Search for Mesonic Decay of ${}^{6}_{\Lambda}\mathrm{H}$ and ${}^{7}_{\Lambda}\mathrm{H}$

Production v60403-VTXREC

Production and Mesonic Decay of neutron rich hypernuclei

- $K^-_{stop} + {}^6Li \rightarrow {}^6_\Lambda H + \pi^+$
  - $\rightarrow {}^6He + \pi^-$ $\quad p_\pi$ ~135.5 MeV/c
  - $\rightarrow {}^5H + \pi^- + p$

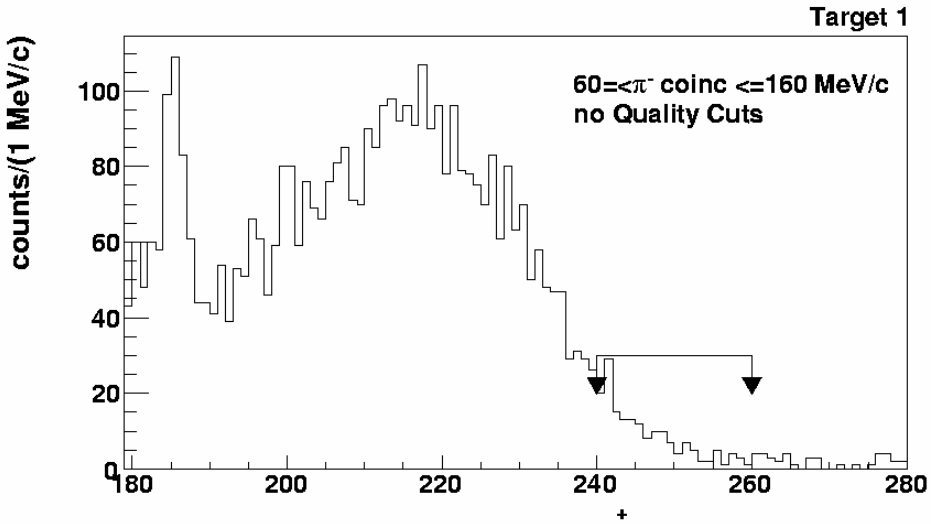
  ...
- $K^-_{stop} + {}^7Li \rightarrow {}^7_\Lambda H + \pi^+$
  - $\rightarrow {}^6H + \pi^- + p$

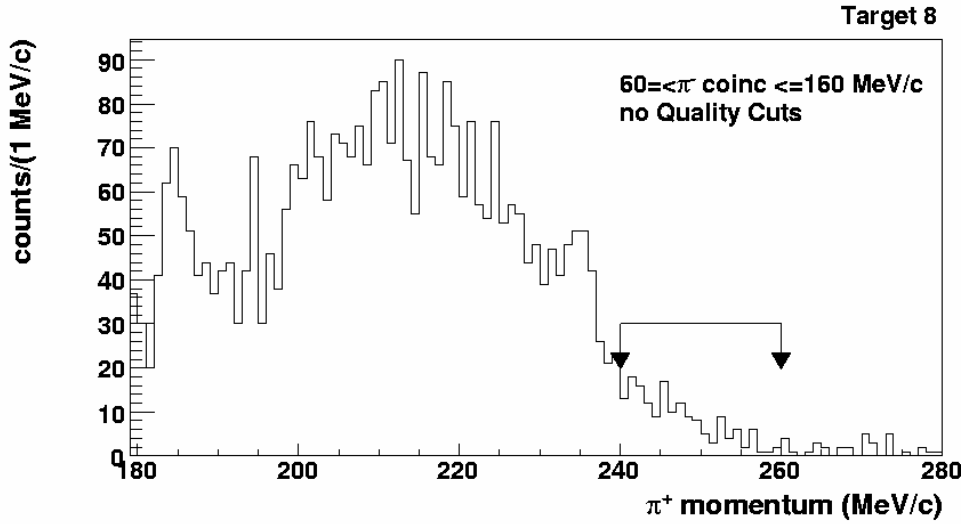
  ...

