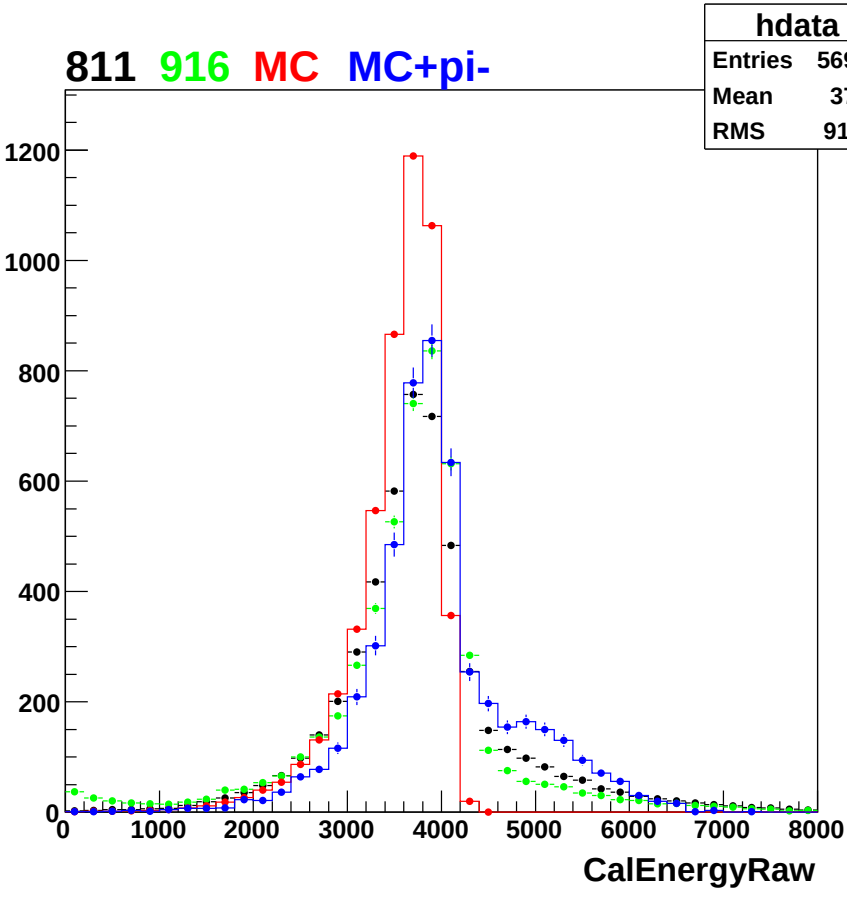
The large CalTransRms population

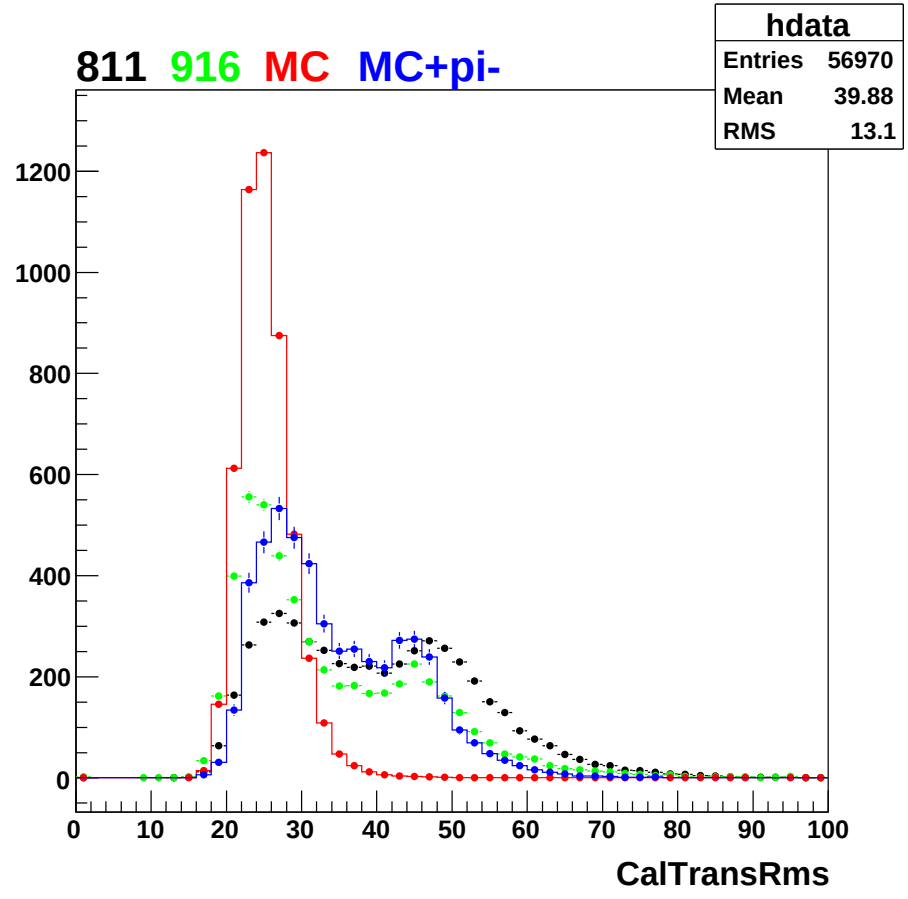
- trying to understand the large CalTransRms population
- testing the π^- pile-up hypothesis
- simulating 5 GeV electron + one 5 GeV π^- in the same event

Data/MC comparison

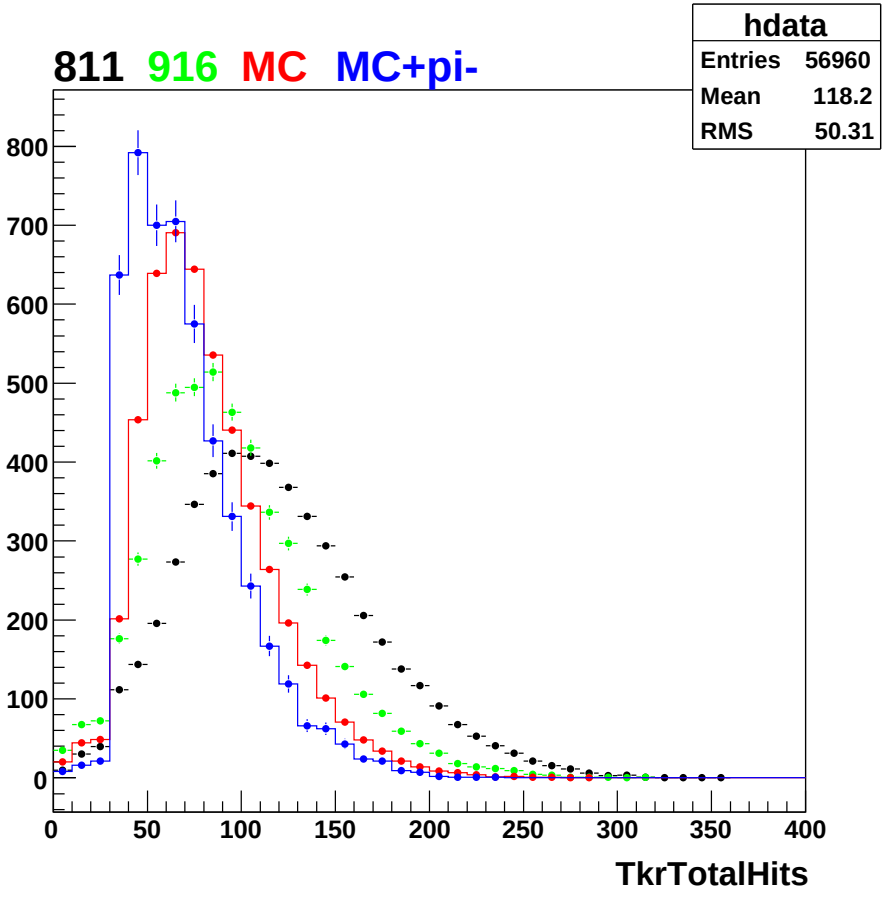
- run 700000811
  second arm of the tagger in the beam line and Al protections on all silicon chambers
  the rate in the big scintillator S0 : 30kHz
- run 700000916
  no Al protections on the silicon chambers and the second arm of the tagger not in the beam line
  the rate in the big scintillator S0 : 12kHz
- 30 μs deadtime (GemDeltaEventTime>600):
  - 30 kHz $\Rightarrow$ one π^- in 90 % of events
  - 15 kHz $\Rightarrow$ one π^- in 45 % of events
- MC : BeamTest-0122-merit.root
- MC mod : one electron and one pion in each event
  (simulated pion beam profile : sigma in x and y = 10cm)

