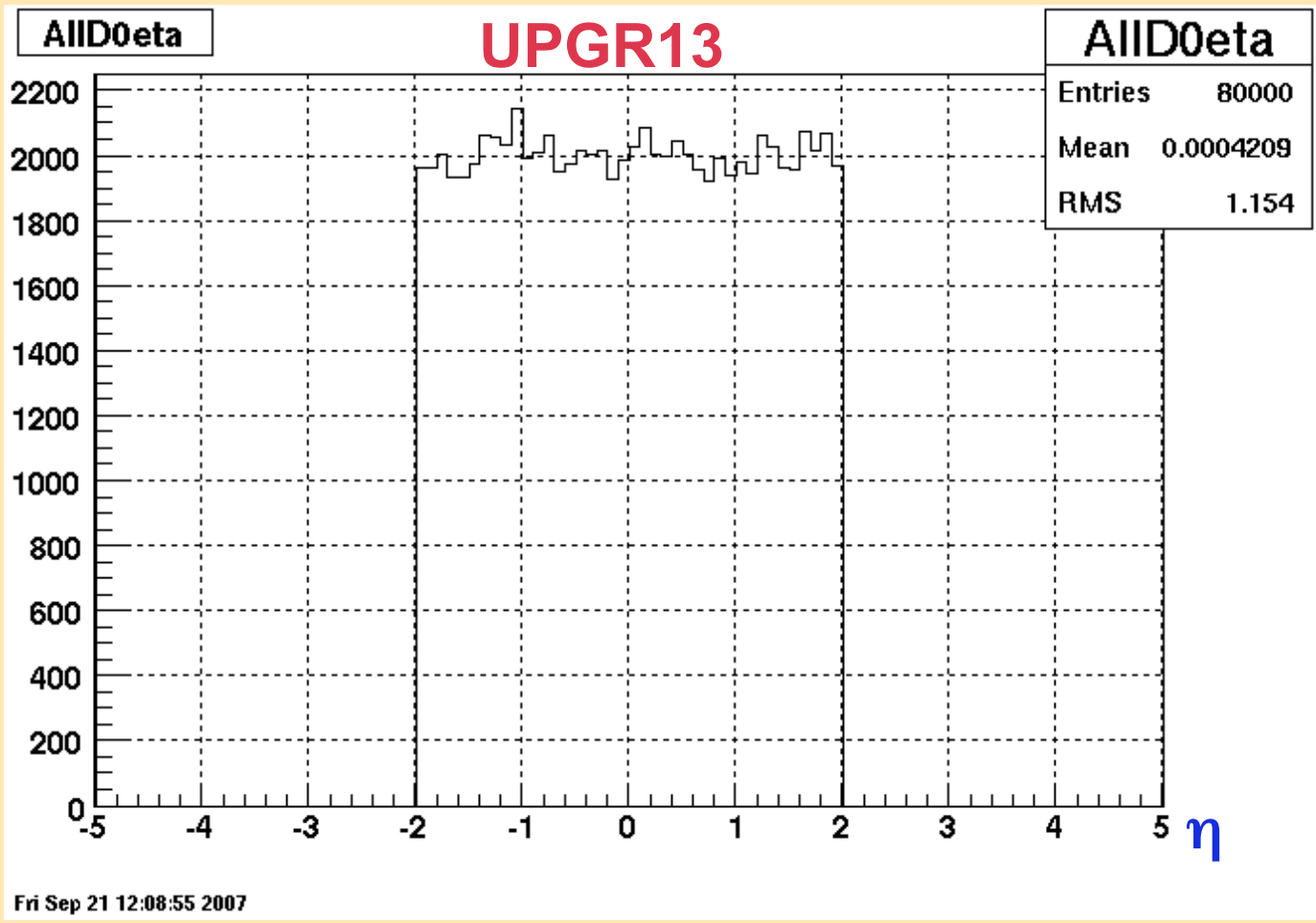
Geometrical efficiencies of a patch Pixel detector via GEANT