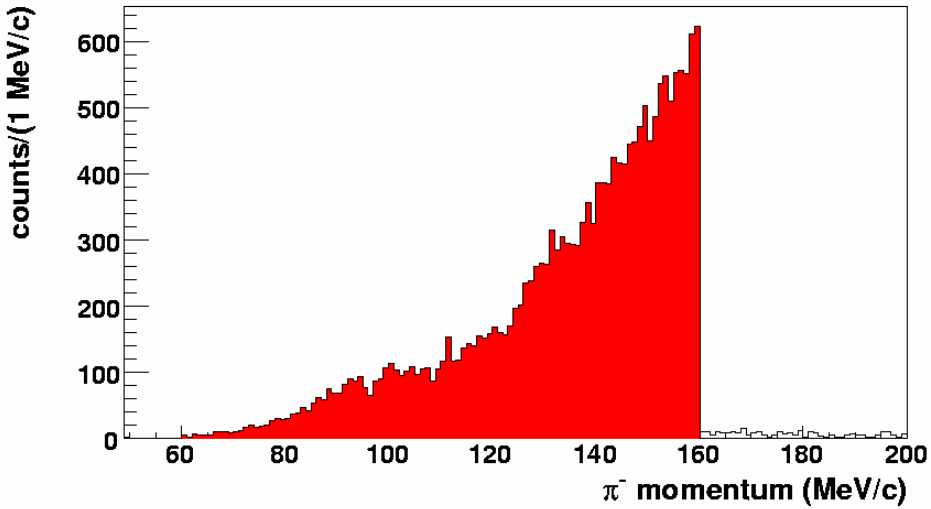
π^+, π^- selections

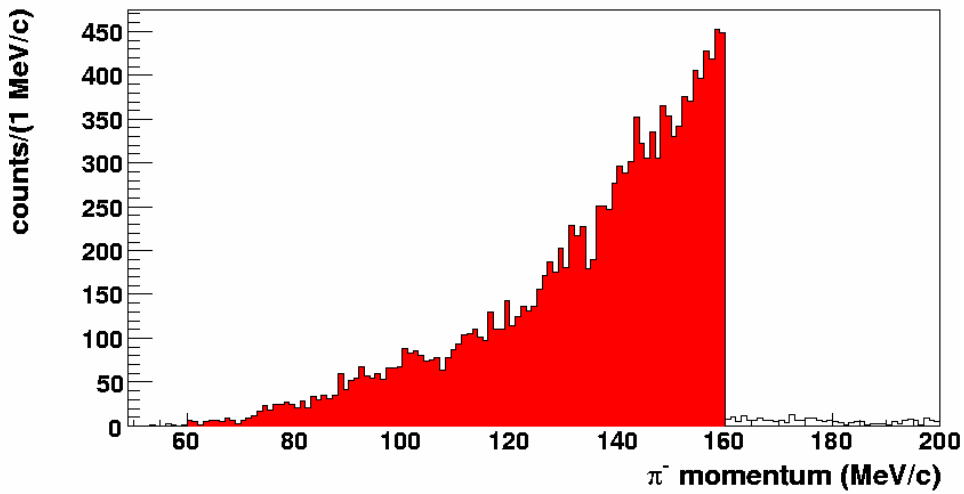
- π^+ π^- coincidence:
  - 60<= π^- momentum <=160 fitted tracks, all type tracks including the VERY-short tracks.
  - π^+ selected with multdedx, w/o tof, w/o phi and no Quality Cuts
    - no Quality Cuts: fitted tracks that comes from target and do not hit supports crossing the apparatus.

