VHMPID L0 triggger
Status report

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Data sample:

pp@10 TeV, MB, B=0.5 T

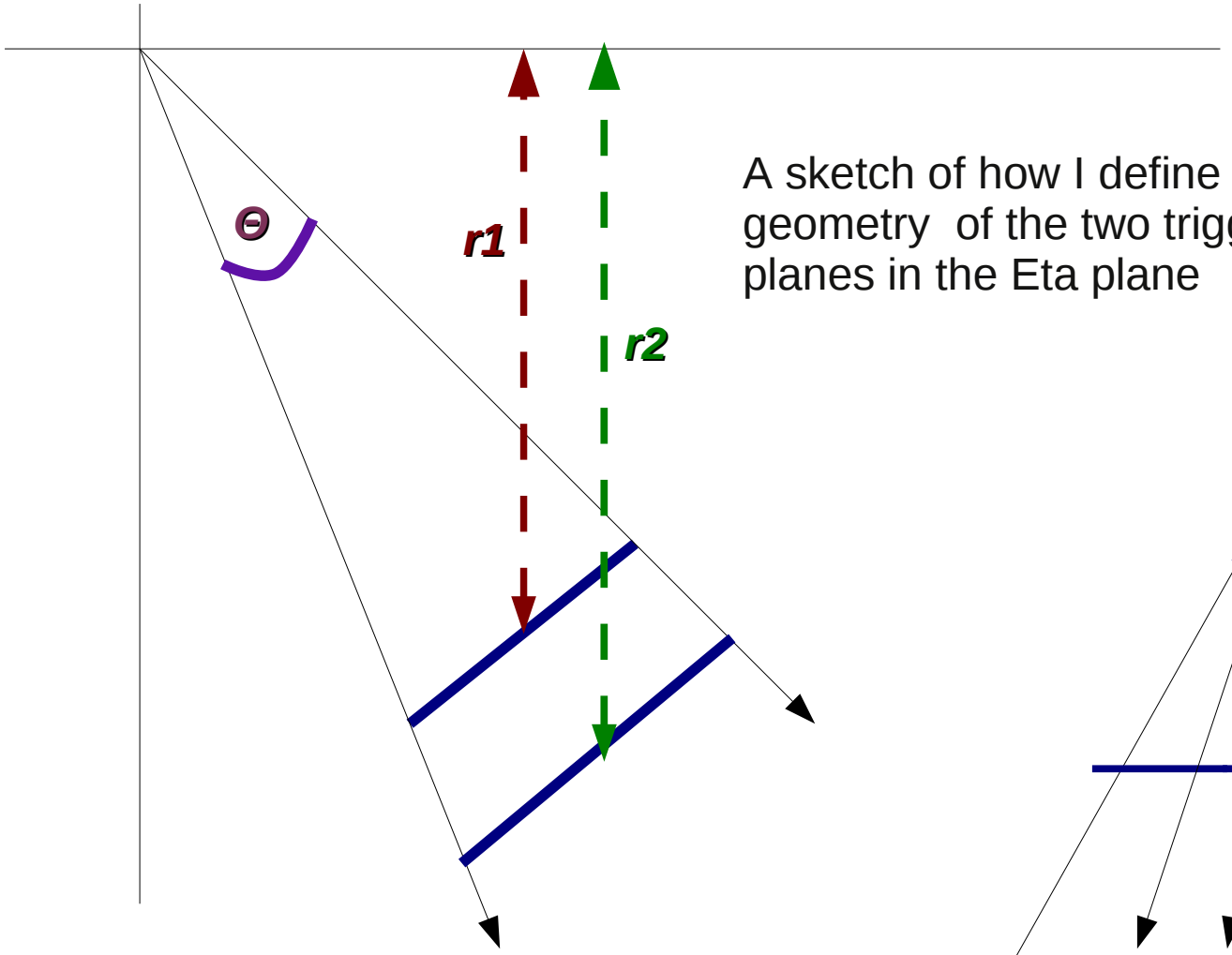
1,5 Mevents

Geometry

Acceptance:

