update on D0 reco. using micro-vertex code

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datasets

- mix D0 sample :
  - 1 D0 embedded in Cu+Cu event, 280 files with 400 events
  - $|z_{vertex}| < 30$ cm (20 cm in the analysis)
  - defaults cuts in macro (applied to positive and negative tracks):
  - NTpc > 15
  - $|\eta|$ in SSD acceptance, ie $|\eta| < 1.2$
  - pT > 0.1 GeV/c
  - Decay length < 700 μm
- real data : Cu+Cu@200 GeV Min bias (P07ic)
  - look only for a fraction of these files
  - $|z_{vertex}| < 20$ cm in the analysis

some issues

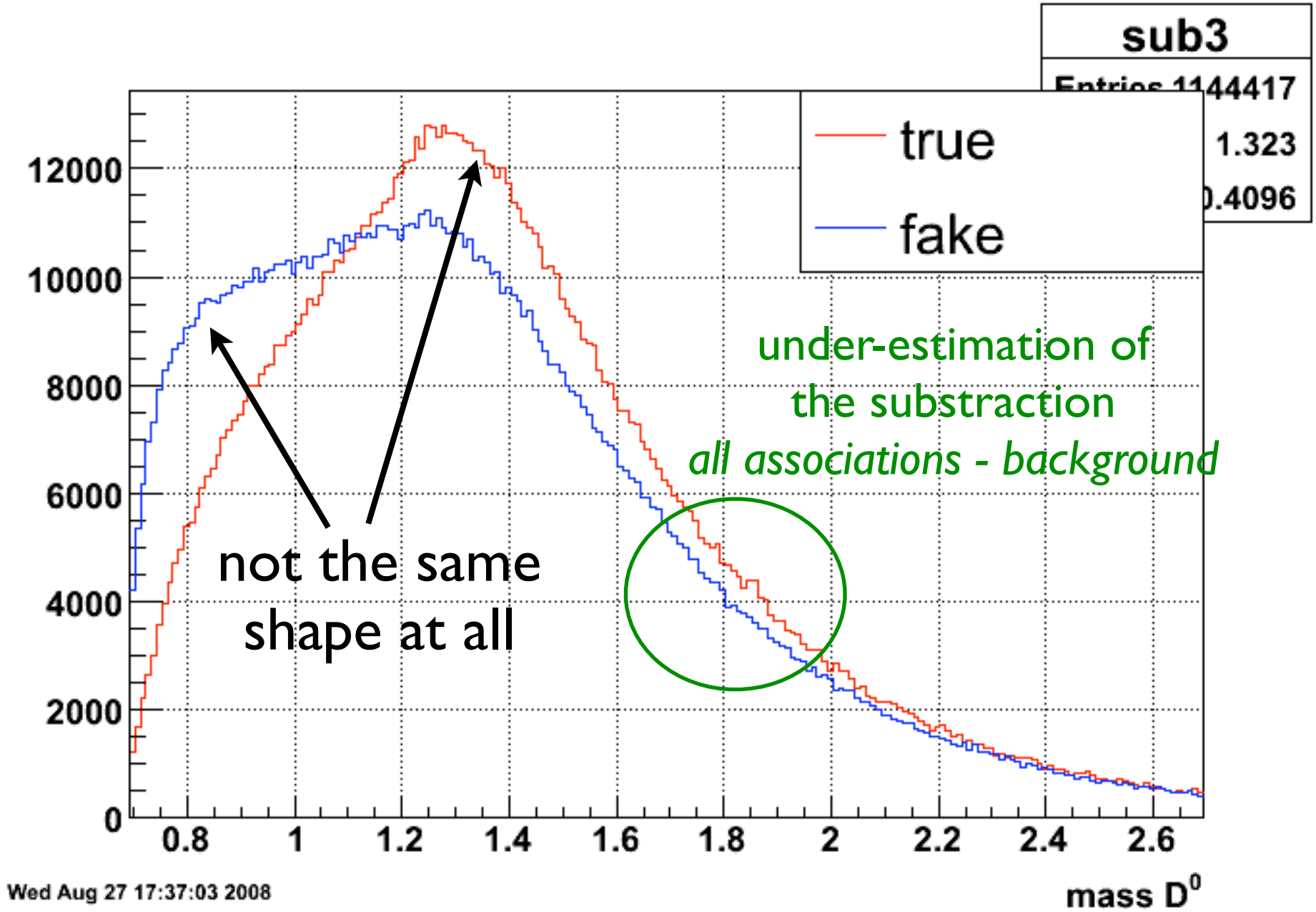
- Background rotation calculation
- Cut on the number of tracks per event
- Cut on D0 daughters momentum
- NSigma for dEdx values ?

Background rotation

- for each (positive,negative) association, rotation of π of the positive daughter
- recalculate the corresponding mass

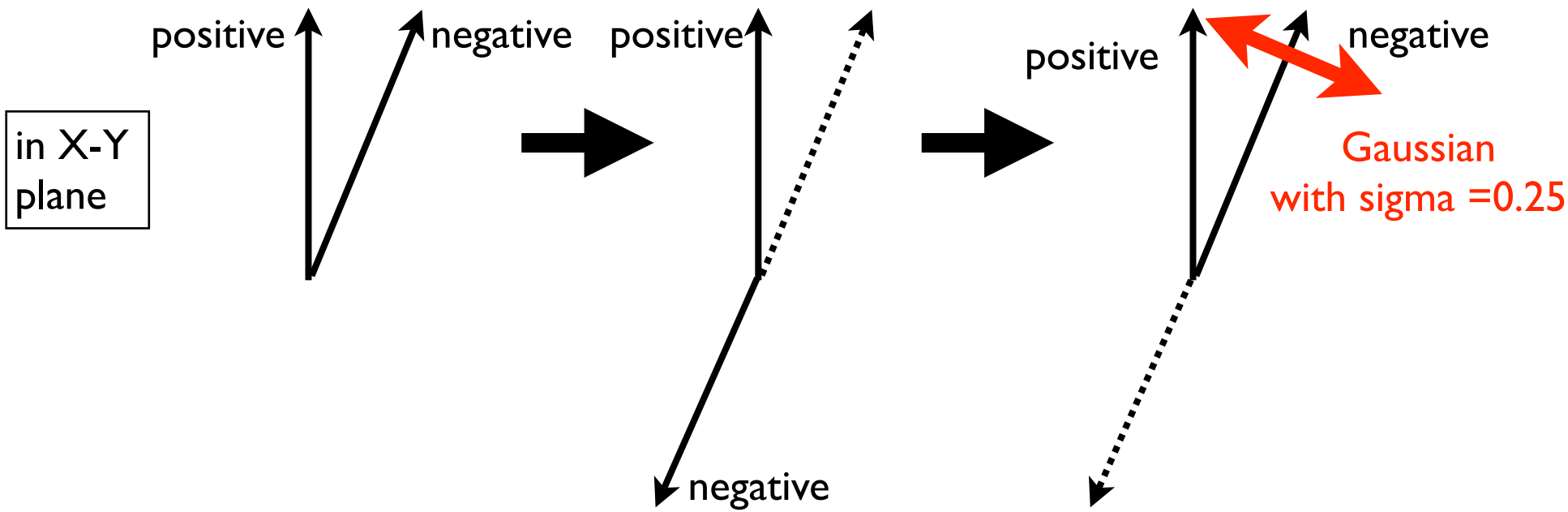
➡ it leads to a not "perfect background", then the substraction of true-fake D0 is over-estimated

mix sample


sub3
Entries 1144417
1.323
0.4096
true
fake
12000
10000
8000
6000
4000
2000
0
0.8
1
1.2
1.4
1.6
1.8
2
2.2
2.4
2.6
mass D0
Wed Aug 27 17:37:03 2008
not the same
shape at all
under-estimation of
the substraction
all associations - background

Modification

- try another value than π : same results
- try random rotation in 2π for both daughters : same results
- rotation of π + TMath::Gaussian(π,0.25)

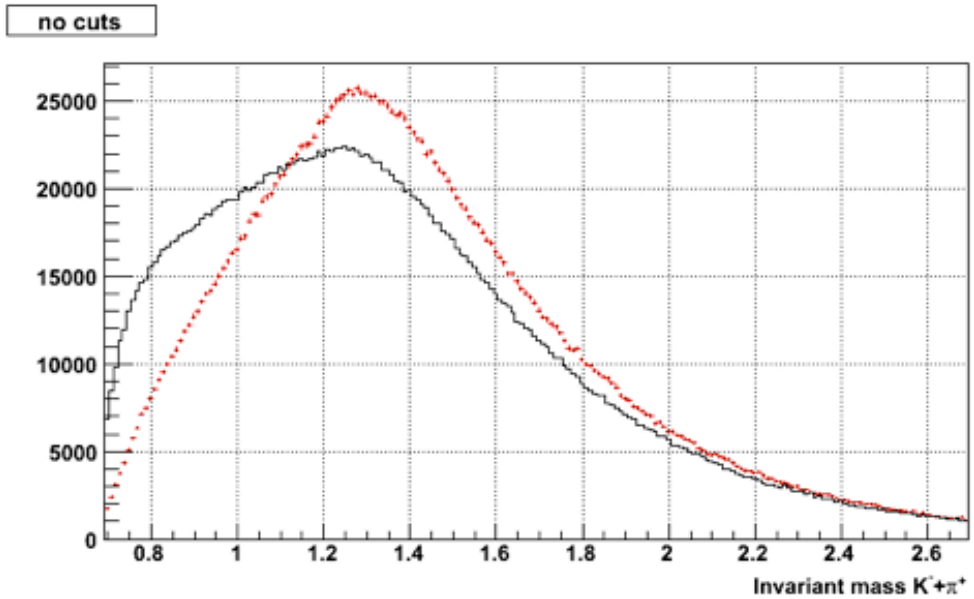


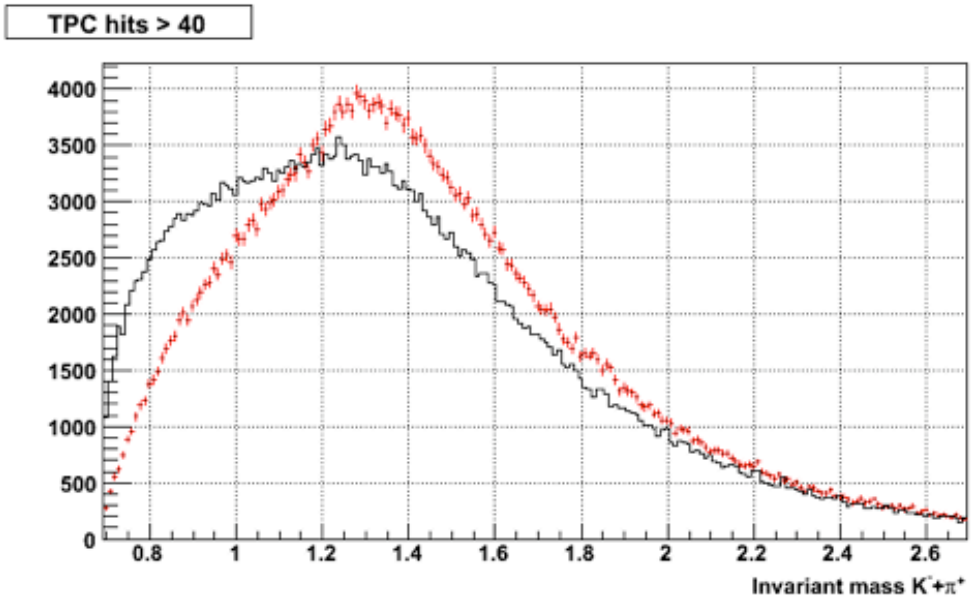
- In the following plots, we tried 3 cuts : number of TPC hits, number of silicon hits ,number of tracks per event