multy-layer dedx ^{6}Li

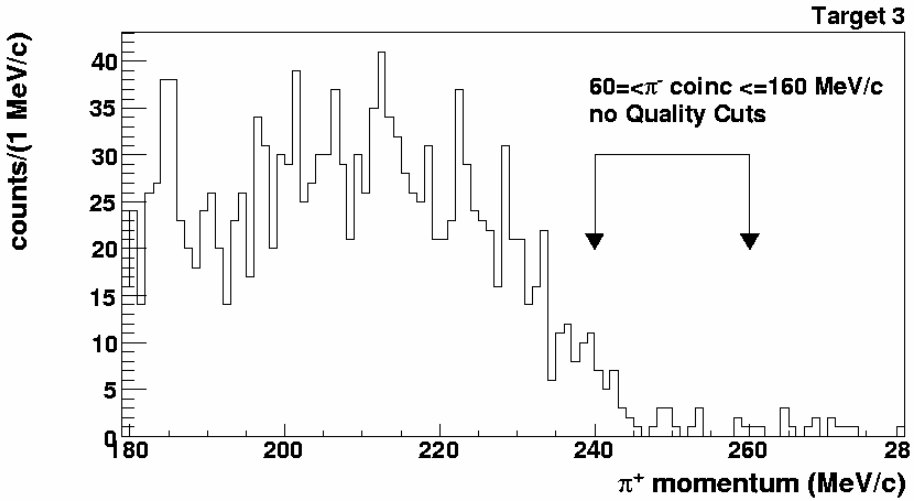


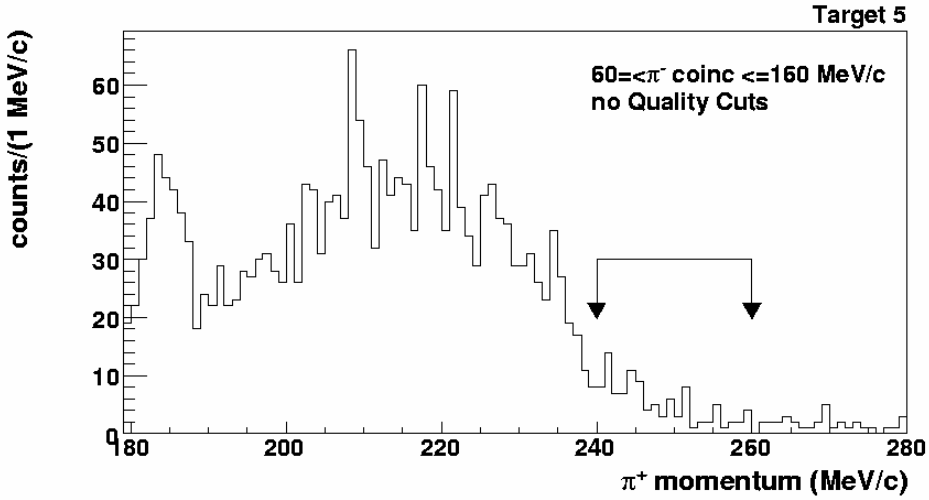