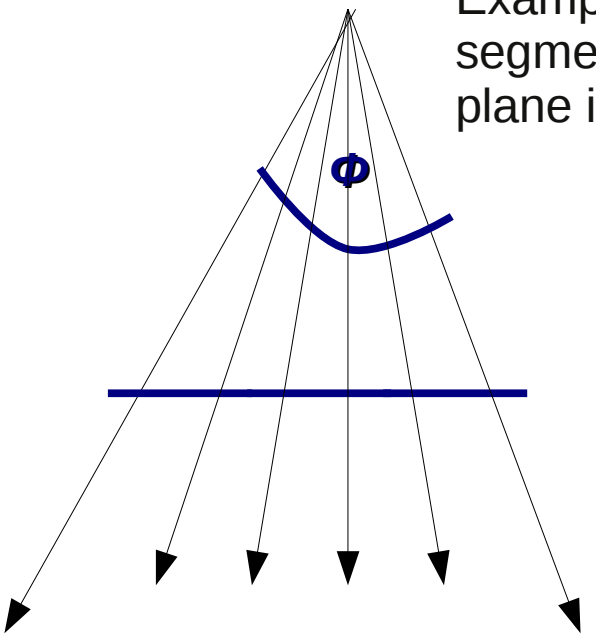
Θ ~ 22.5

Φ ~ 20.