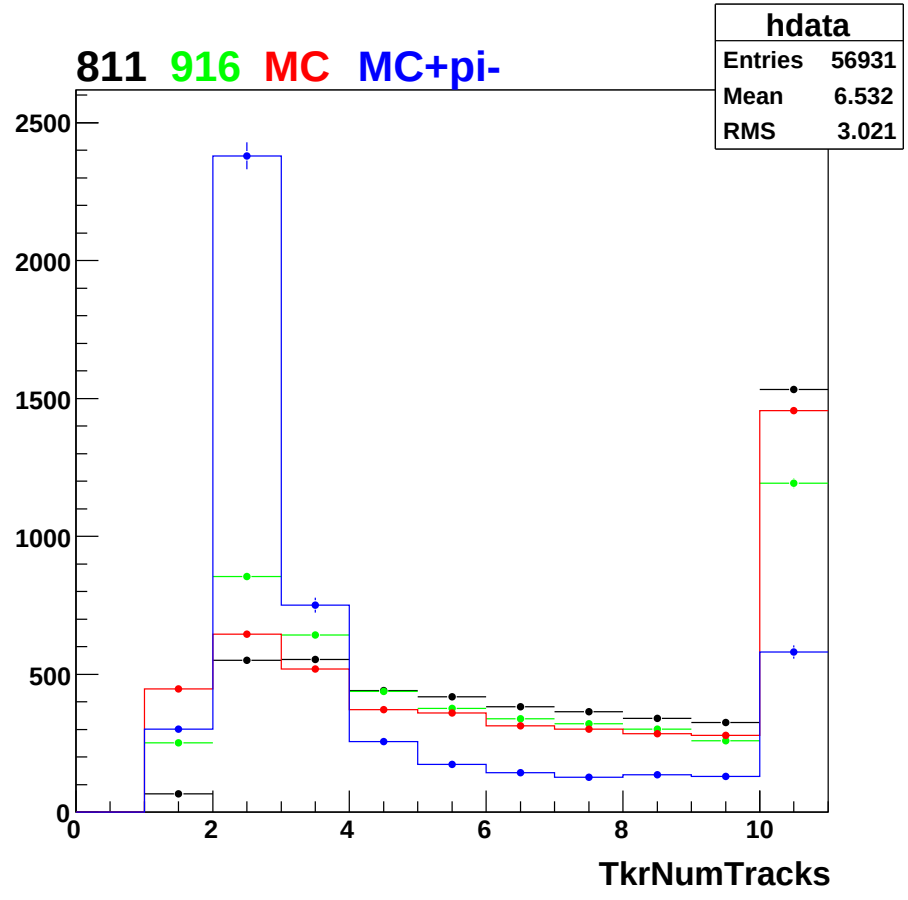
CalEnergyRaw and CalTransRms



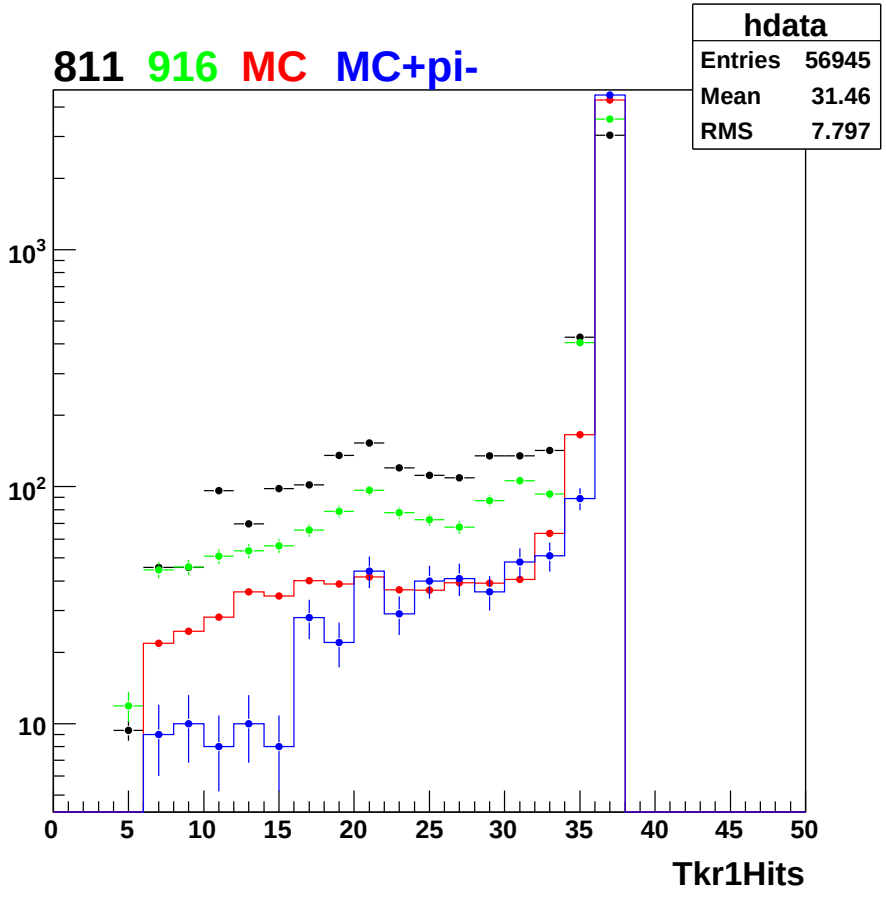