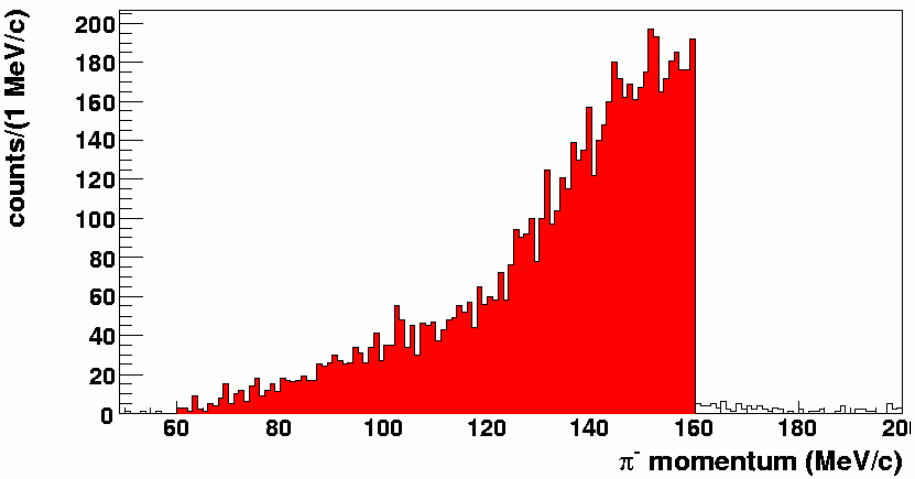


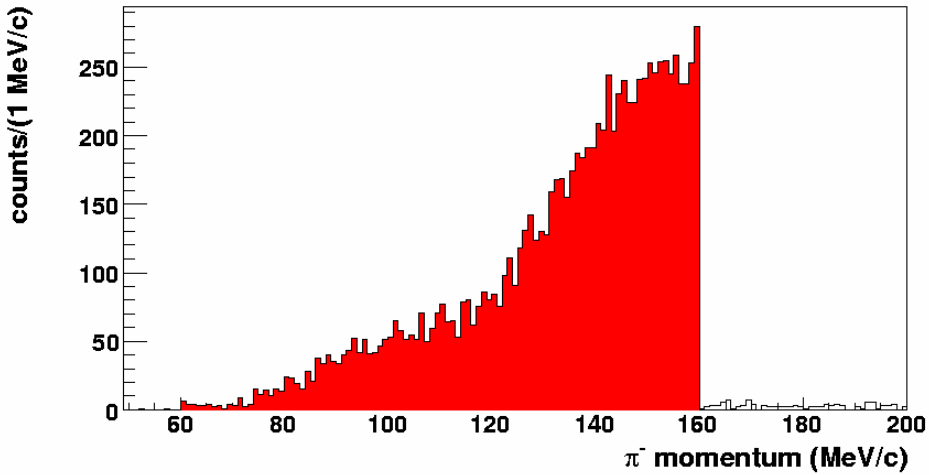


multy-layer dedx ^{7}Li

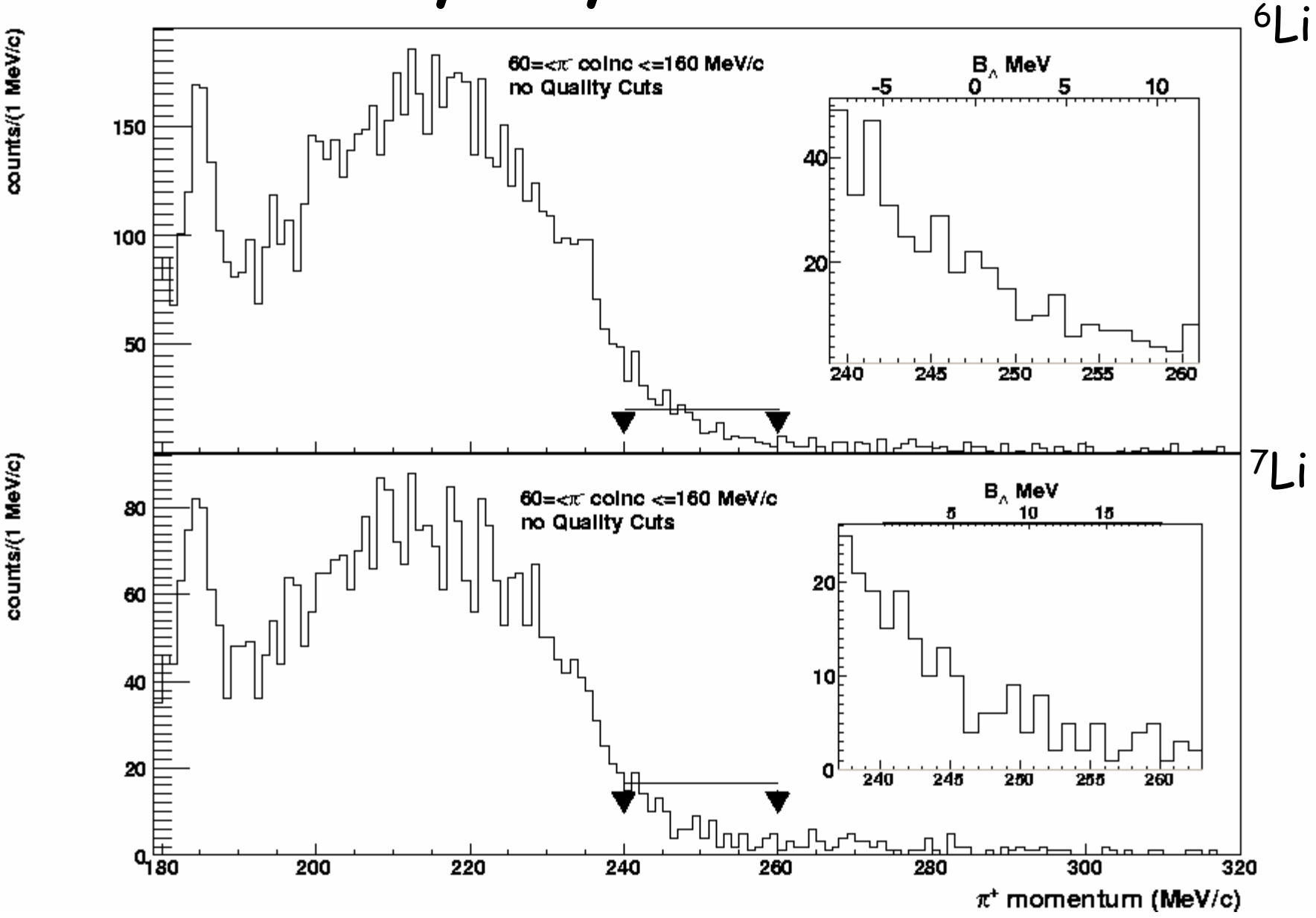




