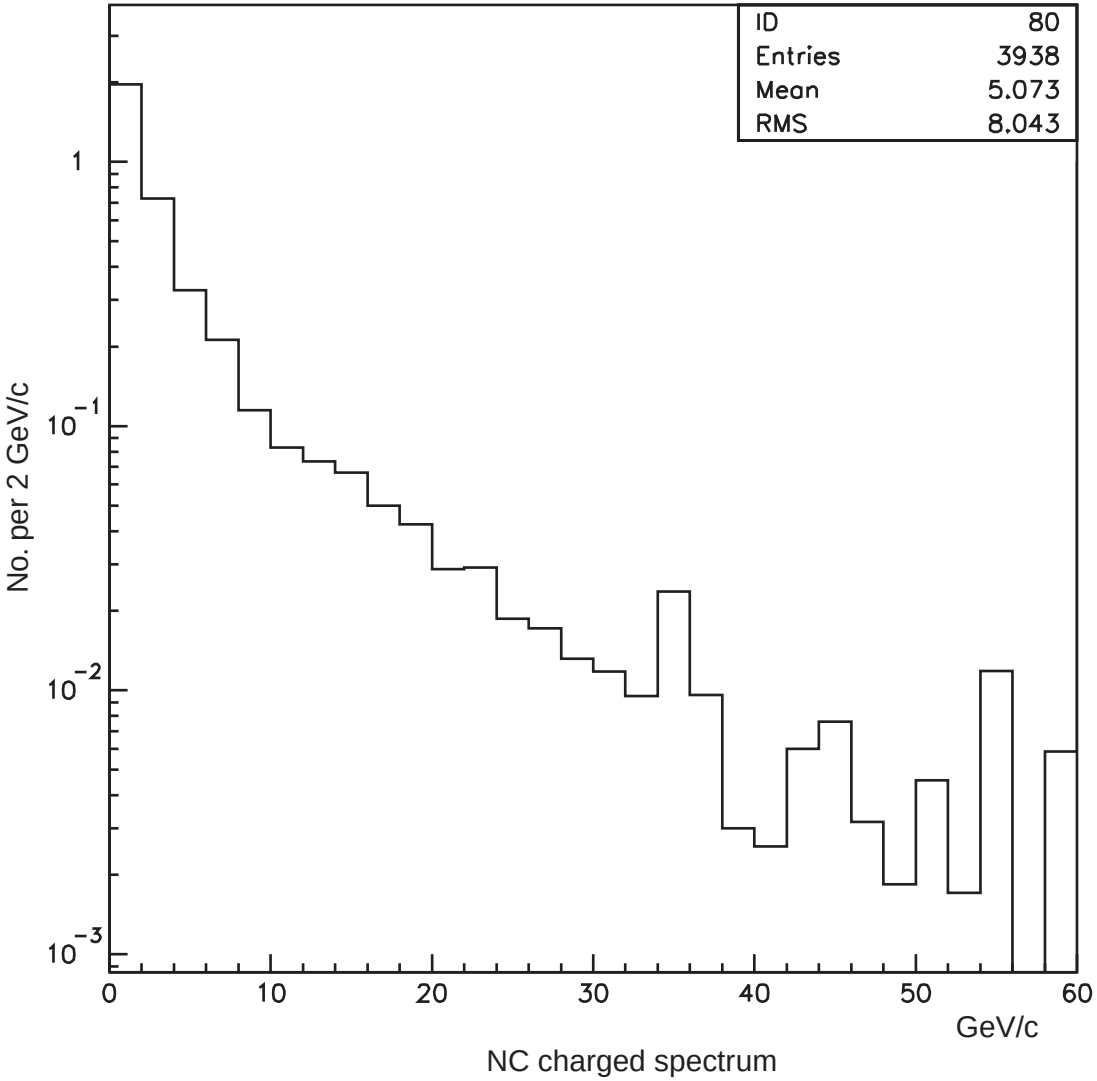
Background from Tridents

Purpose: To estimate the number of trident events in the tau sample due to background processes