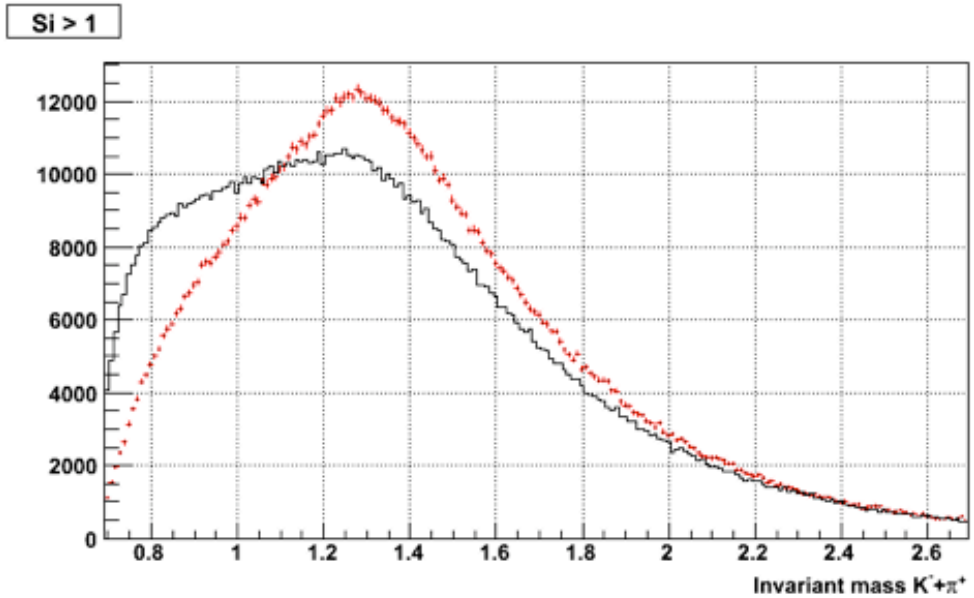
(done with a sample of the files available)

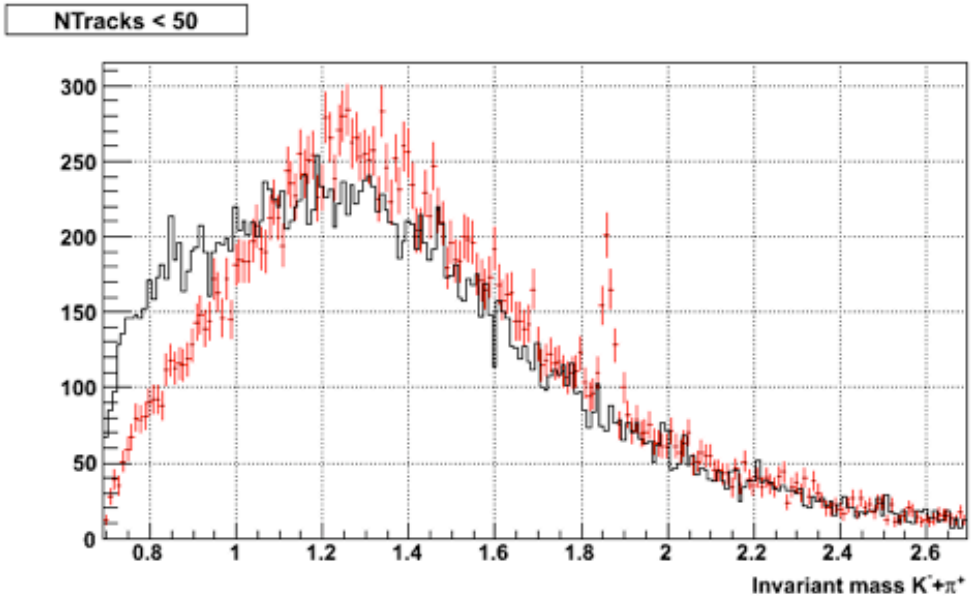
Fixed rotation

all associations
background





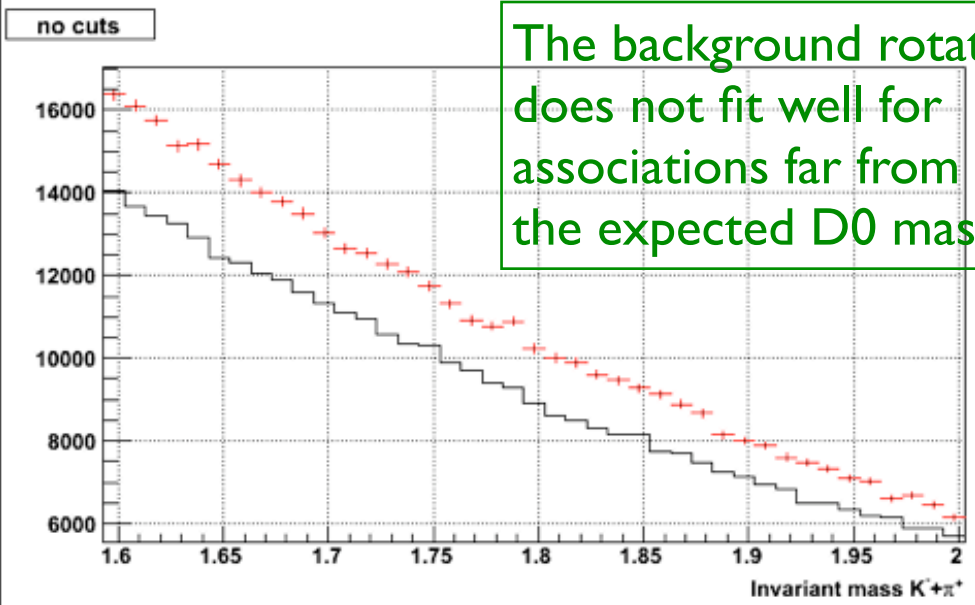


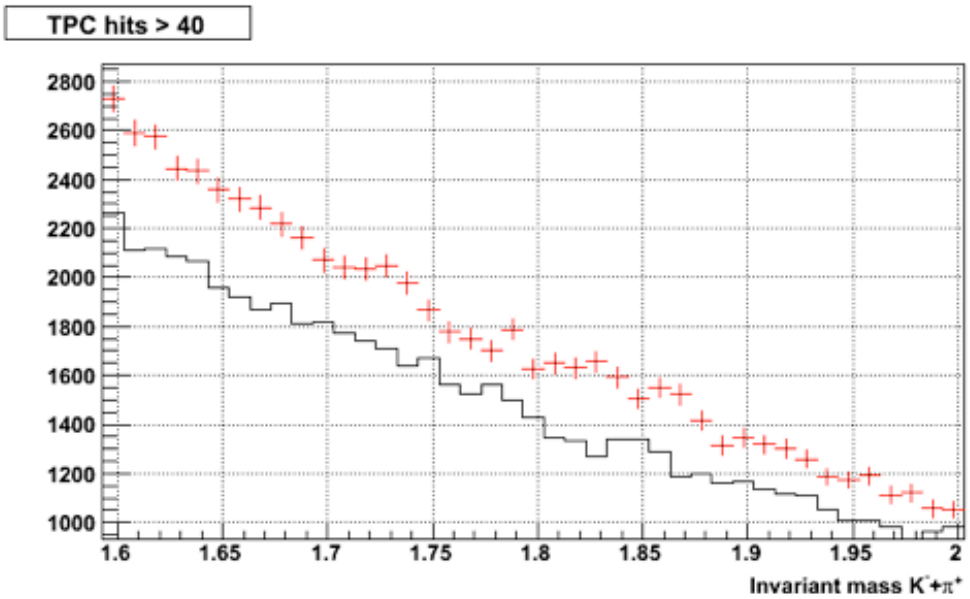


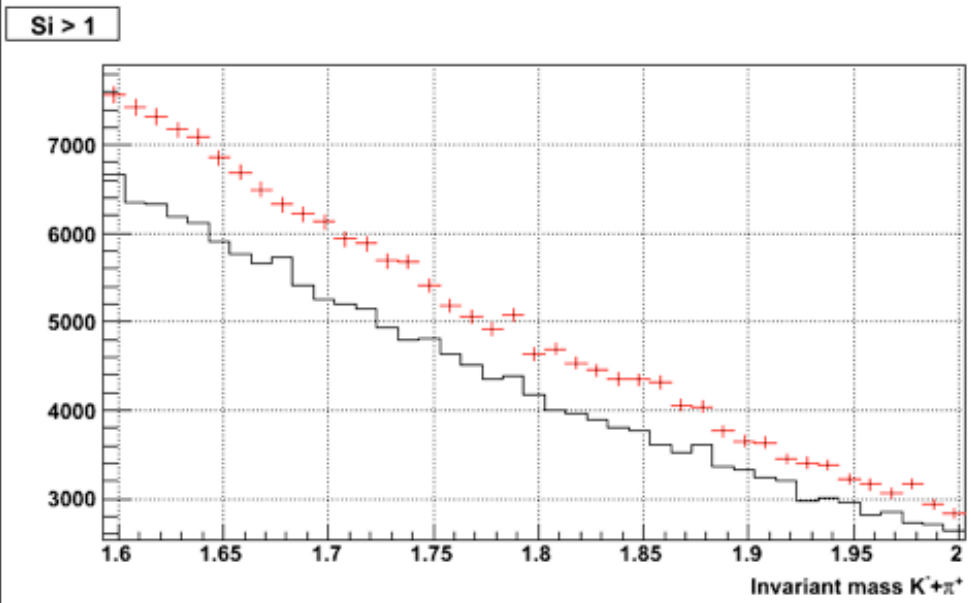
Fixed rotation (zoom)

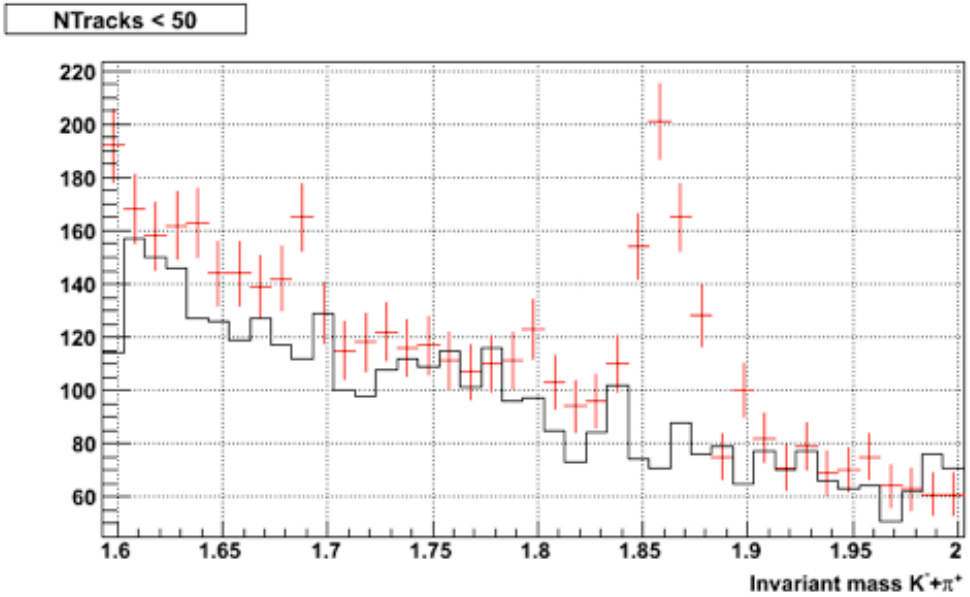
all associations
background

The background rotation does not fit well for associations far from the expected D0 mass