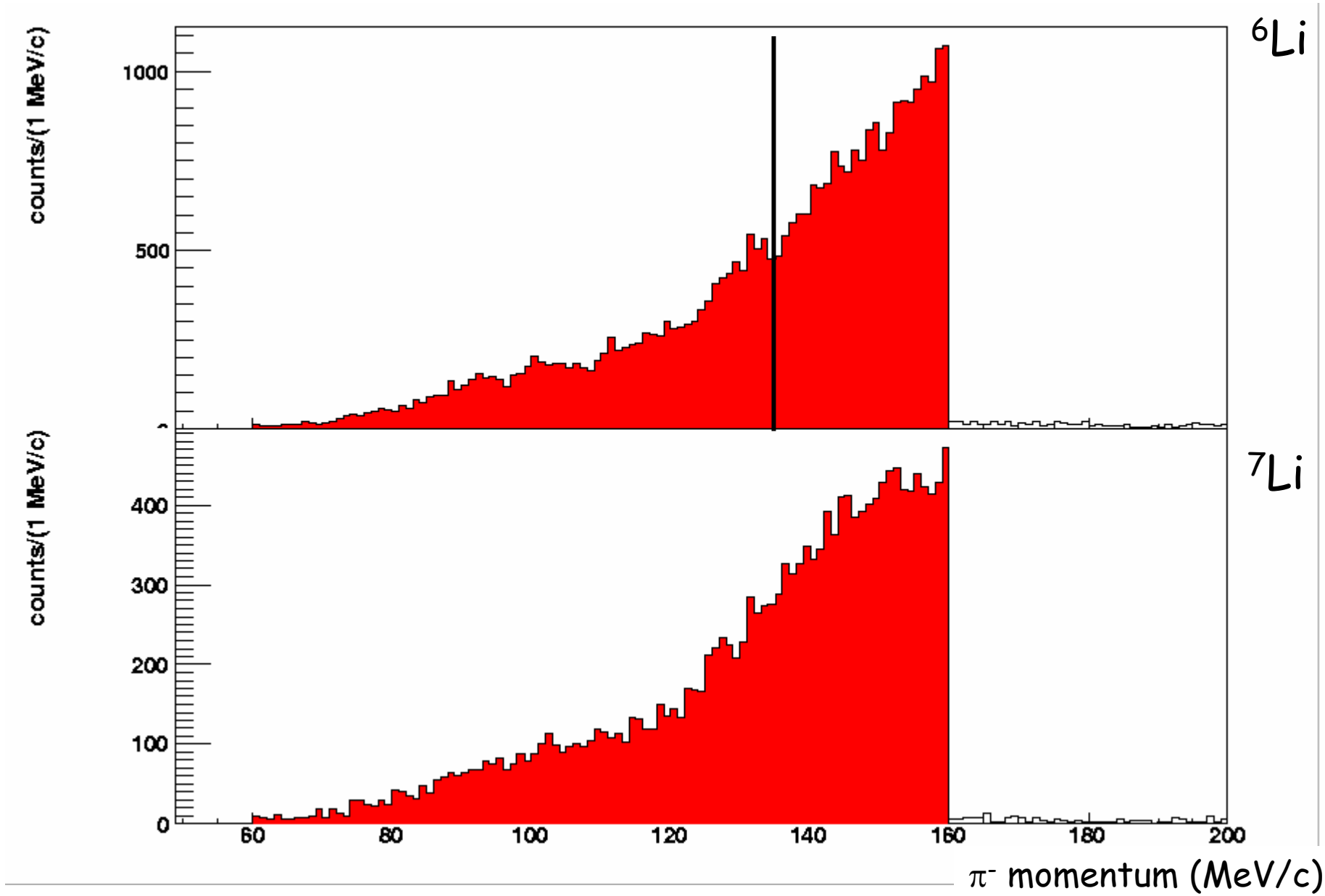




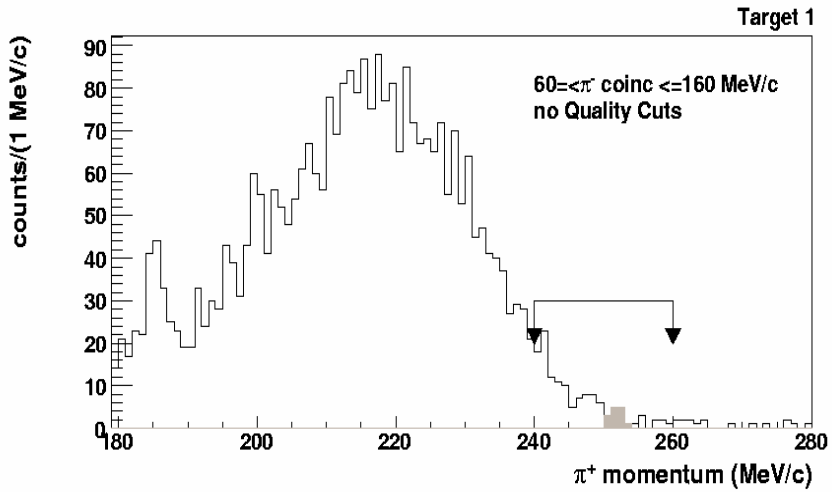
Multy-layer dedx sum