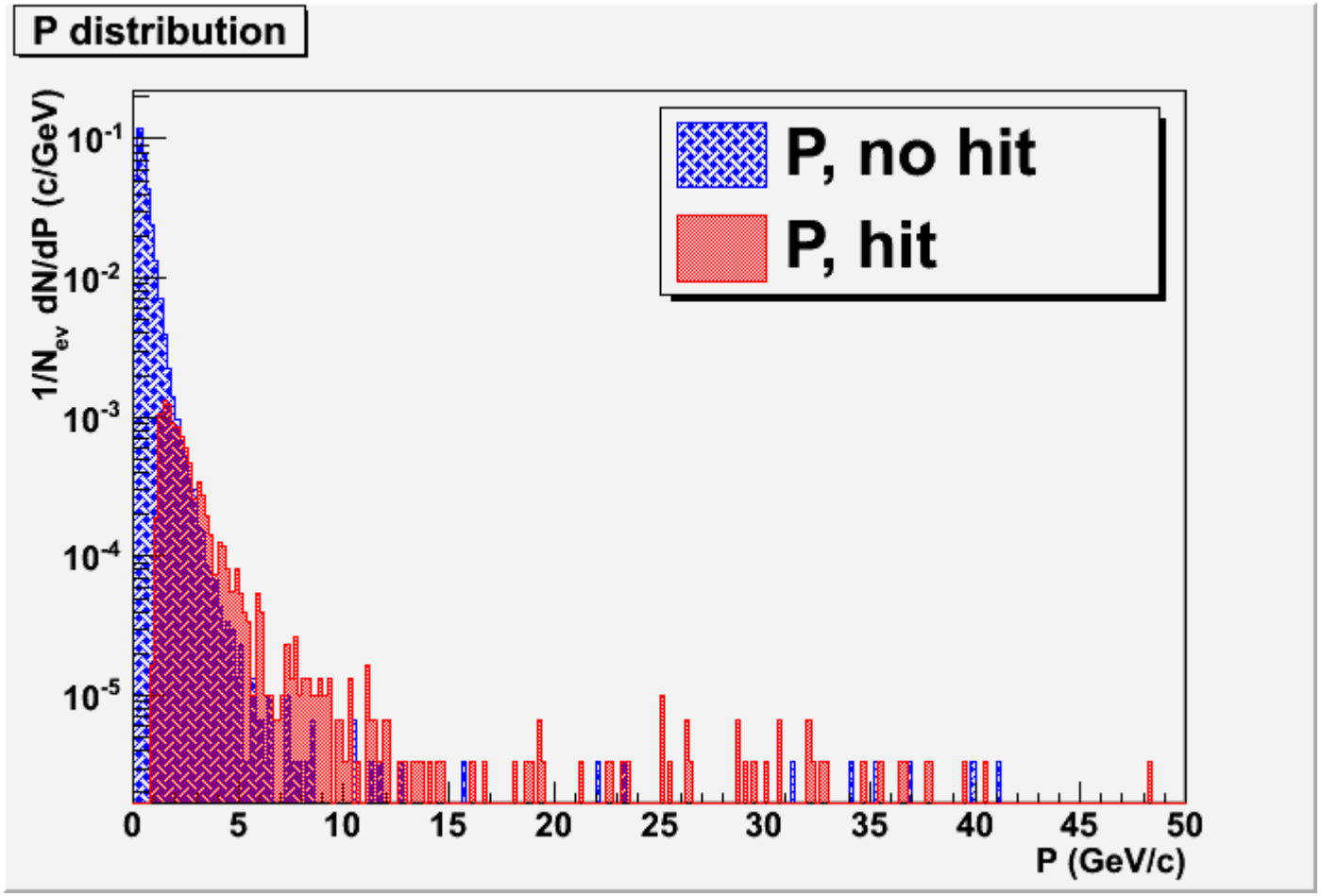


A sketch of how I define the geometry of the two trigger planes in the Eta plane

Example of segmentation of a plane in Phi



1 plane

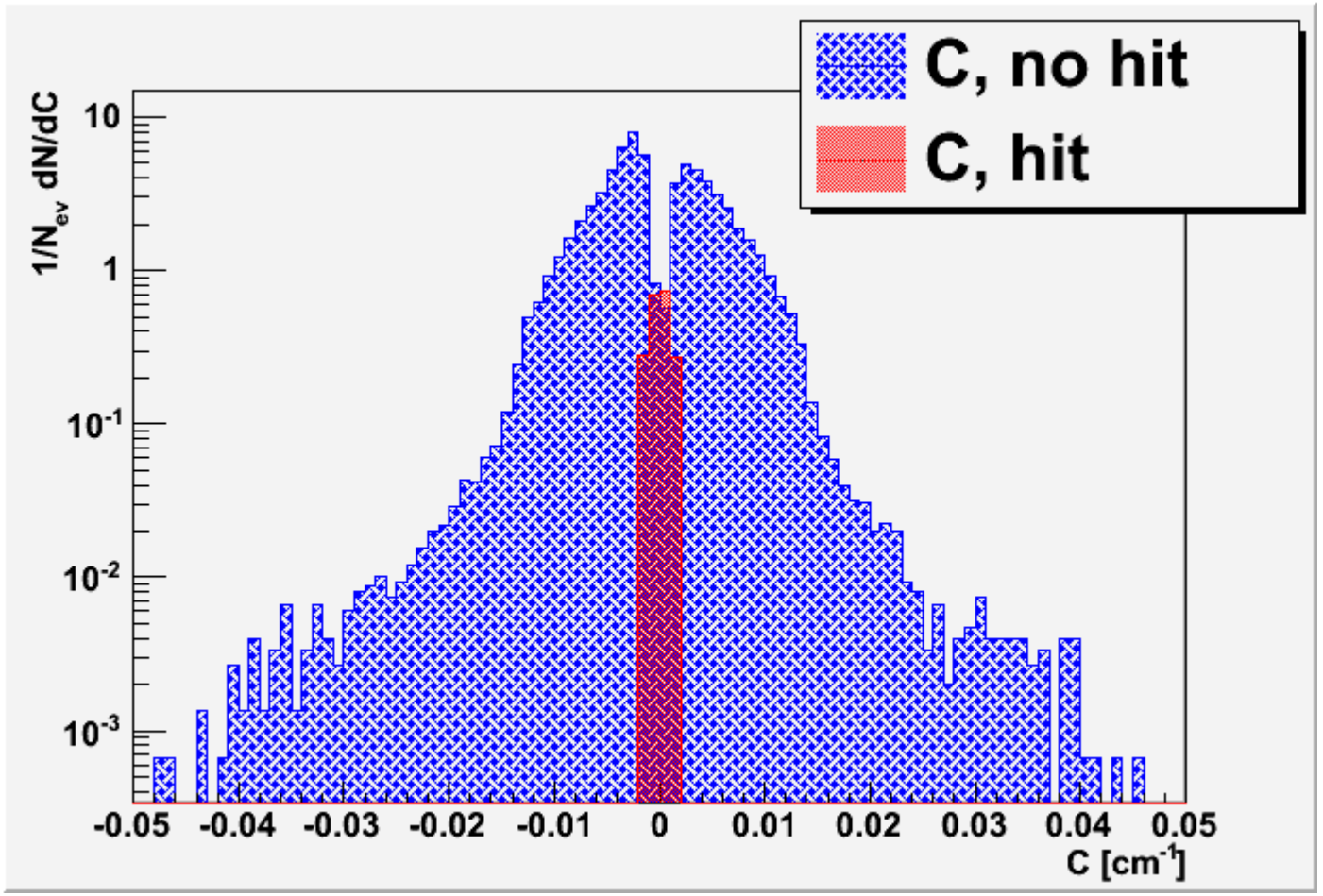


Momentum distribution of tracks inside the momentum acceptance, based on whether it is a “hit” or “no hit”.