J. Joseph, S. Margetis and J. Vanfossen

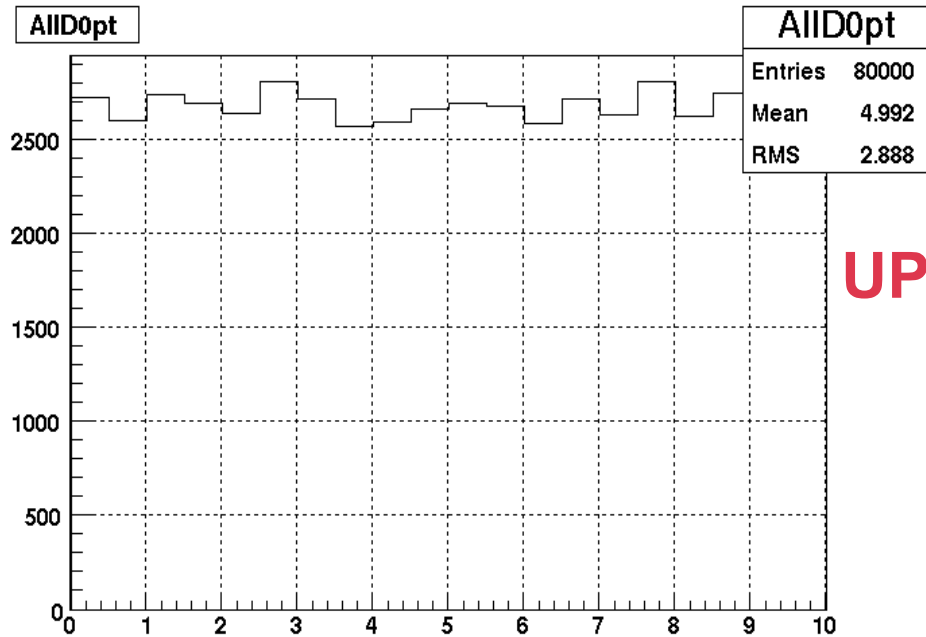
Original note based on a MathCAD simulation by H.Wieman
http://www-rnc.lbl.gov/~wieman/D_efficiency.htm

Input data used

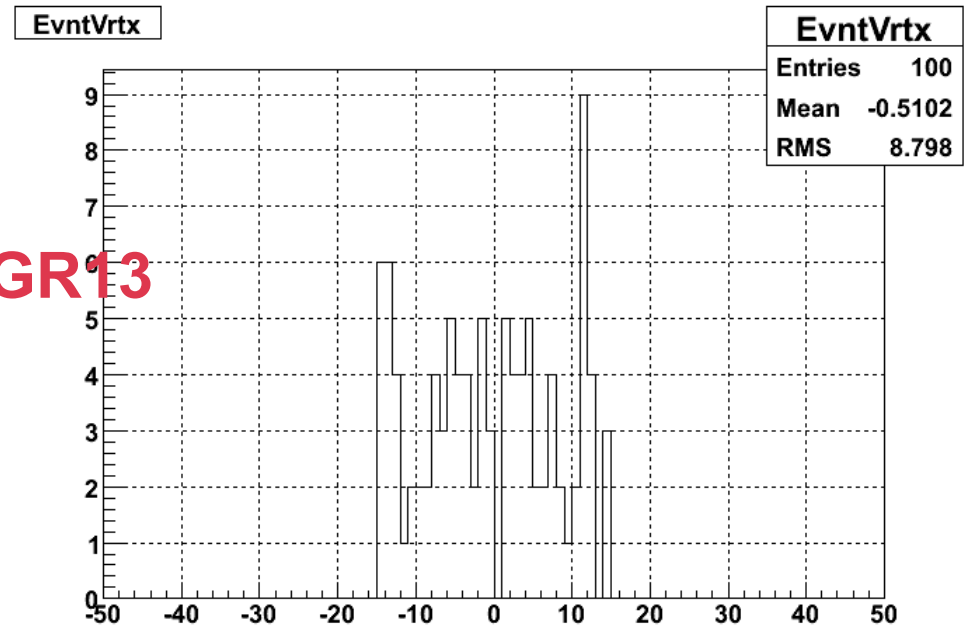
- We used data from recent UPGR13 production
- It differs from what H.Wieman used as his input but is close
- Statistics is still very low mainly due to our inability to push wildcards in AGZREAD (.fzd files).