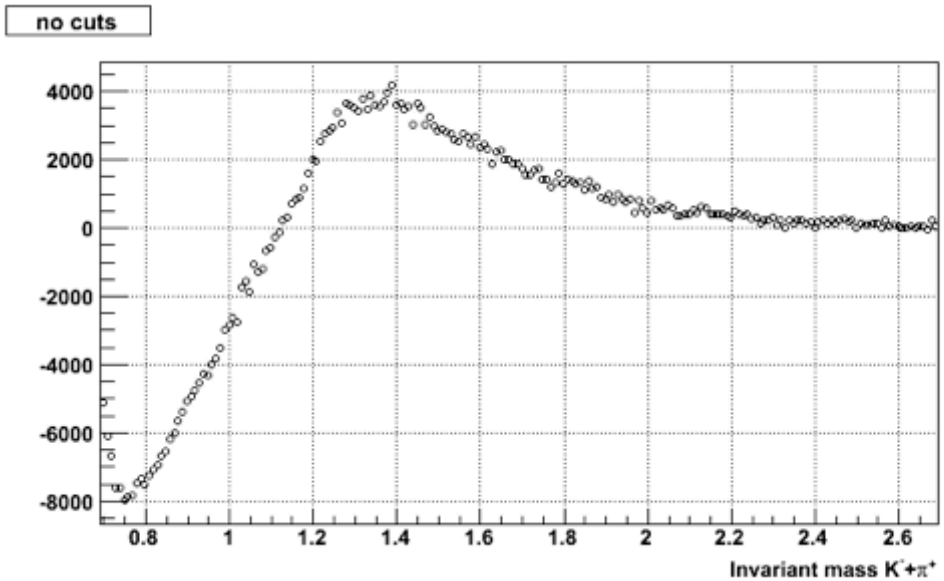


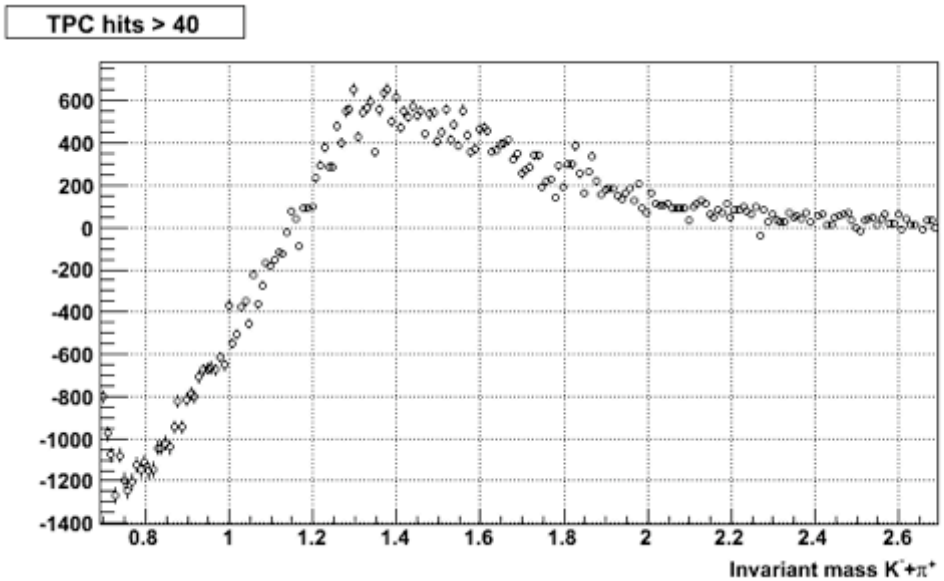


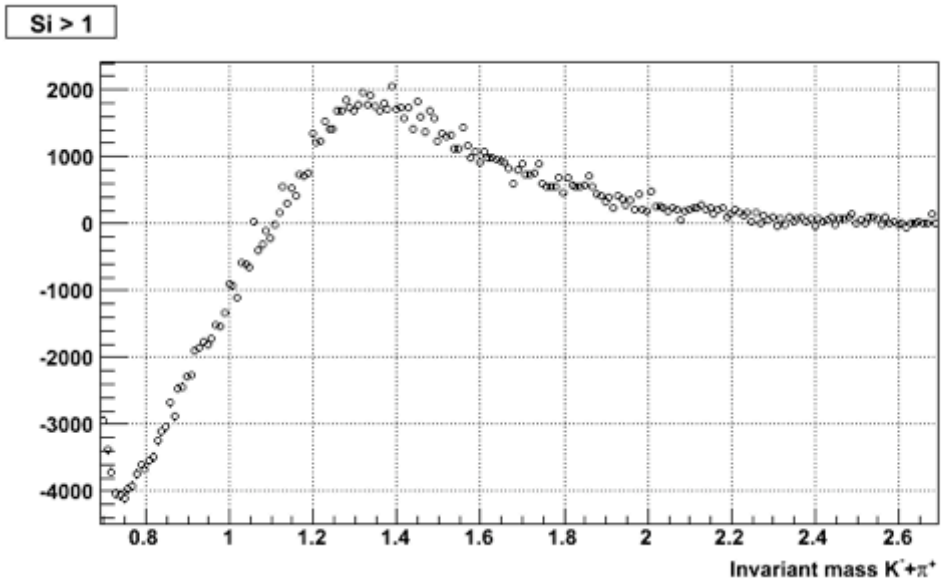


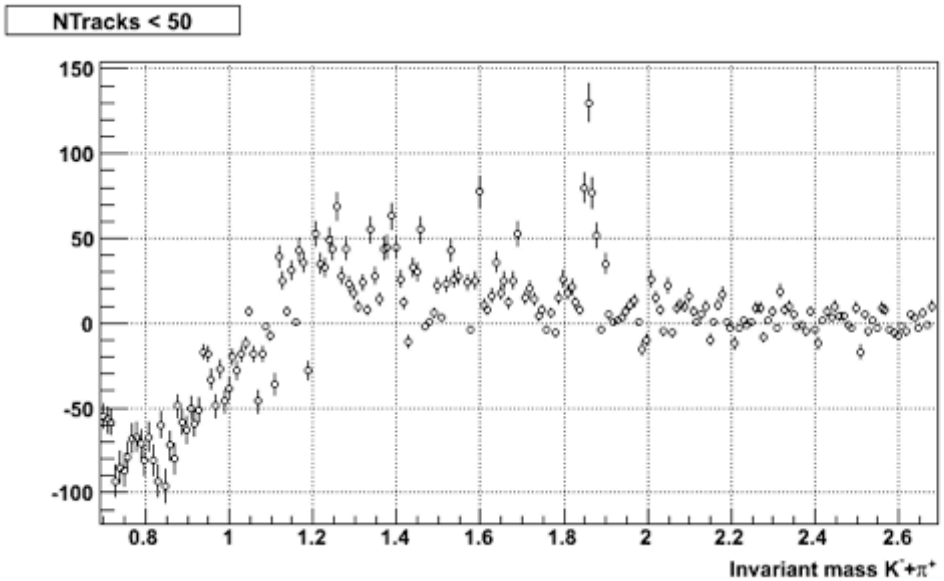


Fixed rotation : substraction

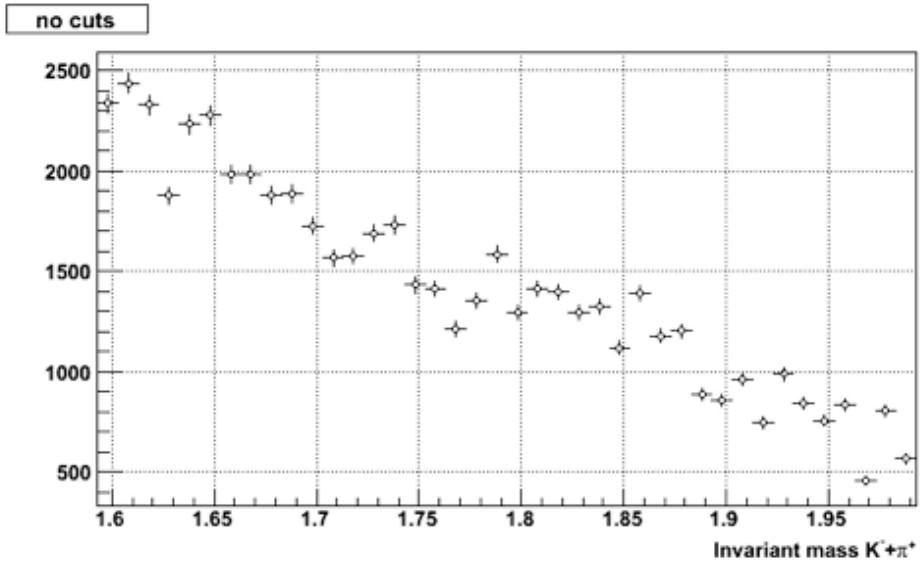


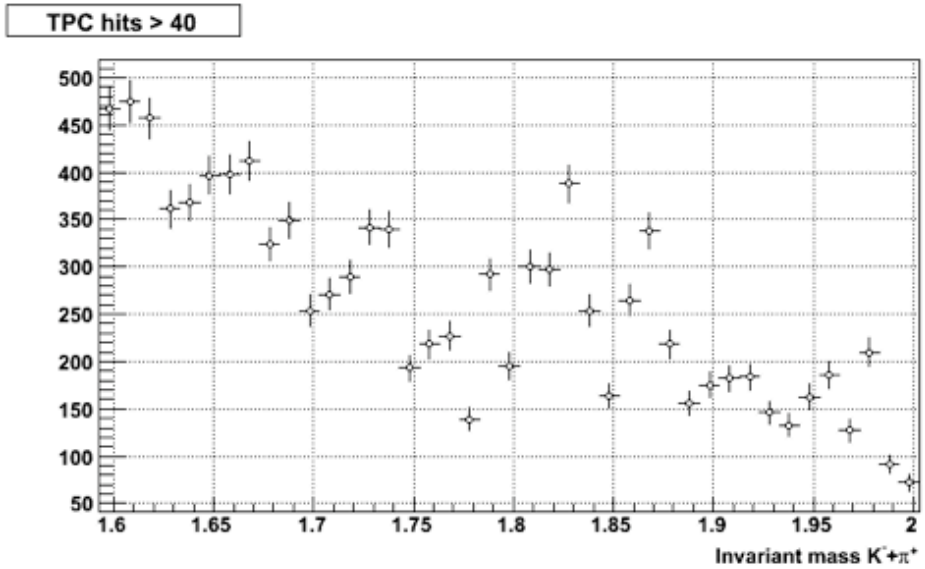


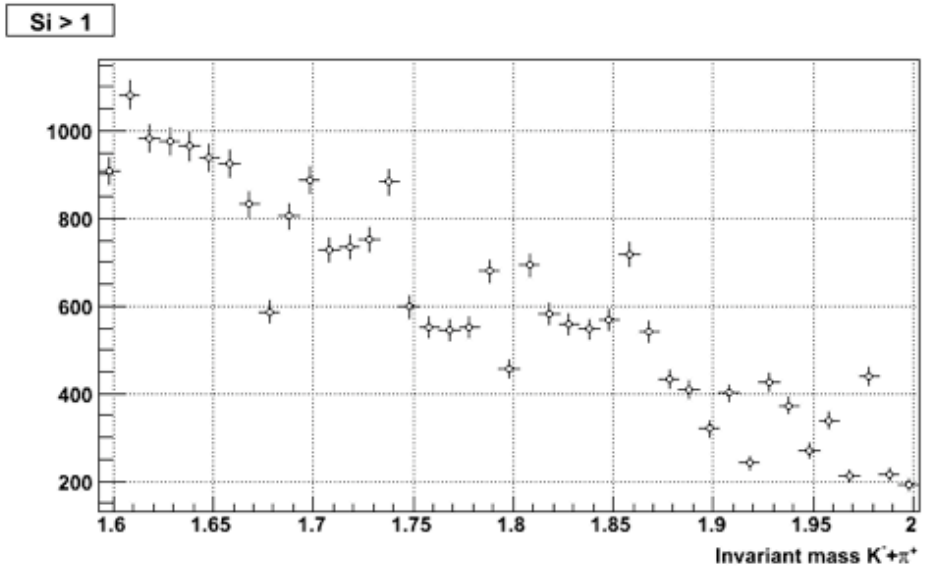


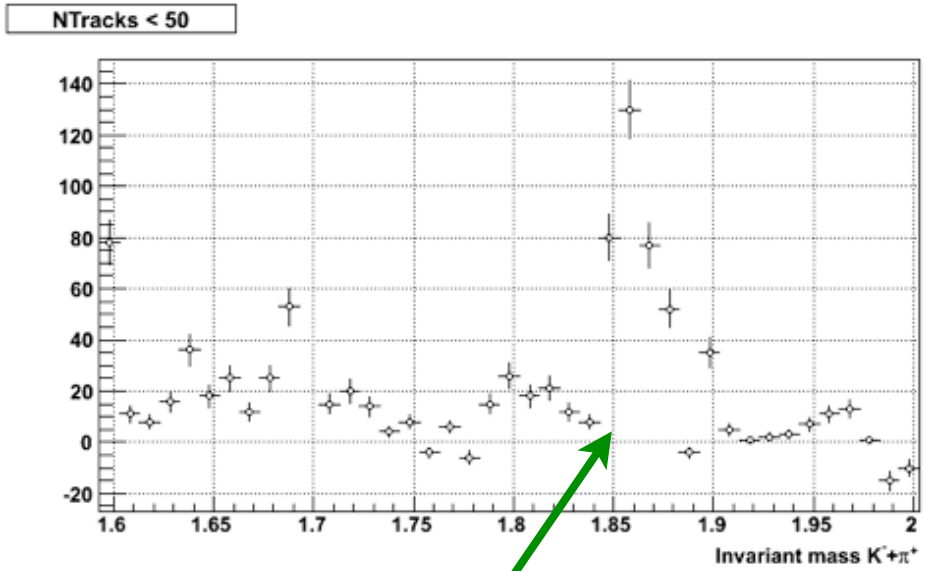


Fixed rotation : substraction(zoom)