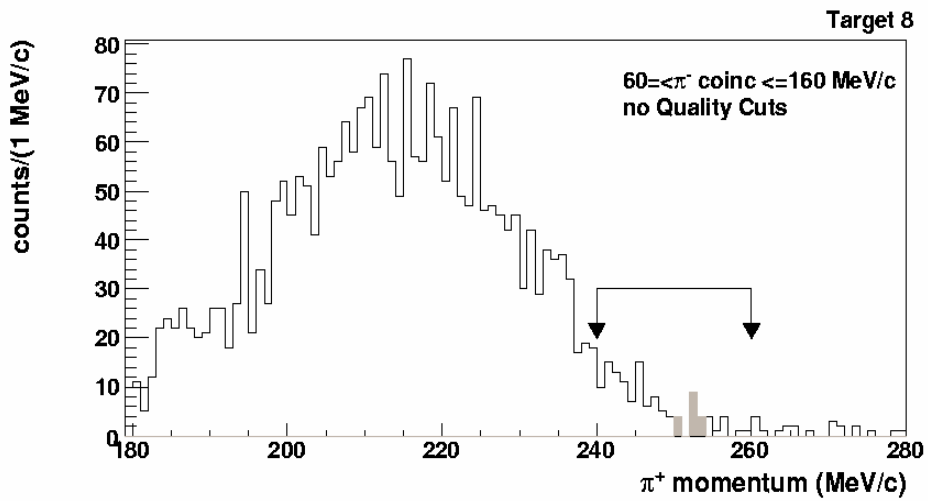


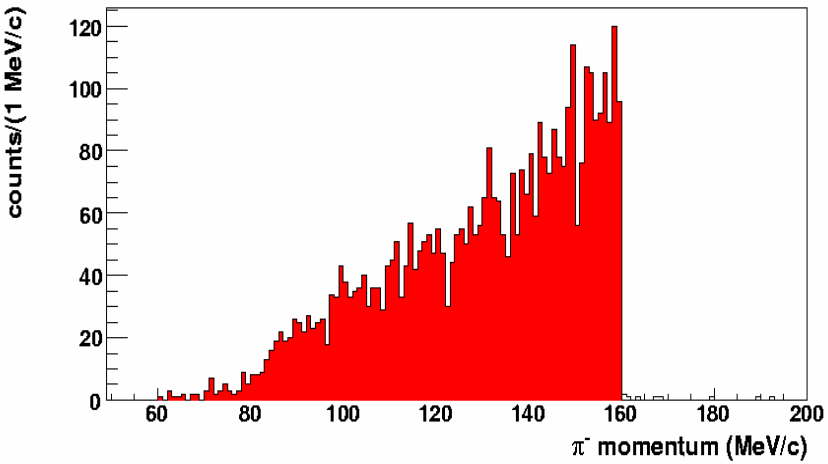
π^- coinc with multy-layer dedx π^+ (sum)