Our input has D0s uniformly in $|\eta| \leq 2$, HW $|\eta| \leq 3$



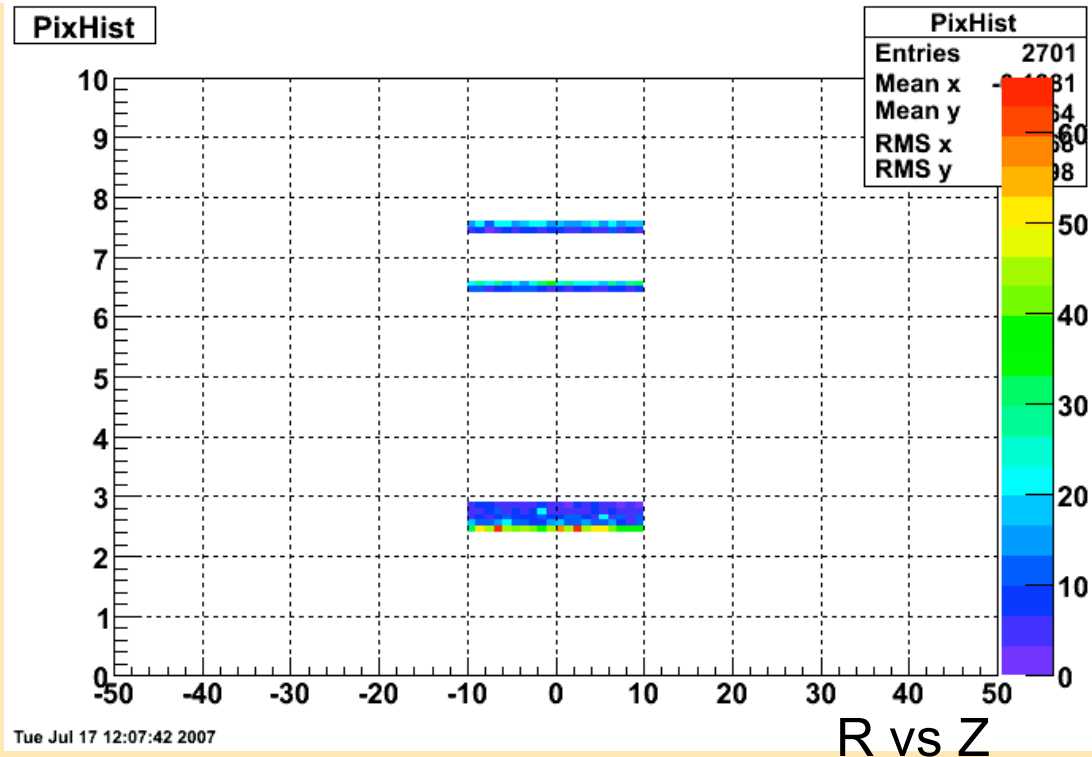
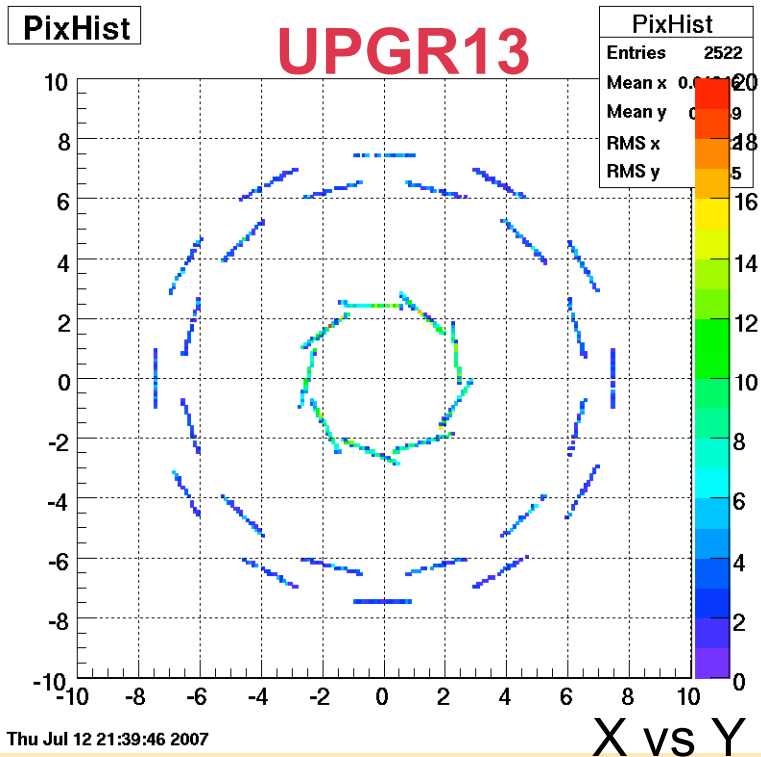
UPGR13