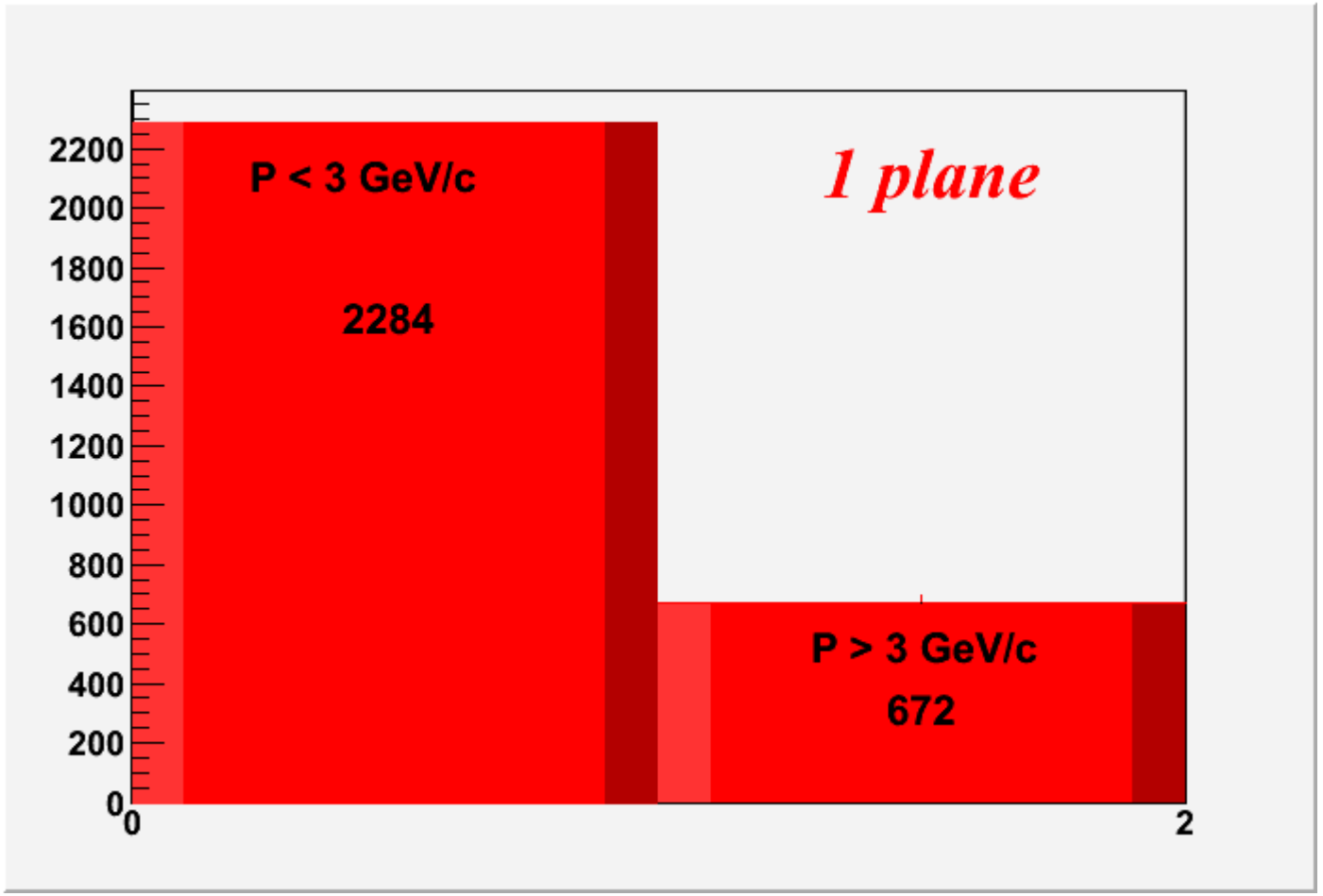
We see that the “hit” flag selects tracks with P > 1 GeV/c

If a track hits the first plane, I flag it as a “hit” track, and if it does not leave the hit on the plane I flag it as a “no hit” track.
I decided not to use pT, since the signal flag is based on p.