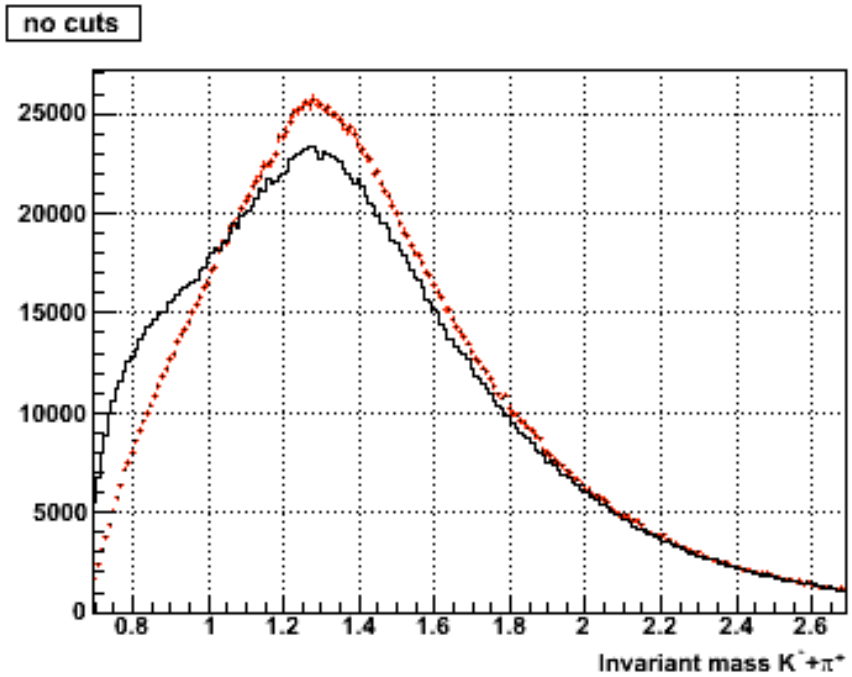


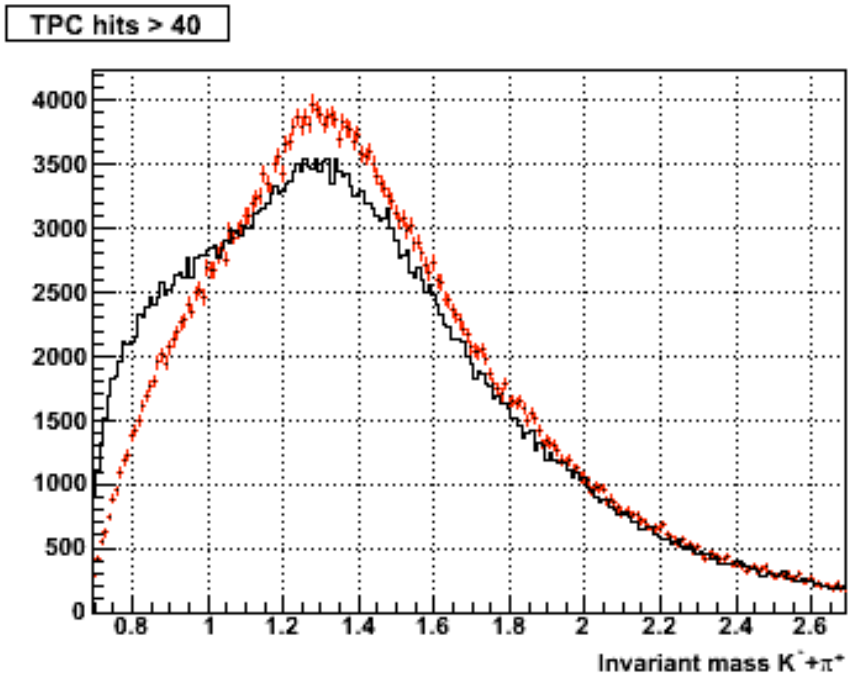


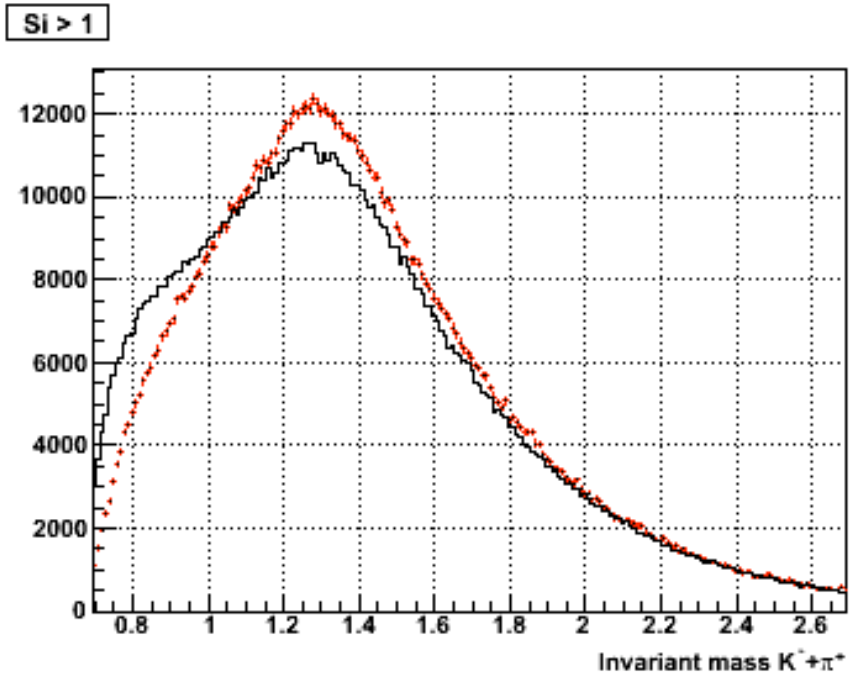


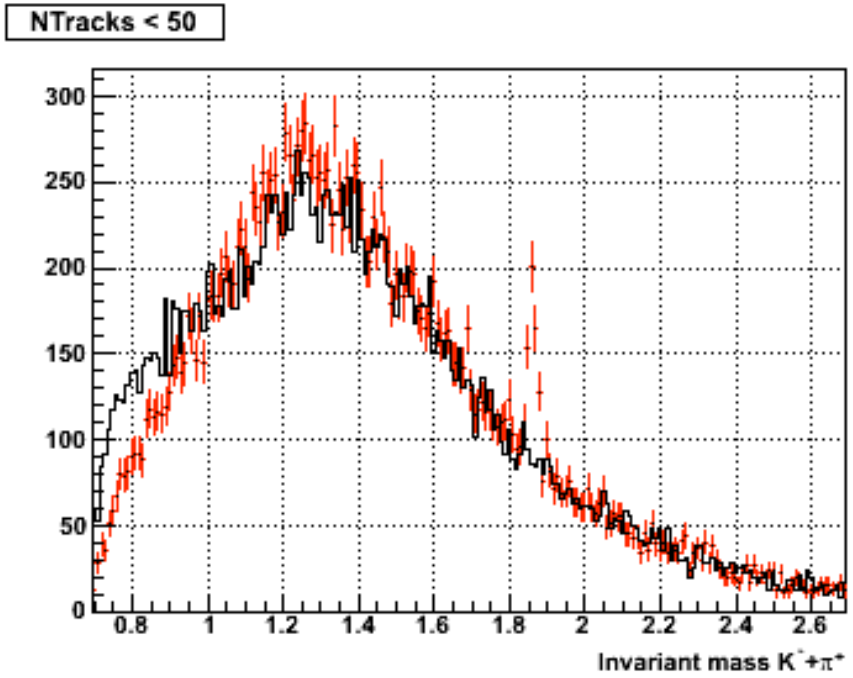
it seems to work better with the cut on the number of tracks per event