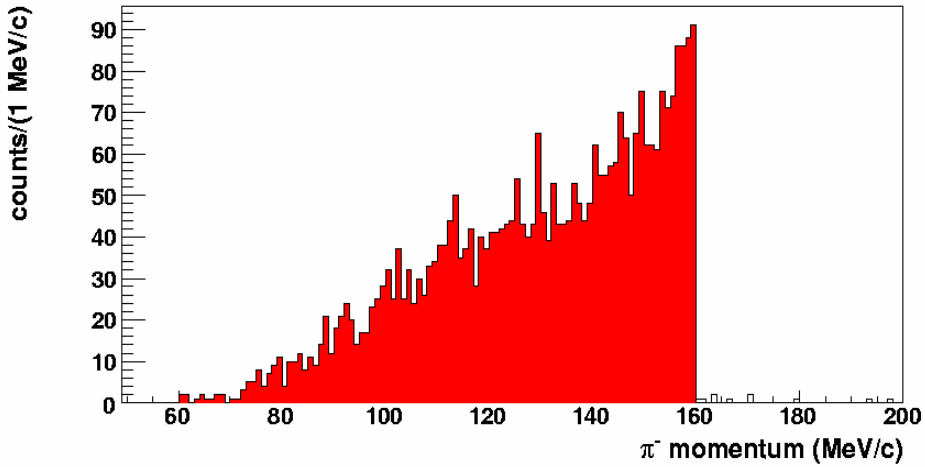


multy-layer dedx+Tof+Φ ^{6}Li

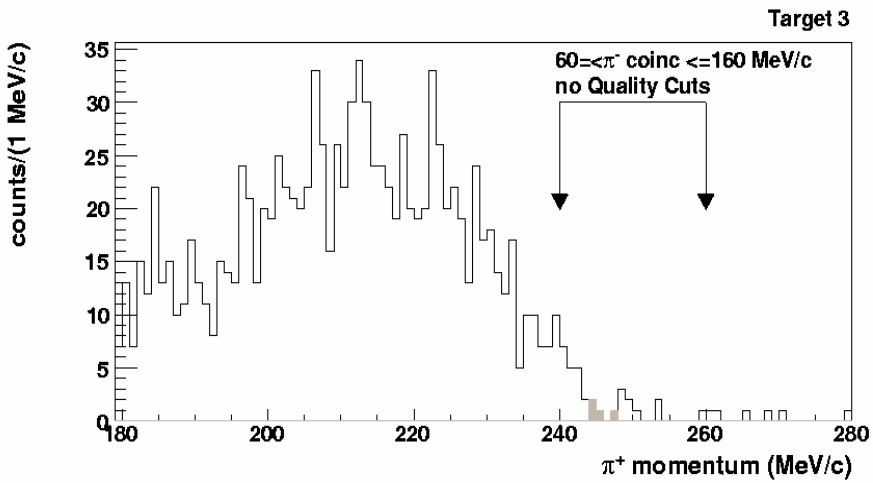


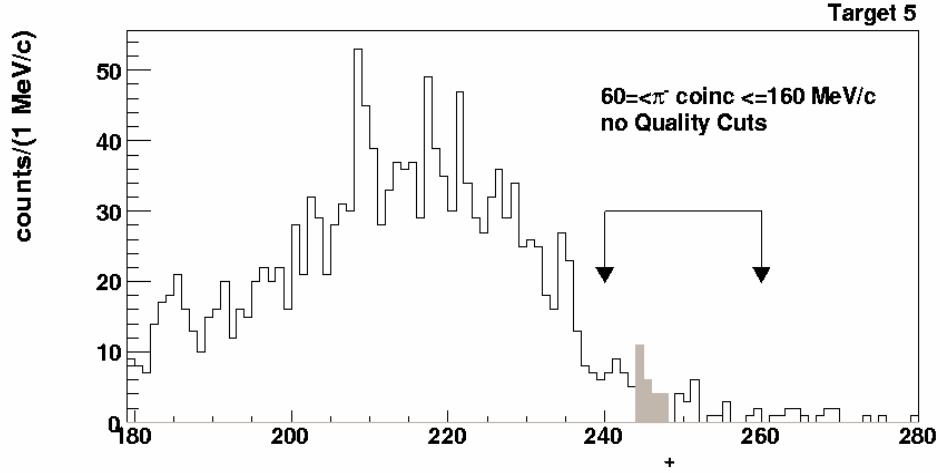