Method: a) Use Monte Carlo to generate hadronic interactions in one 1mm iron plate

b) Compute the trident background from charm decay by scaling previous results

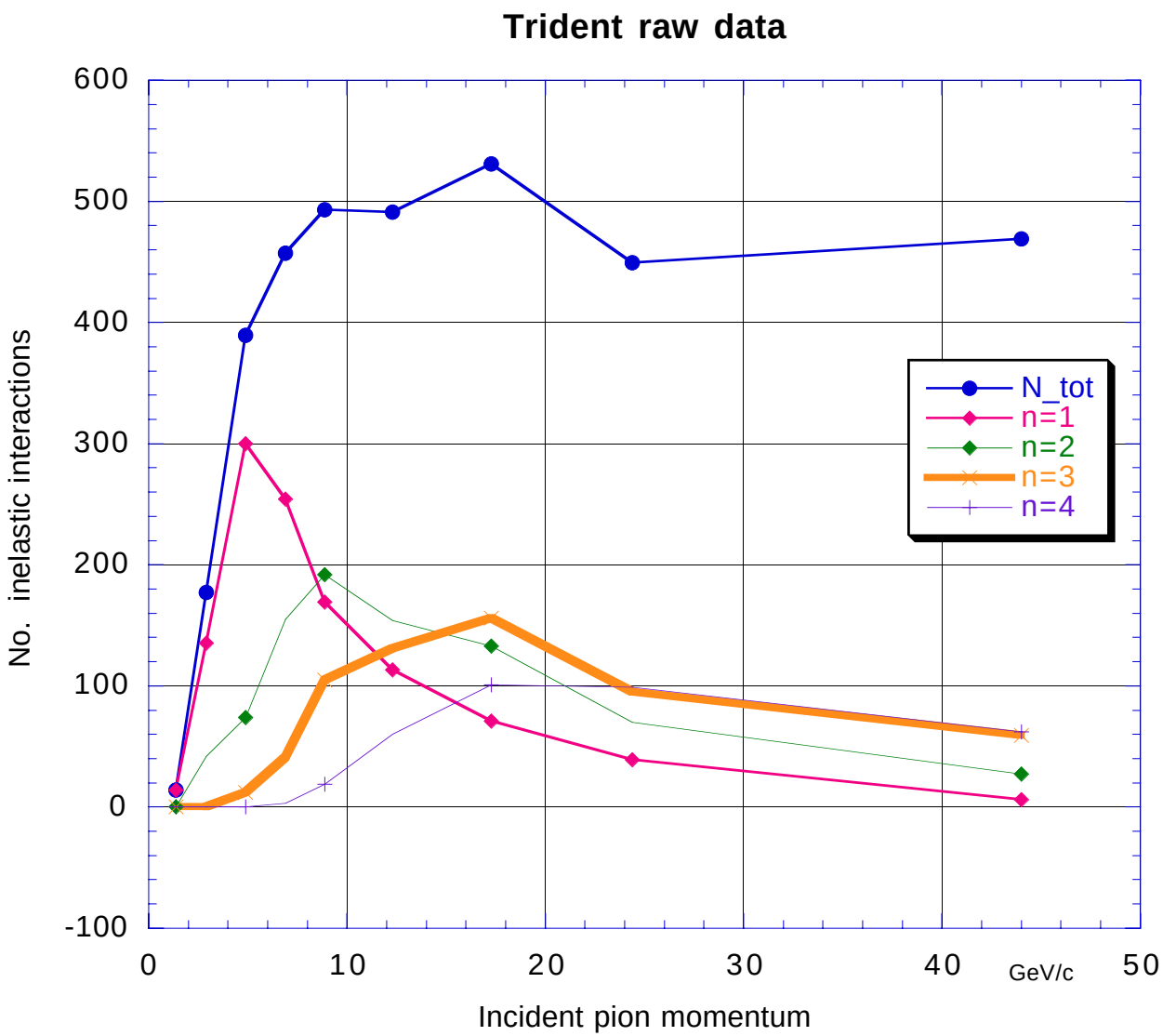


The spectrum of charged secondary particles in NC interactions

This spectrum is used to weight the individual mometum bins in the next plot

Assume CC events with mis-identified lepton is the same as NC

Inelastic interactions as a function of incident momentum.
Cuts: $|\theta_{2ry}| < 0.25$; $p_{2ry} > 1$ GeV/c ;



Each momentum bin contains 10^4 events, on a 1mm Fe plate of density 87 g cm^{-3}, equivalent to 10^5 events

The expected rate of interactions is 625 w/o cuts

Note that only the n=3 data are background

Preliminary Estimate:

based on

- 12.7% of the interactions are seen as tridents
- 26% of the events in our sample of 344 appear NC-like
- 10mm decay length allowed
- the target-weighted average amount of material is 3.4mm Fe
- the efficiency for finding tridents is 0.70

➠ $(7.0\times10^{-4})(3.4)(0.26)(344)(0.70) =$ 0.15 events