random rotation

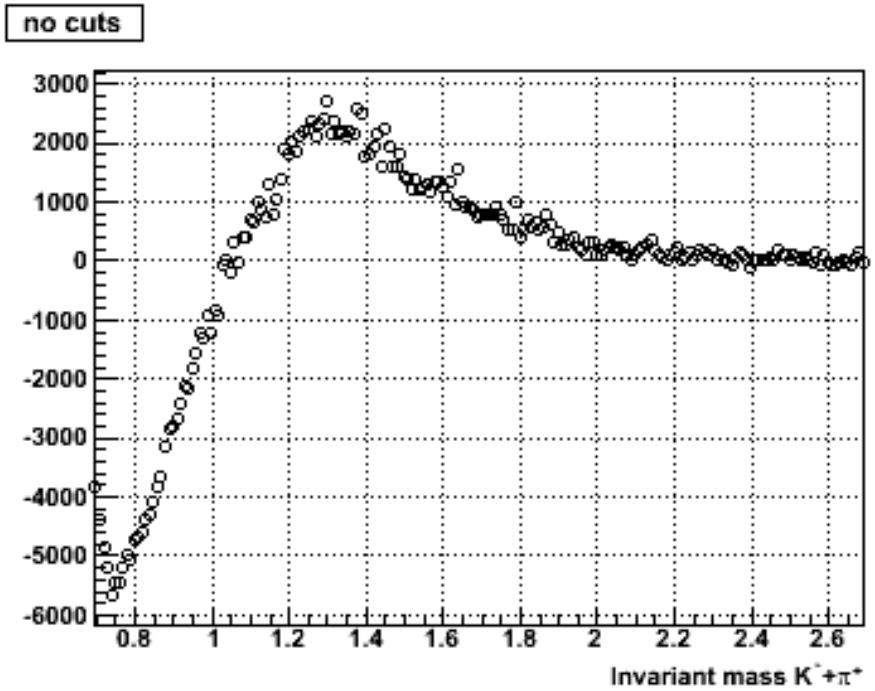


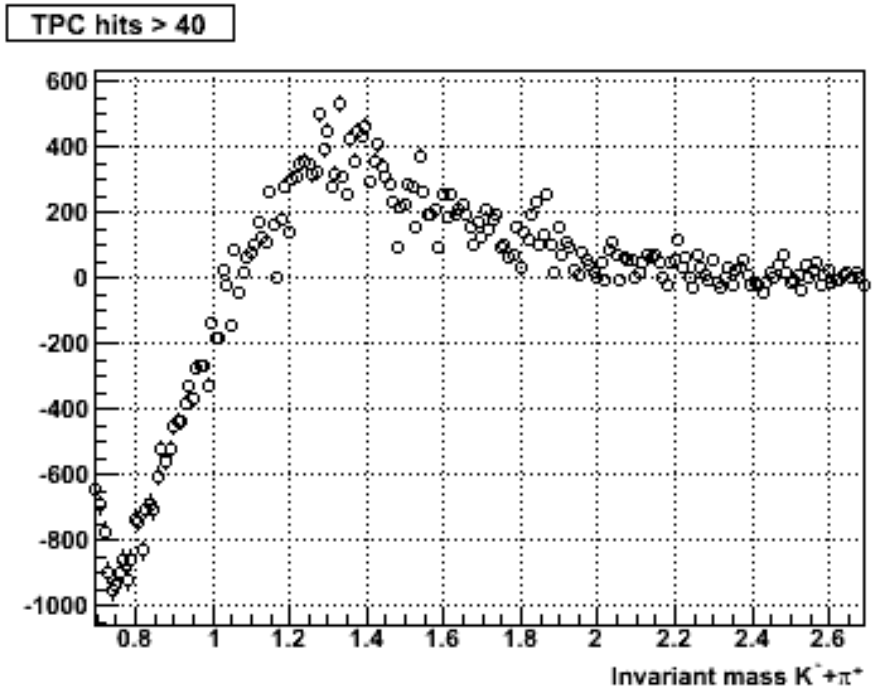


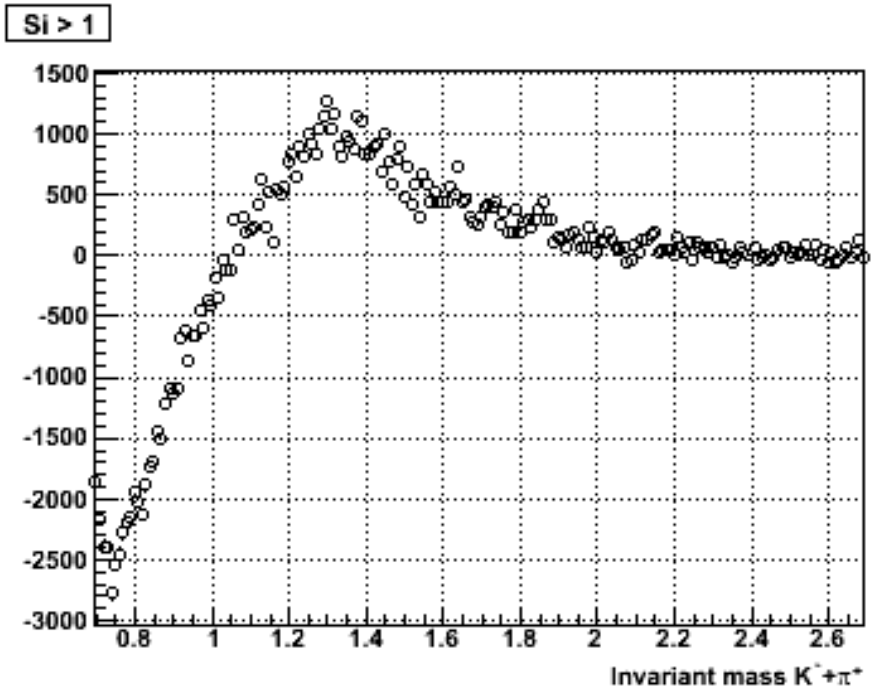


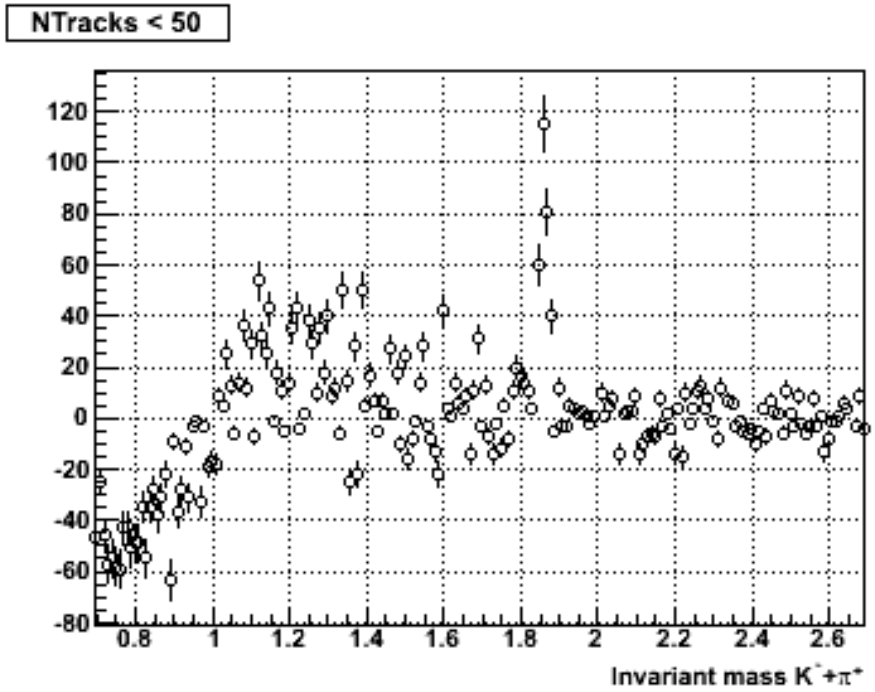


random rotation : substraction

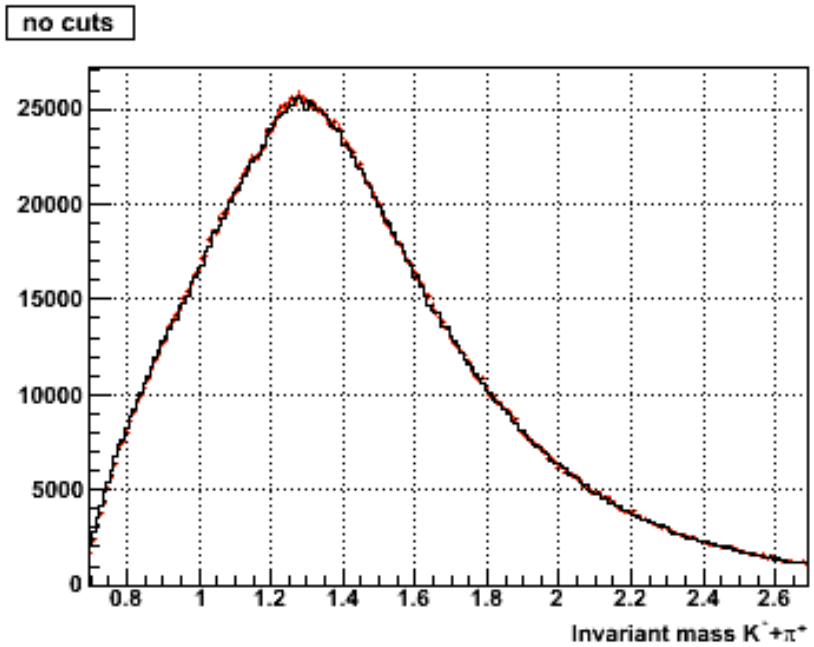


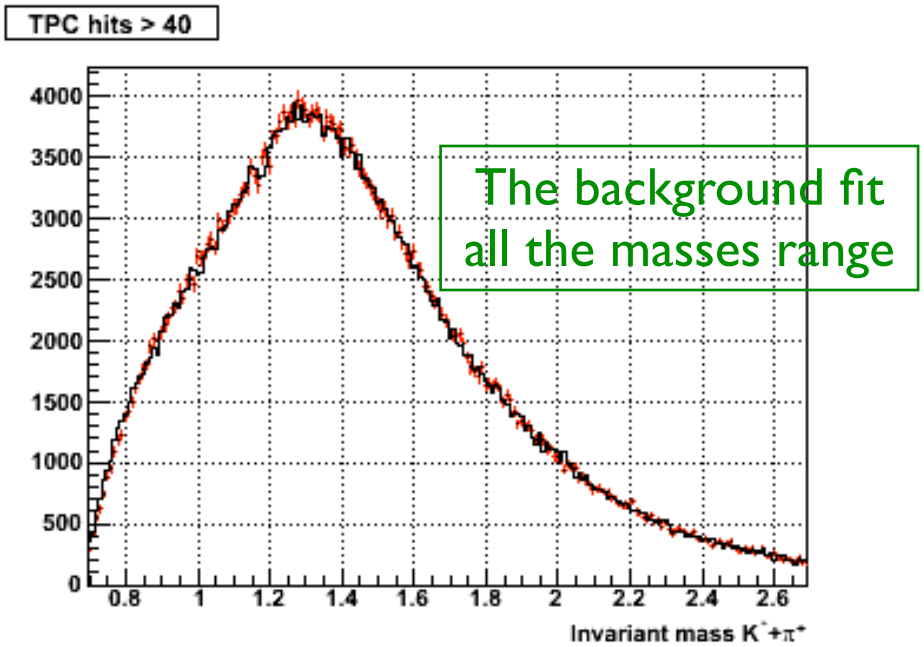


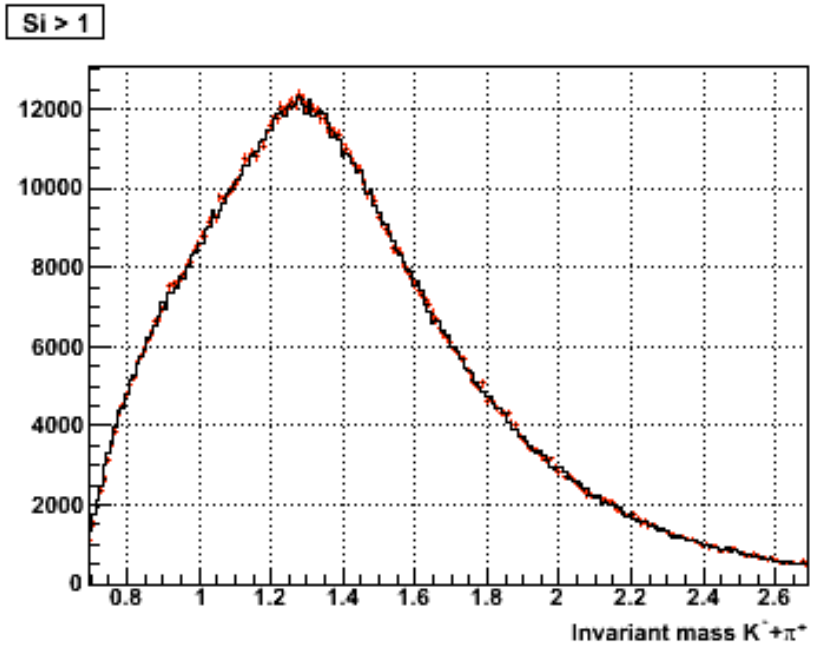


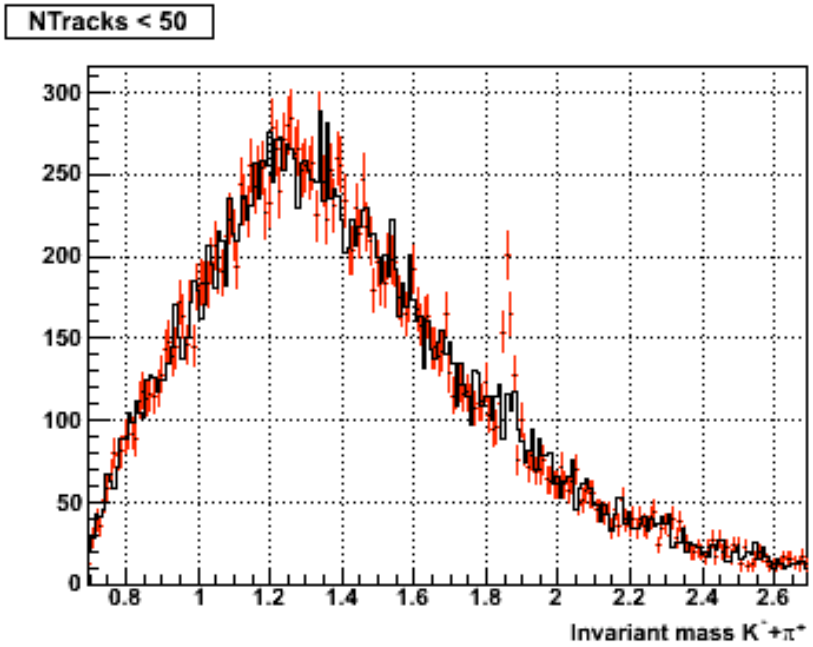


gaussian rotation