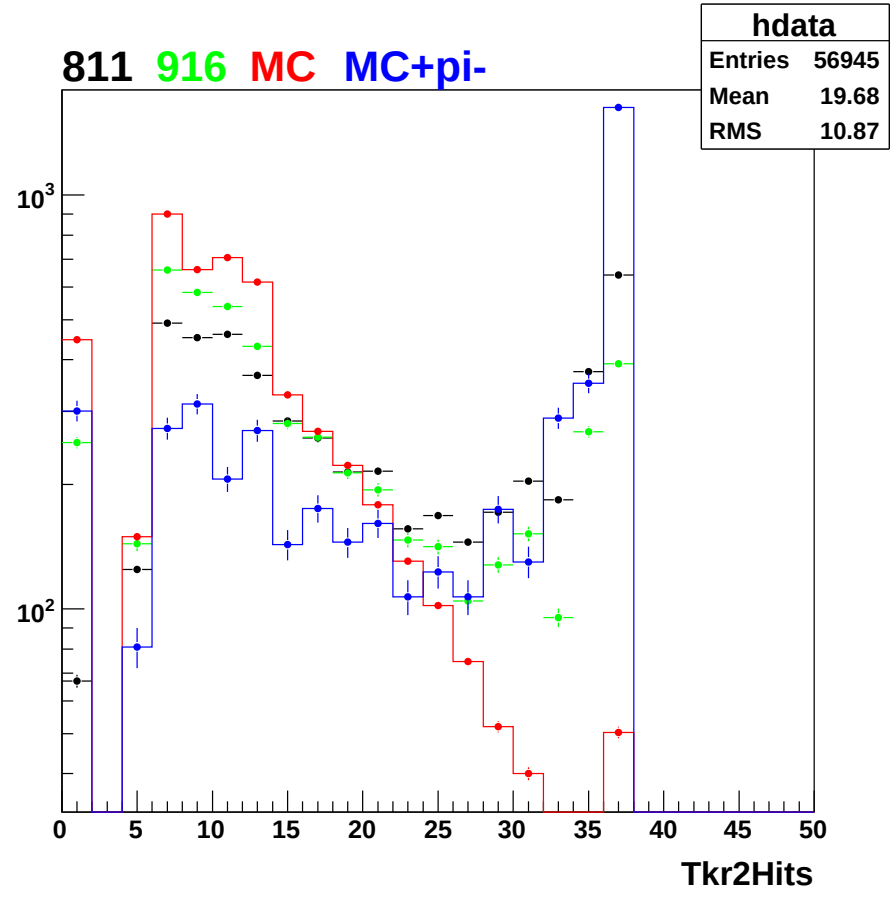
TkrTotalHits and TkrNumtracks