Tue Jul 17 12:08:30 2007

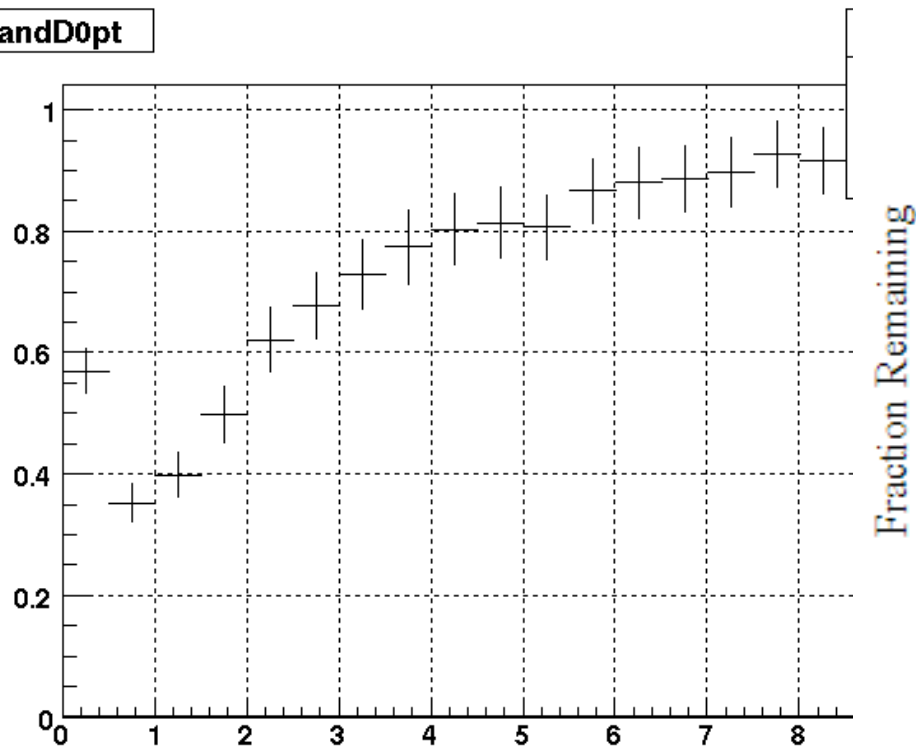
Fri Sep 21 12:07:57 2007

- D0s are flat in pt
- Event vertex flat in $|z| \leq 15\text{cm}$
 - HW uses gaussian with $\sigma = 10\text{ cm}$

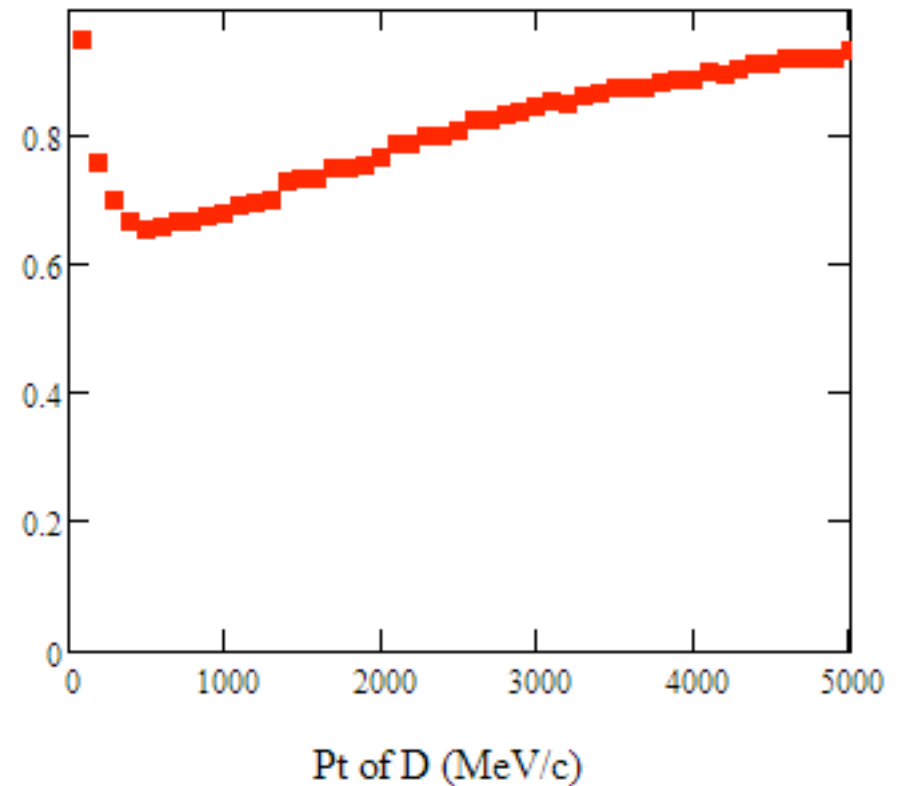


- Detector hits look fine
- Extends to $|z| = 10\text{cm}$ (only 3 patch configuration of HW can be checked)