Curvature of tracks

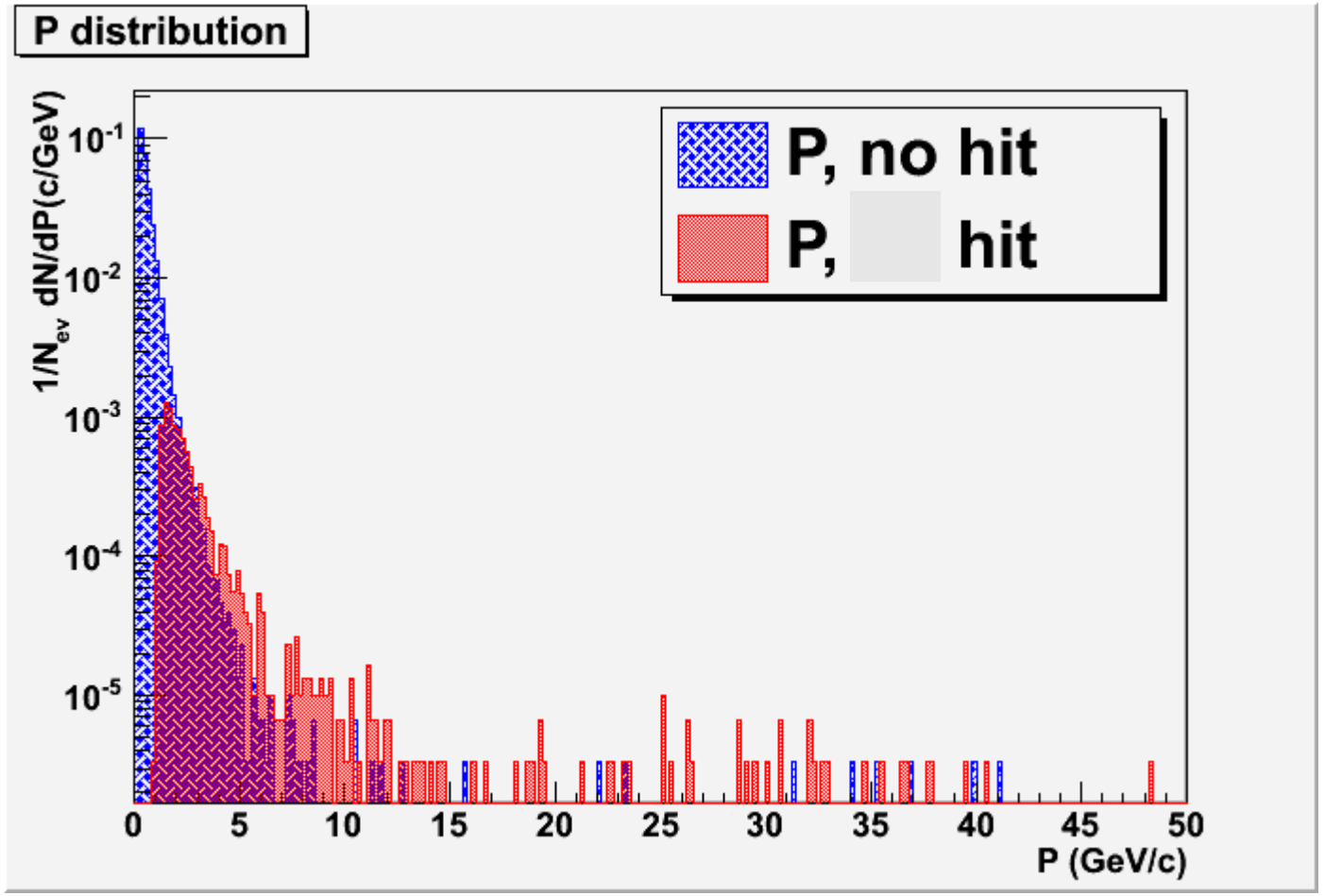


The curvature plot complements the momentum plot.