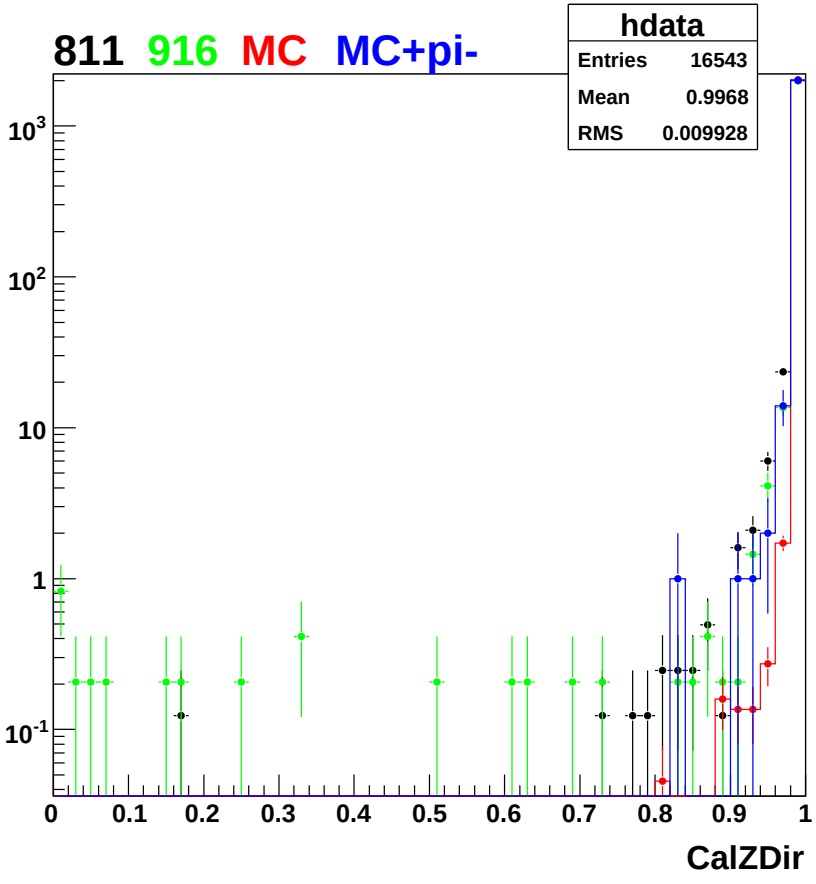
Tkr1Hits and Tkr2Hits

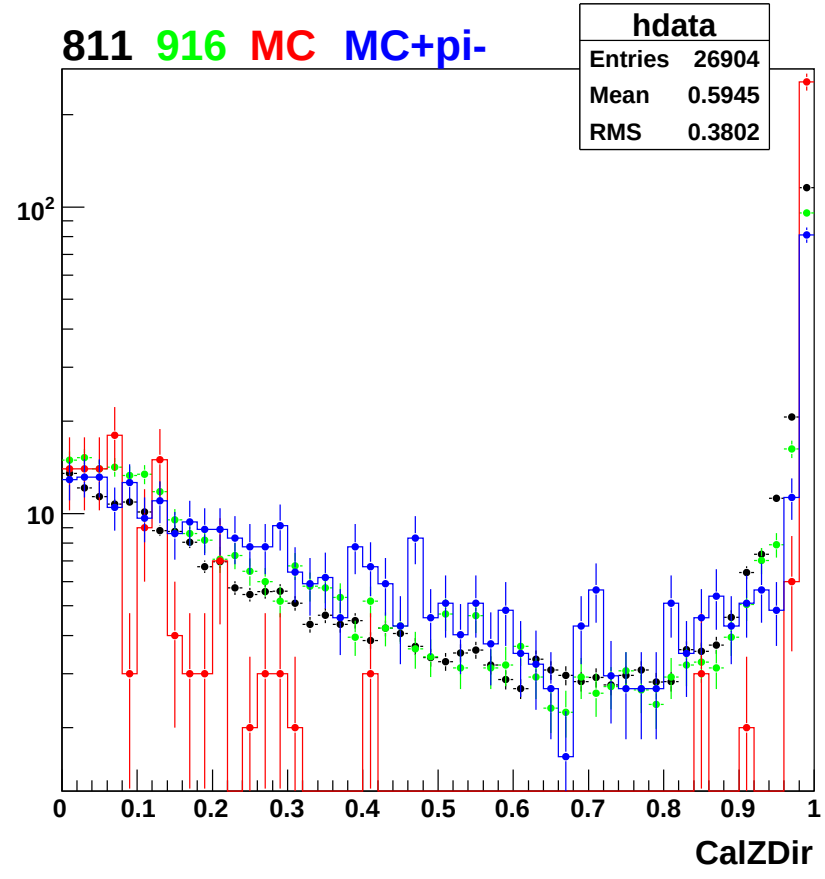