CandD0opt



Fraction Remaining



Fri Sep 21 12:10:51 2007

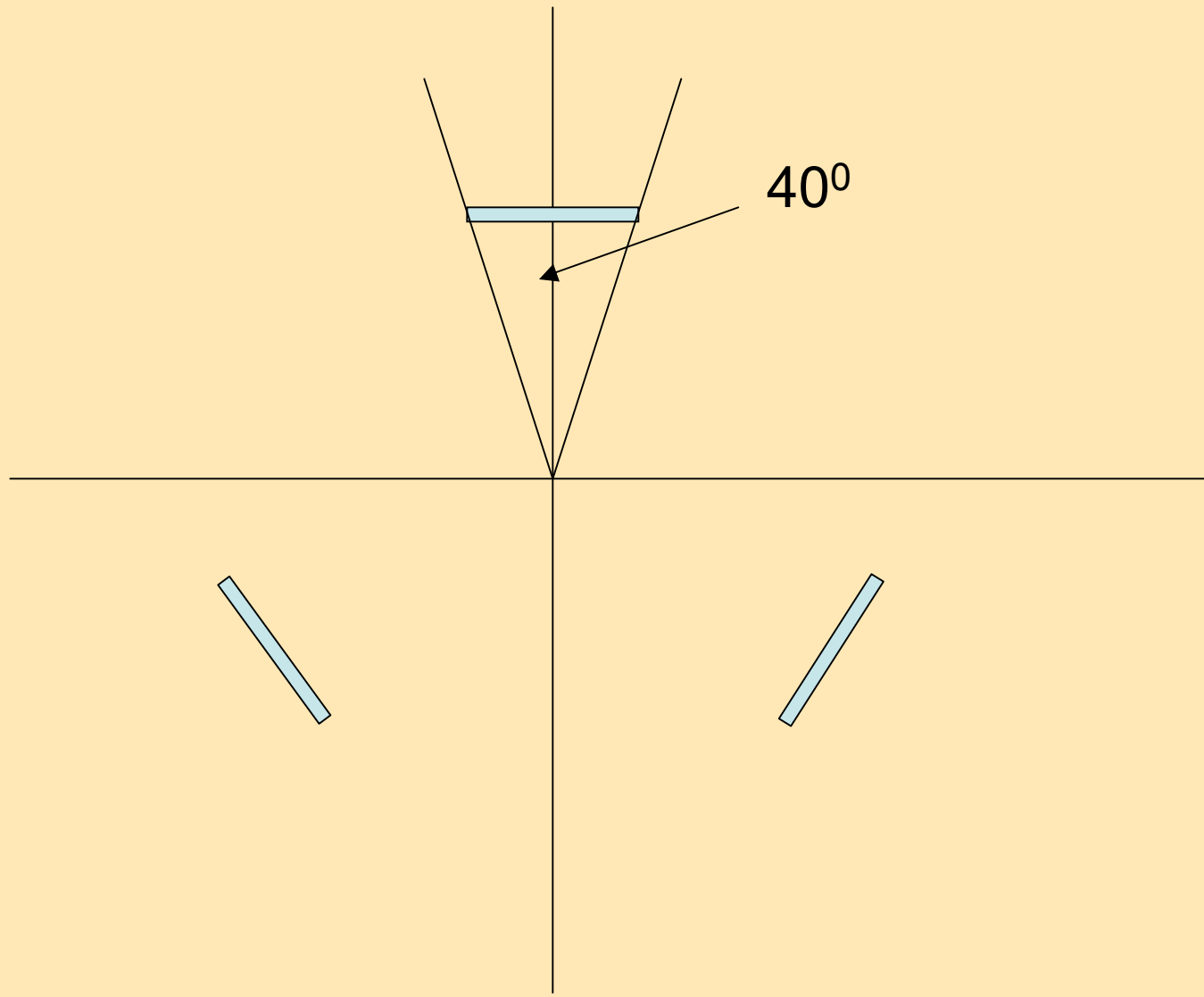
This is fig. 1 in HW note. It is a ratio plot of good D0 candidates with K,pi momentum ≥ 0.8 GeV to all good D0s.