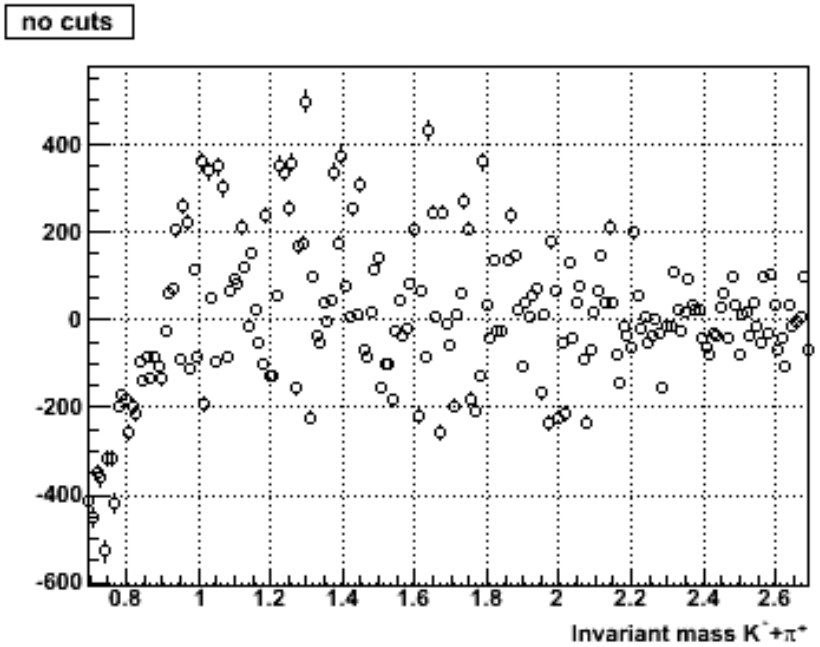


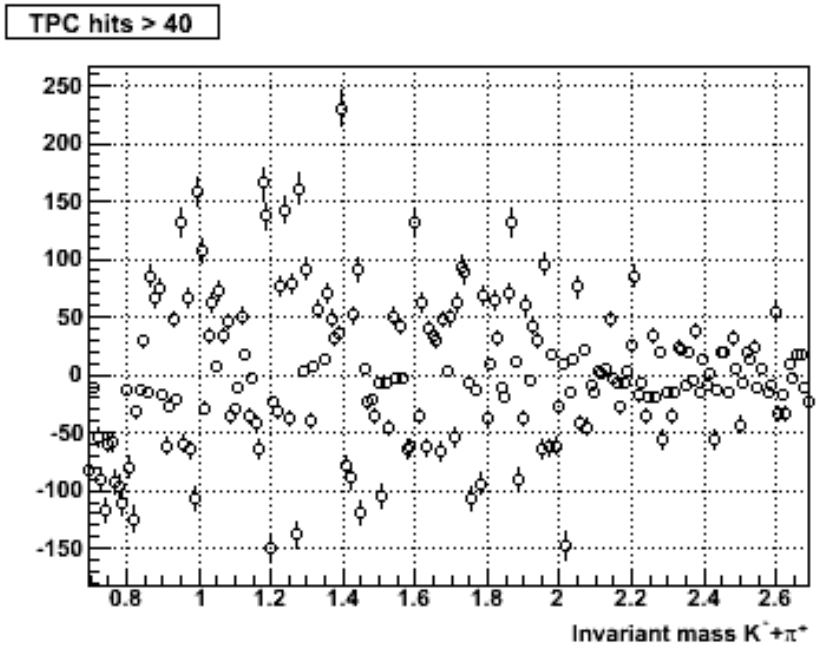


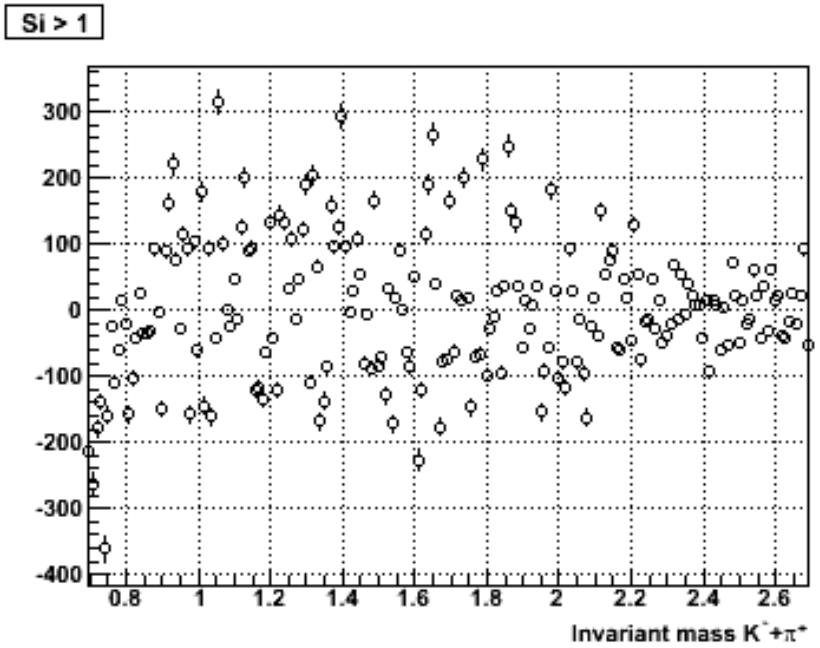


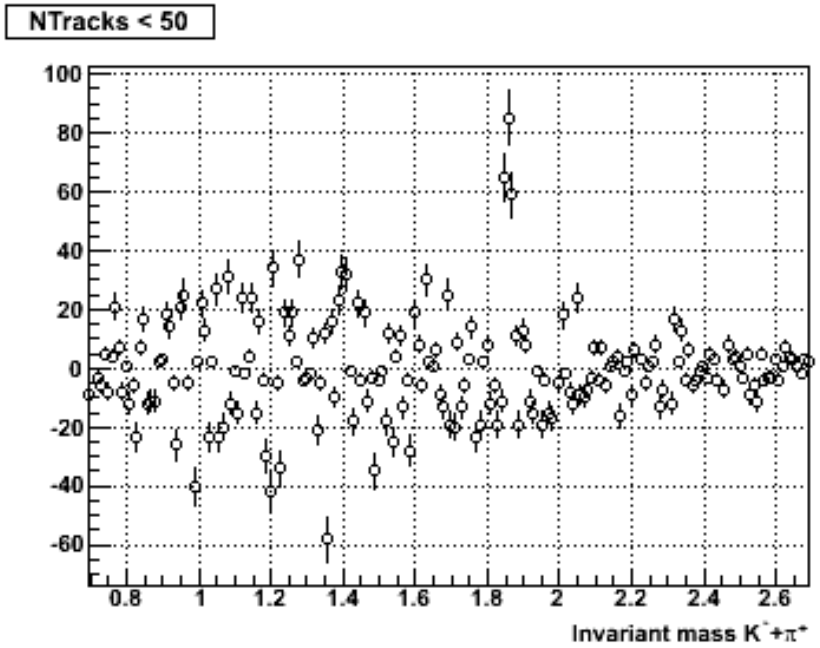


gaussian rotation : substraction

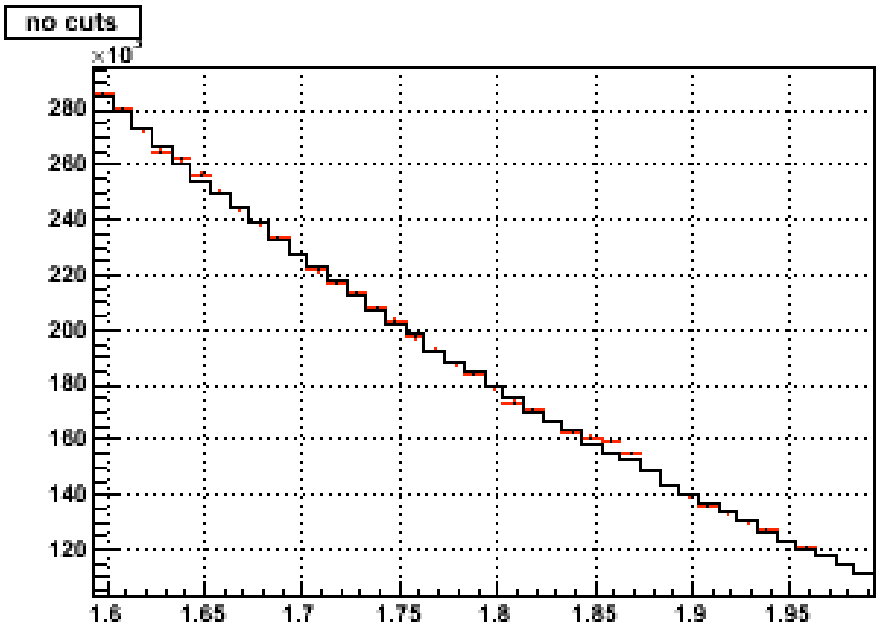


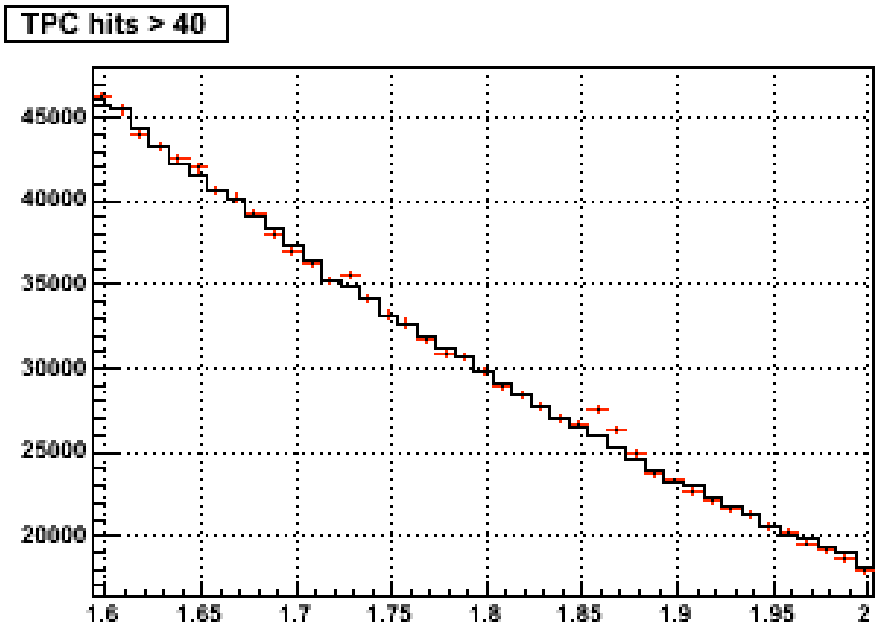


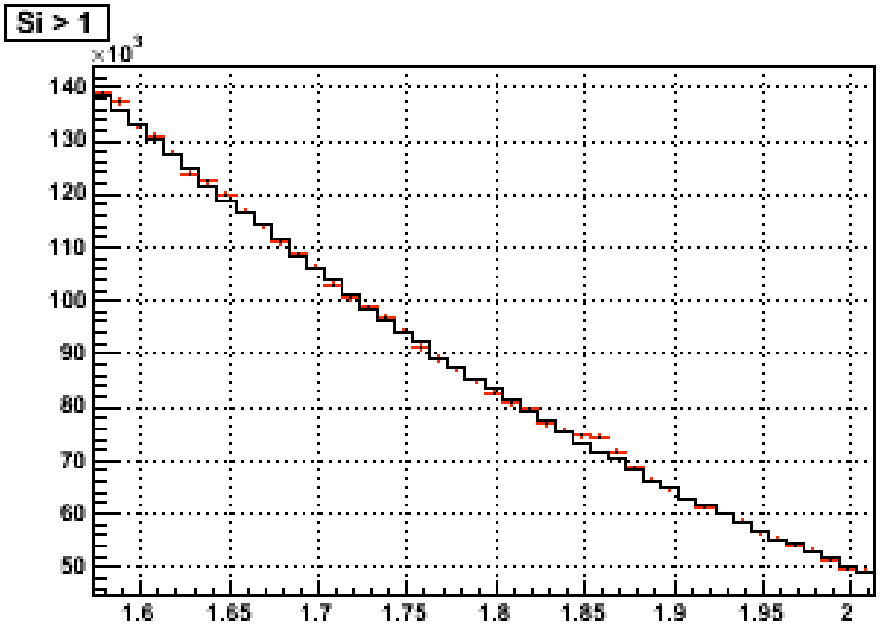


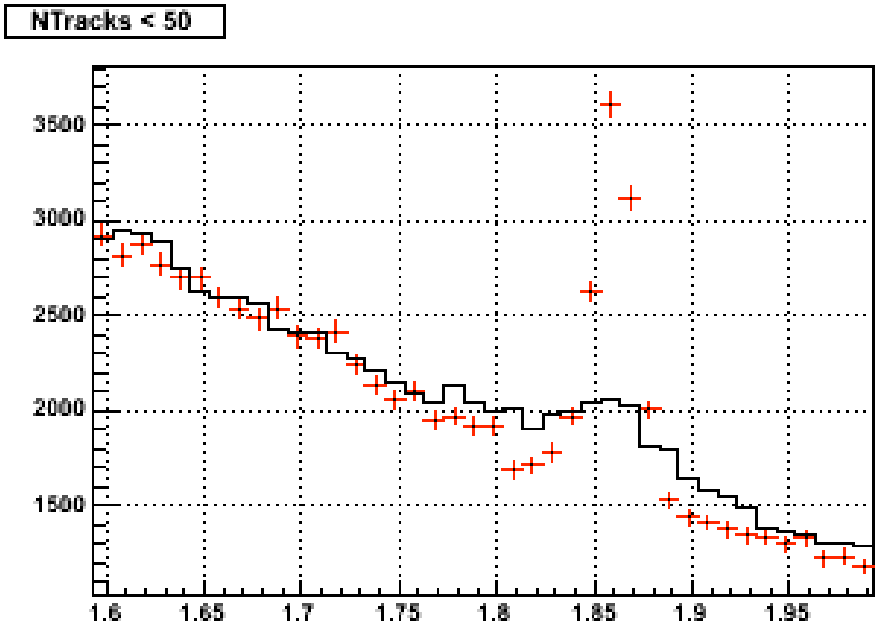


gaussian rotation (all files)