CalZDir

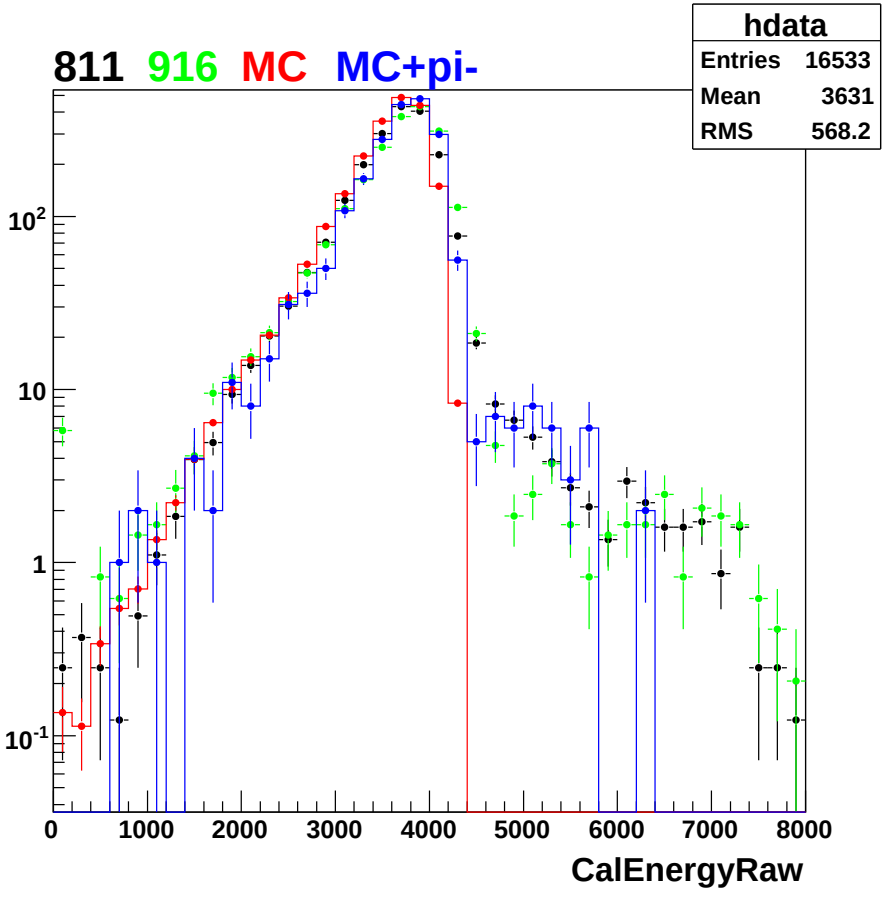
left : CalTransRms<30 - right : CalTransRms>40