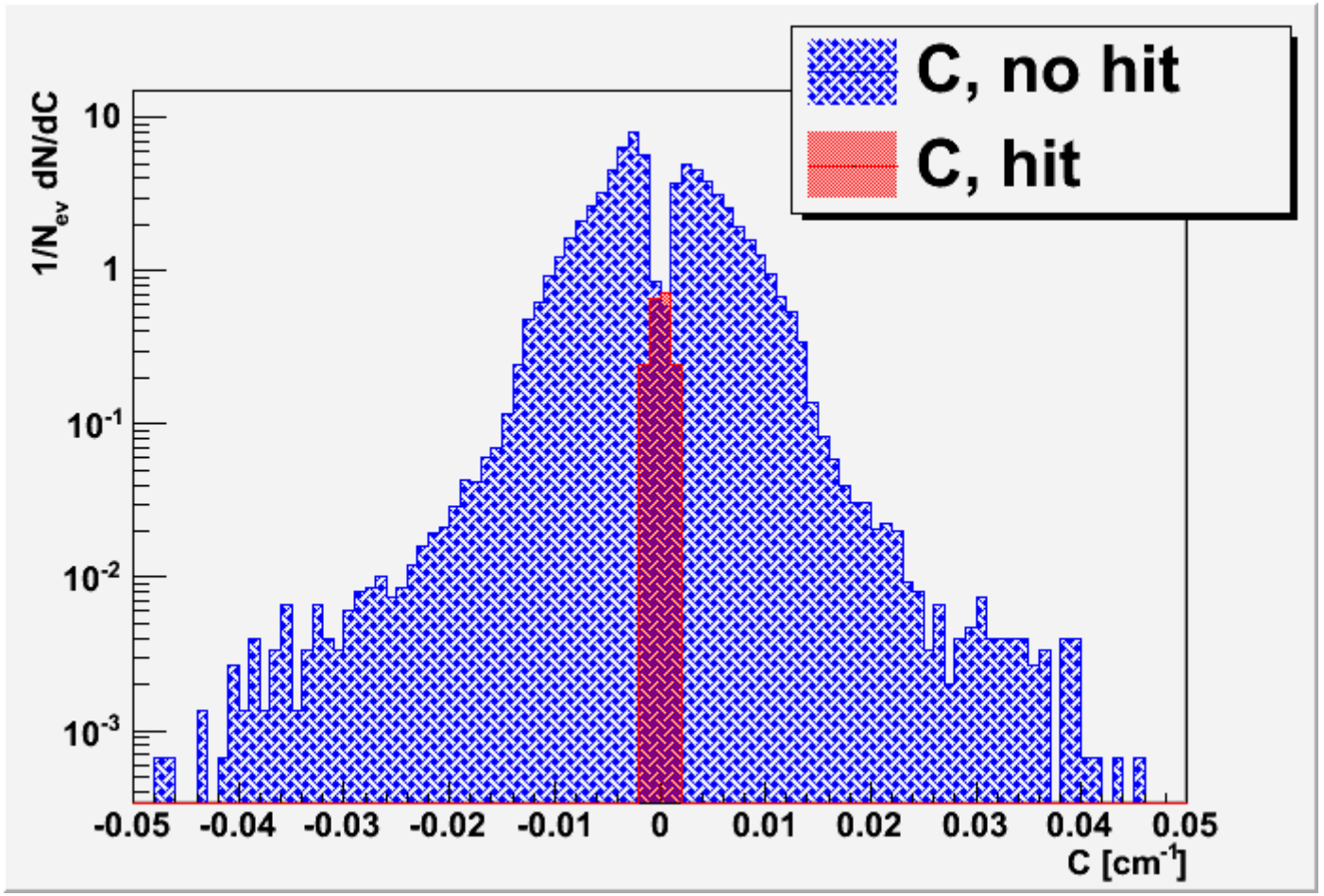
After putting geometry into the picture (although without effects of energy loss, detector effects, etc.), using a simple “hit” flag gives purity of 23%