A good D0 is defined as one where K,pi have

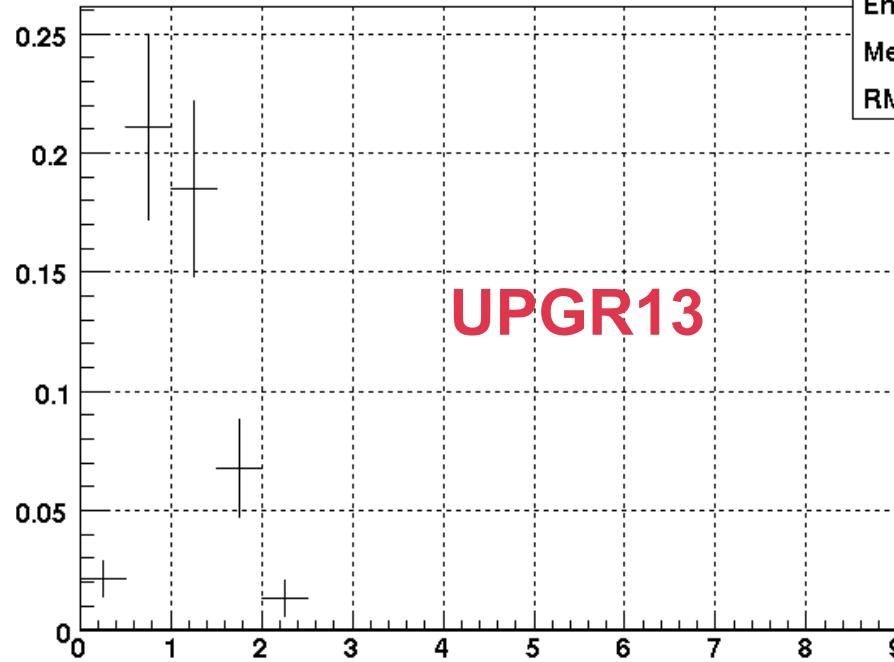
- ≥ 10 TPC hits
- $|\eta| \leq 1$
- NPixHits ≥ 2

The plots agree. Not much is lost by asking for $p > 0.8$ GeV

3-patch Pixel simulation, each covering 40 degrees

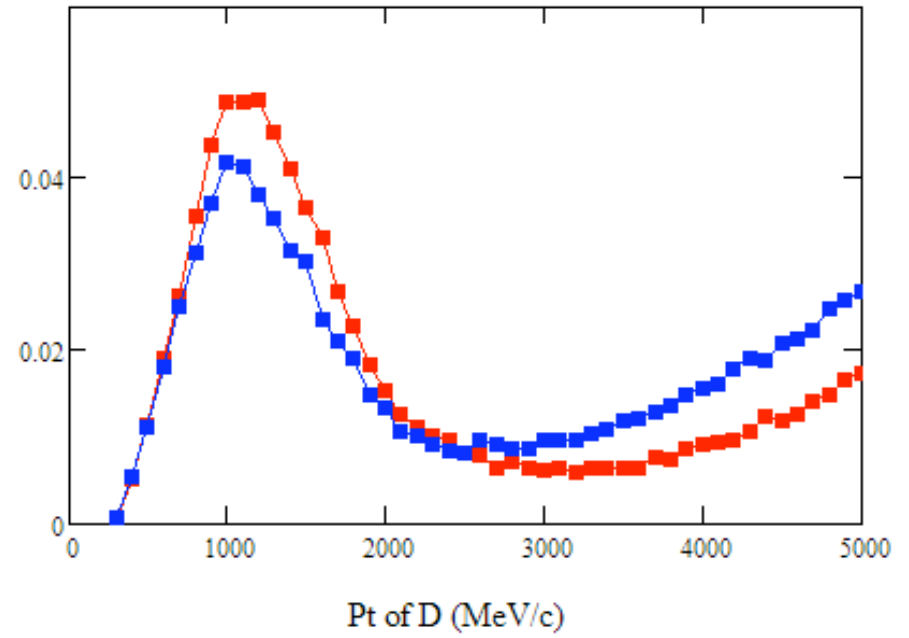


AccD0pt



Fri Sep 21 12:15:52 2007

Fraction Accepted



- 3 patches, 120 deg separation, 10 cm in z, 60 chips
- 2 patches, 120 deg separation, 20 cm in z, 80 chips