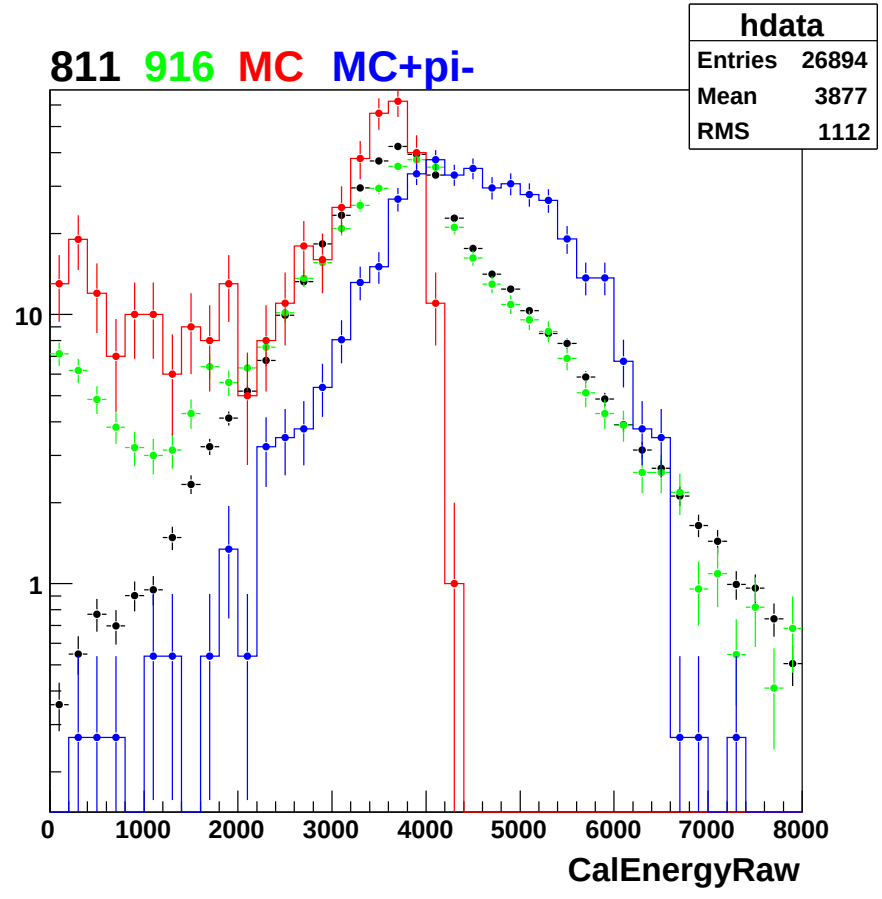




CalEnergyRaw

left : CalTransRms<30 - right : CalTransRms>40





Conclusions

- the fraction of large CalTransRms events is clearly smaller in run 700000916 than in run 700000811
- adding one π^- helps to explain (though not completely) the cal distributions (CalEnergyRaw, CalTransRms, CalZDir) and the Tkr2Hits distribution
- but why TkrTotalHits is smaller ?