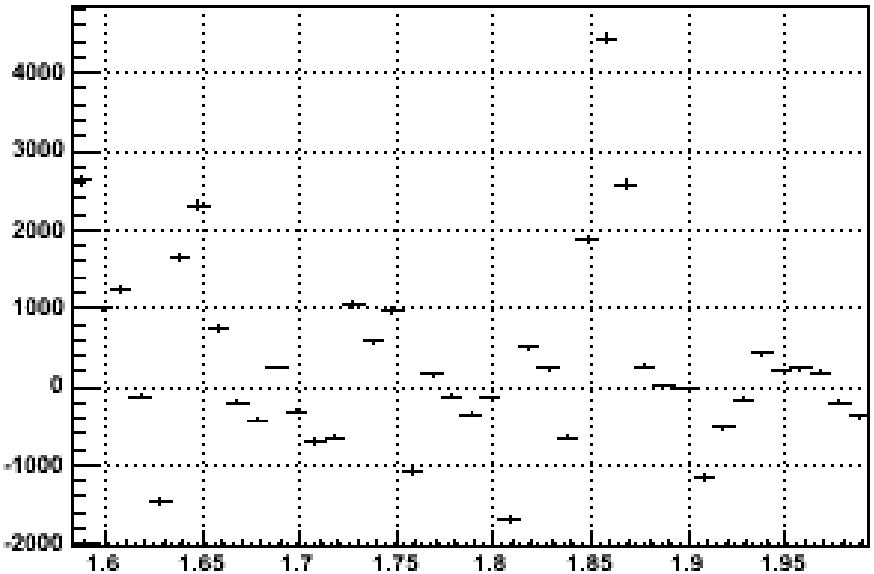


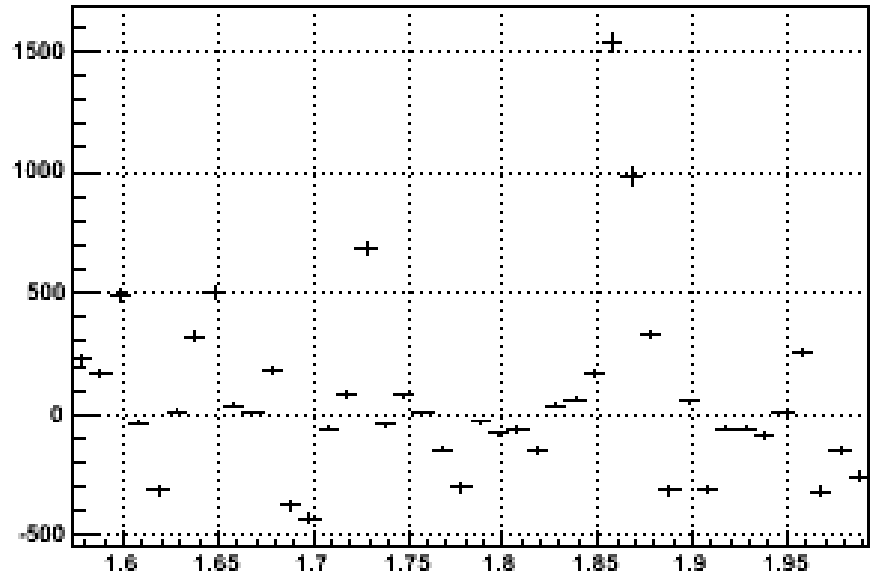


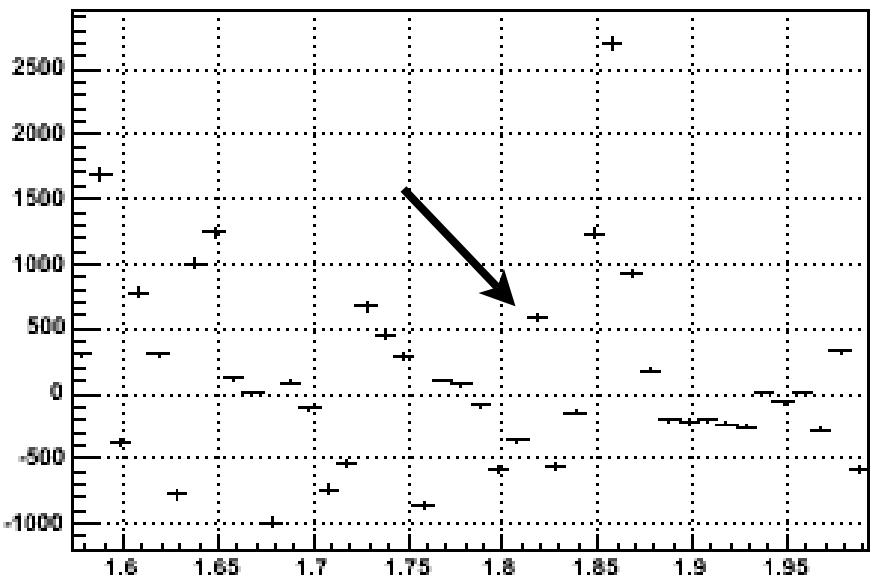


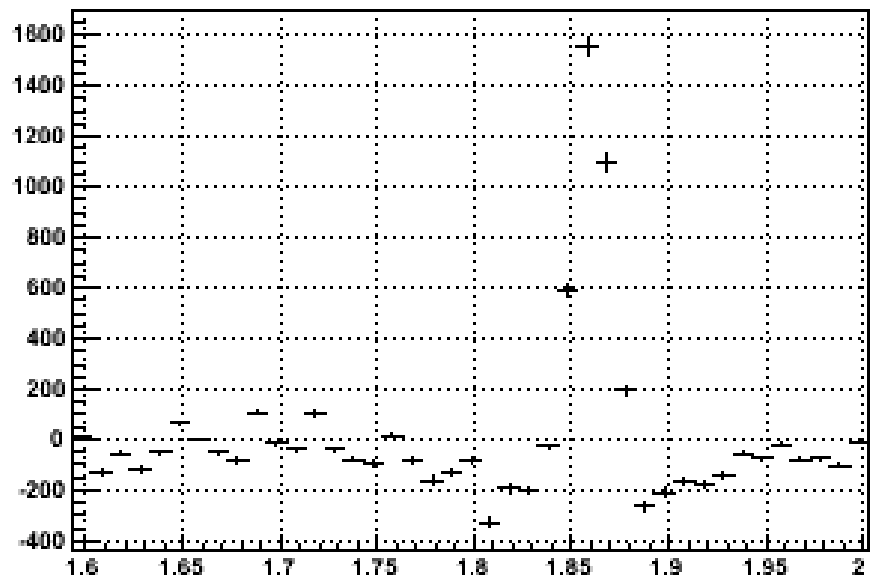


gaussian rotation : substraction (all files)



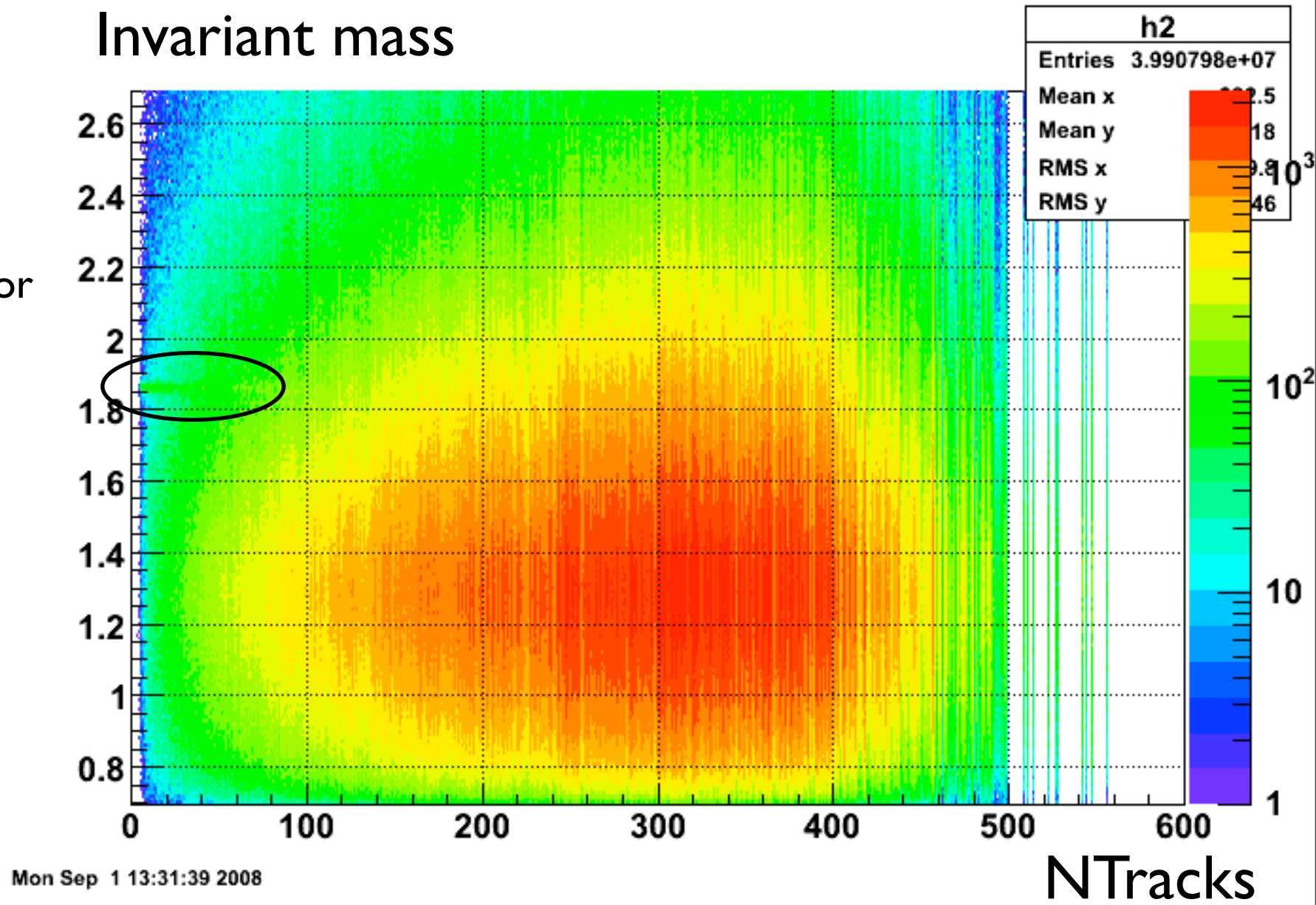






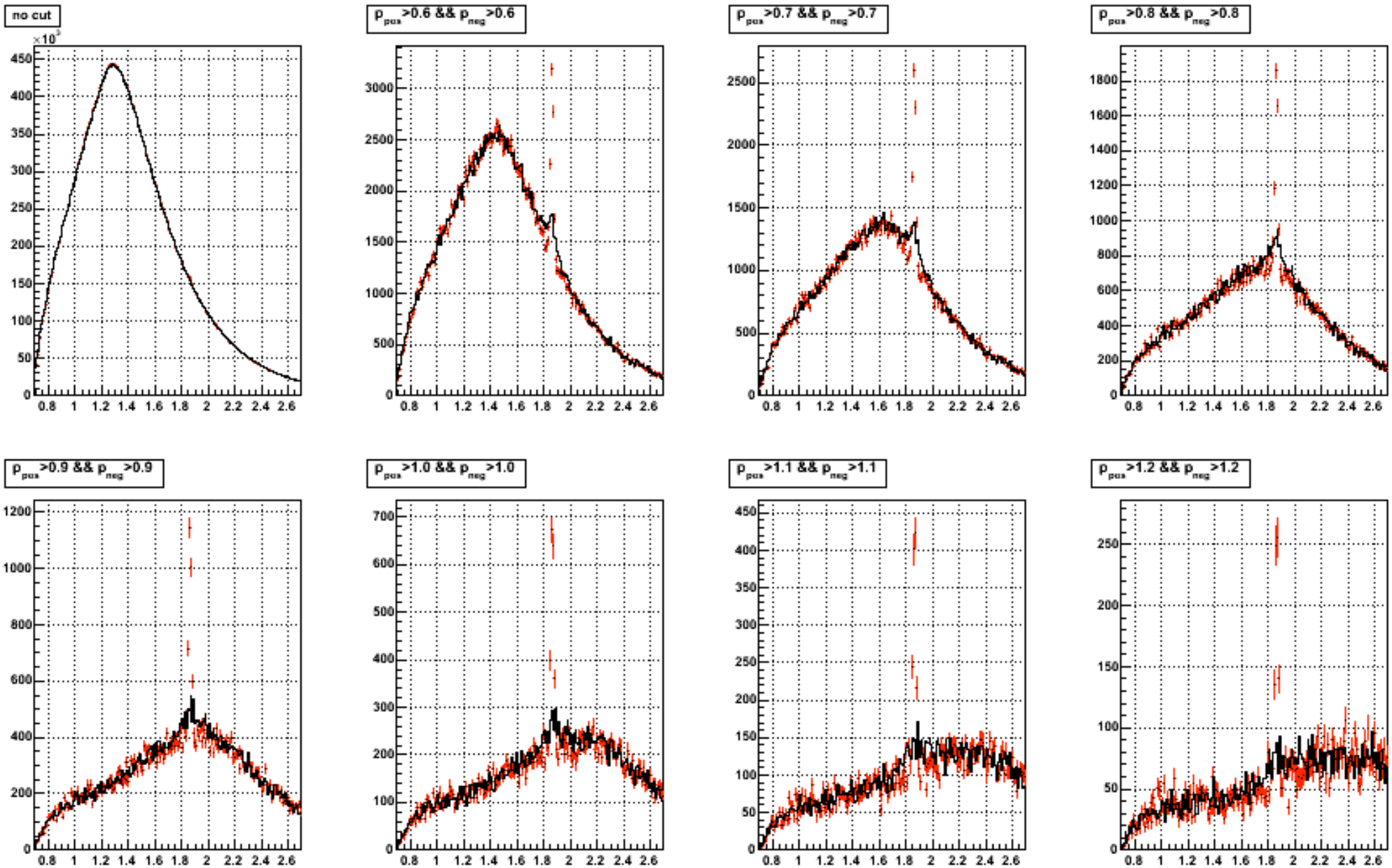
Number of tracks per event (mix data)