2 planes

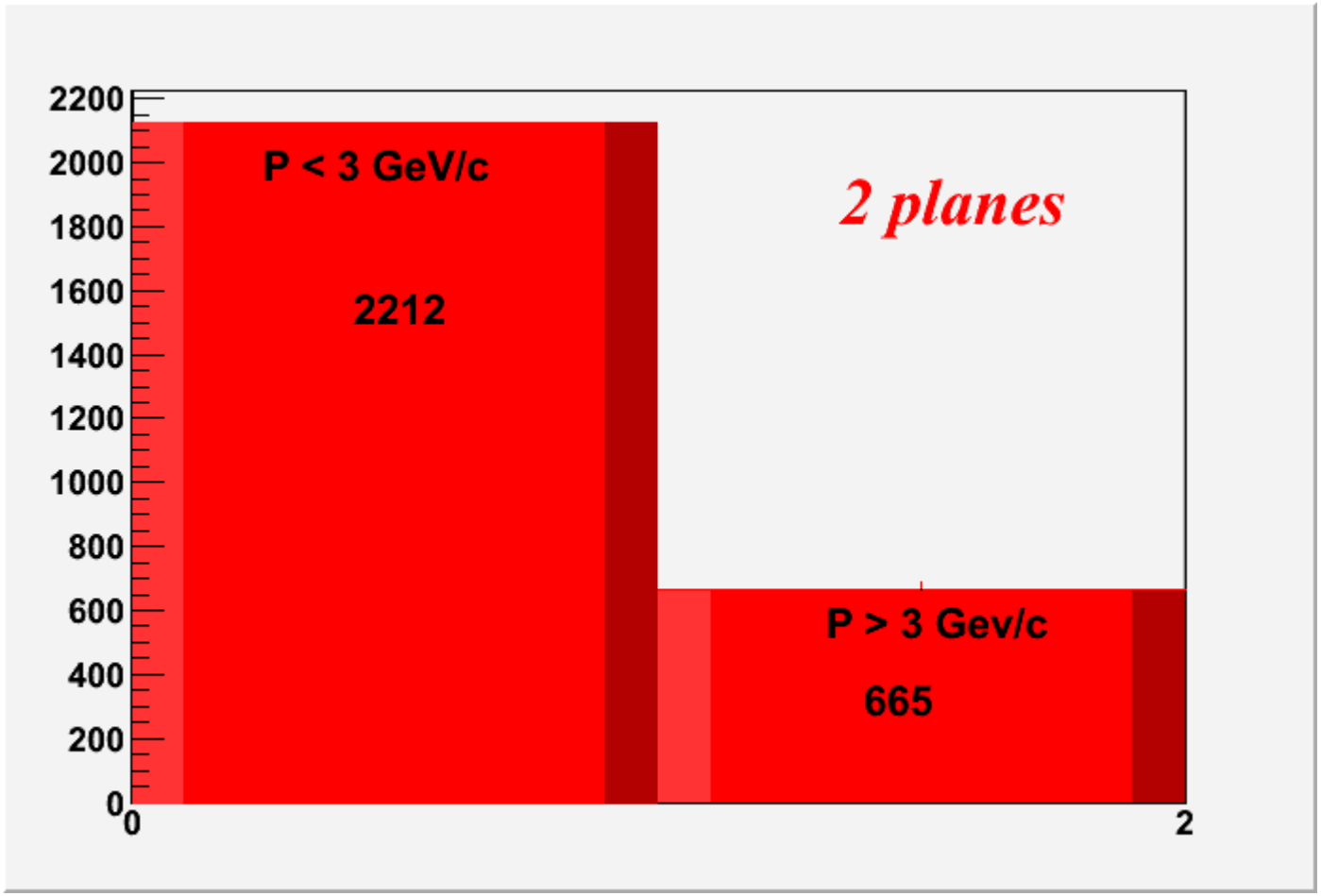


“hit” flag is given to a track that intersects both of the planes

Curvature


C, no hit
C, hit
1/N_ev dN/dC
10
1
10^-1
10^-2
10^-3
-0.05
-0.04
-0.03
-0.02
-0.01
0
0.01
0.02
0.03
0.04
0.05
C [cm^-1]

Purity



Purity: ~23%

Summary

- Geometry introduction
  - L0; far from interaction point, low momentum tracks will not reach it
    - Distance – natural filter
    - Using only “hit” flag we achieved purity ~ 23 %
    - Purity does not depend strongly on number of trigger planes