We see a small correlation for mass = 1.86 and the low multiplicity



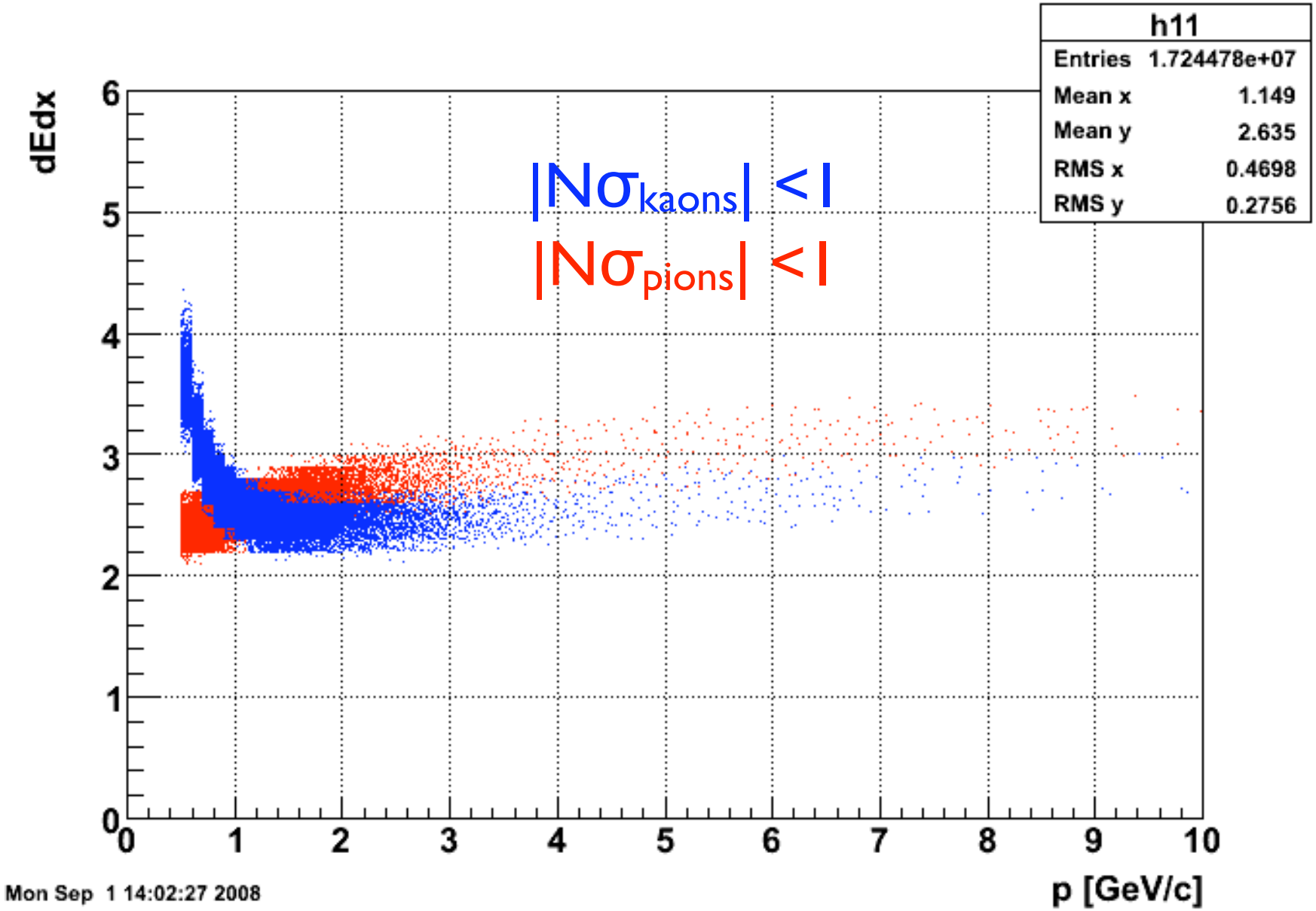
Cut on D0 daughters momentum

(with cut on the number of tracks)

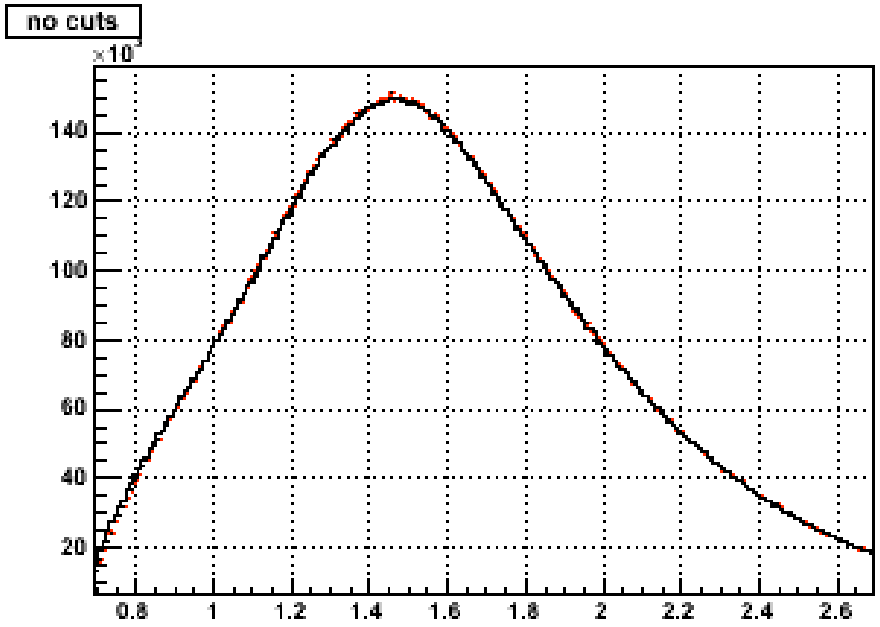


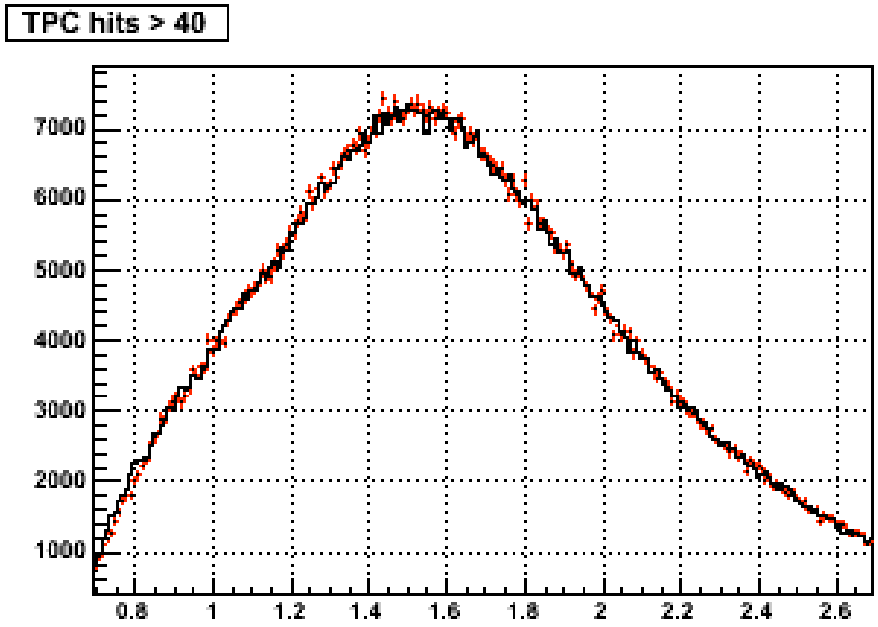
dEdx vs p (real data)

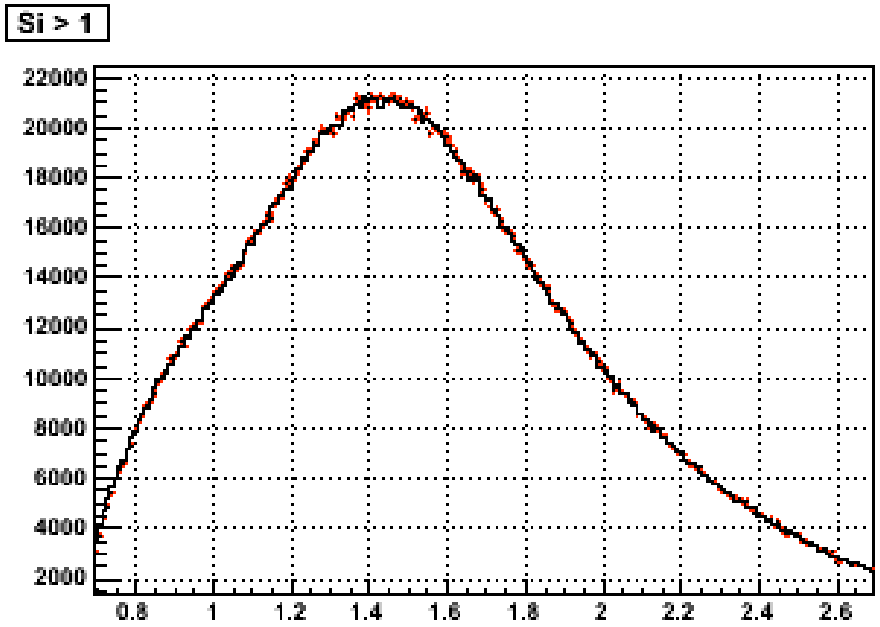
Cuts too strong ?

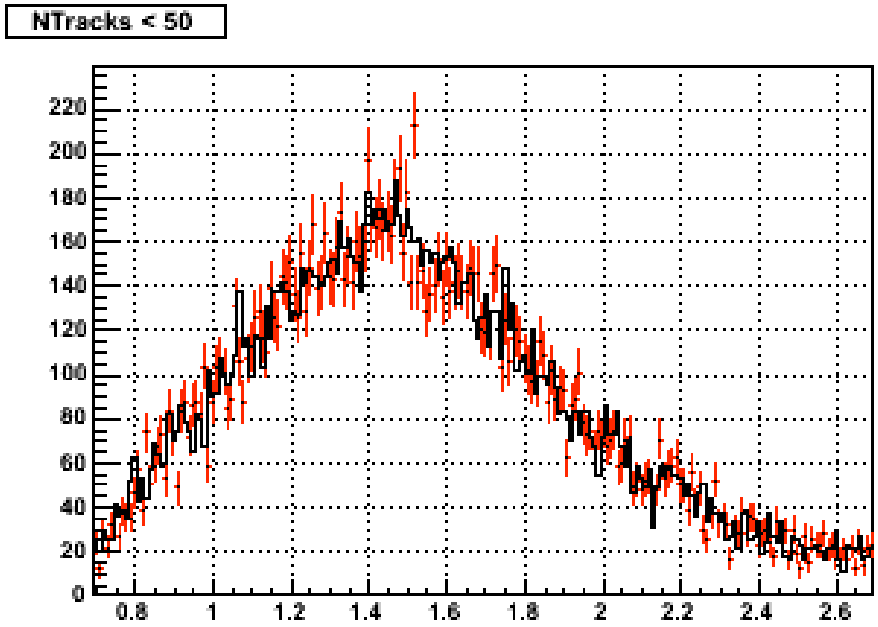


real data (180k events)









summary, to do

- Backgound rotation of π with a gaussian smear seems to work better
- dependence with the number of tracks per events
- dependence with the momentum of daughters
- cuts on nSigma of dEdx in real data ?
- try the mix-event background rotation