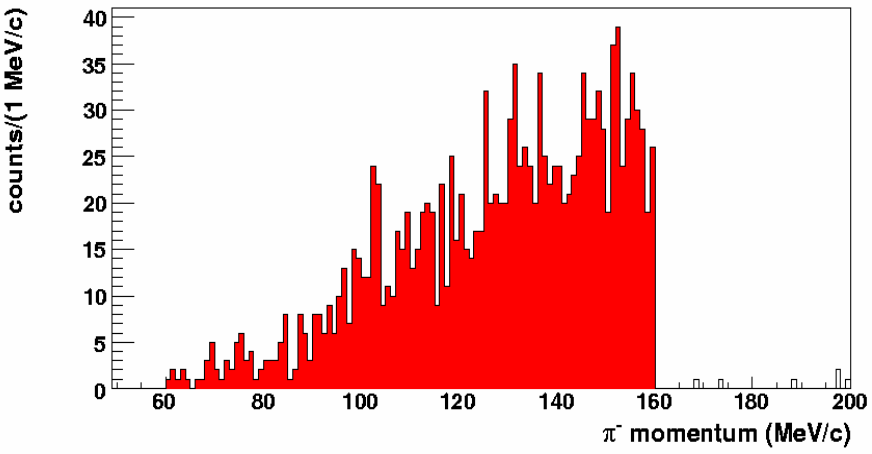


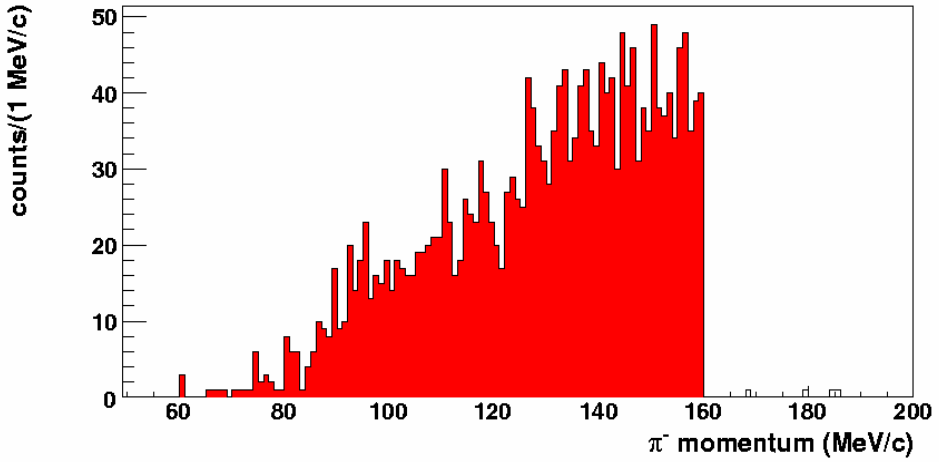


multy-layer dedx+Tof+Φ ^{7}Li

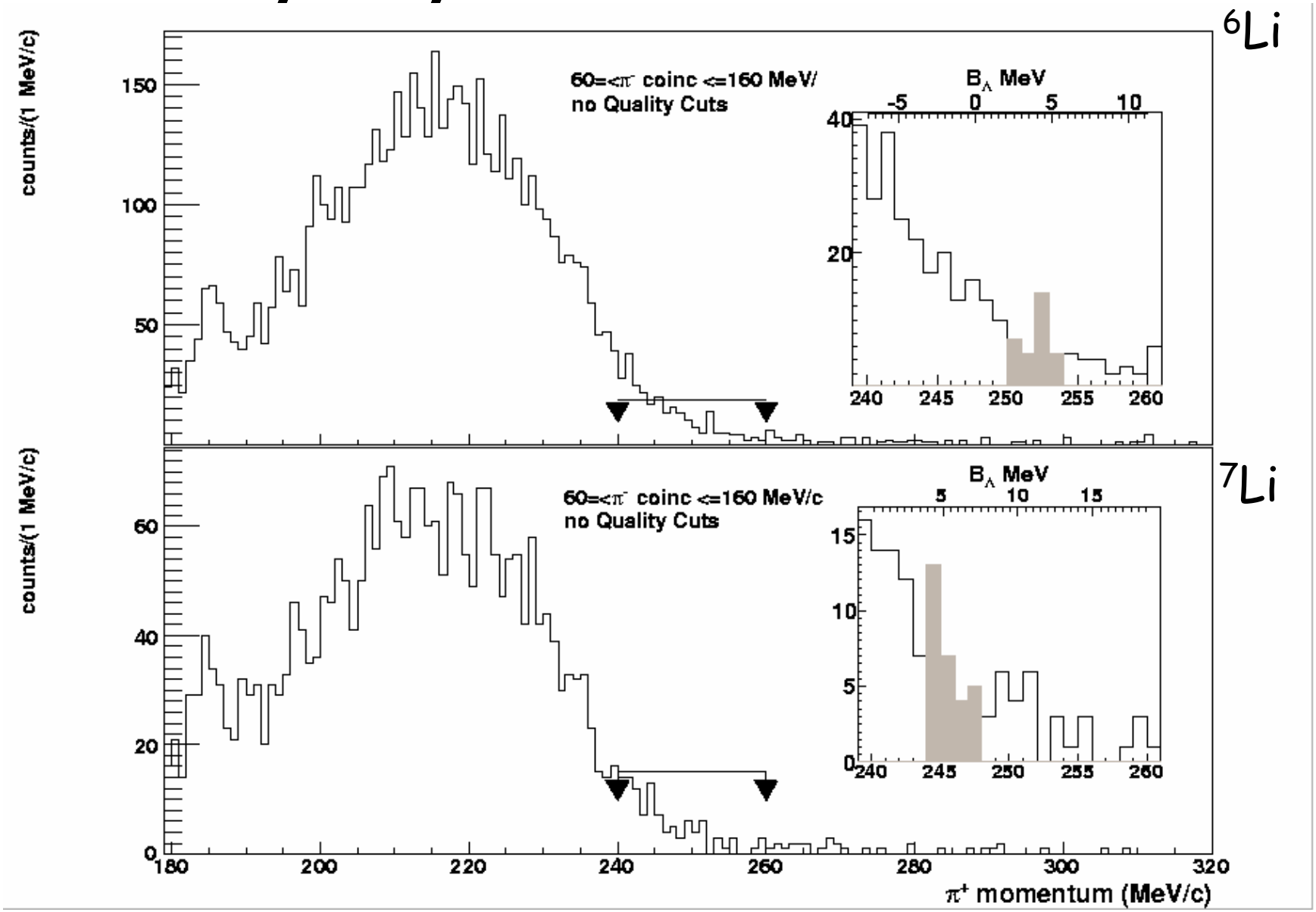




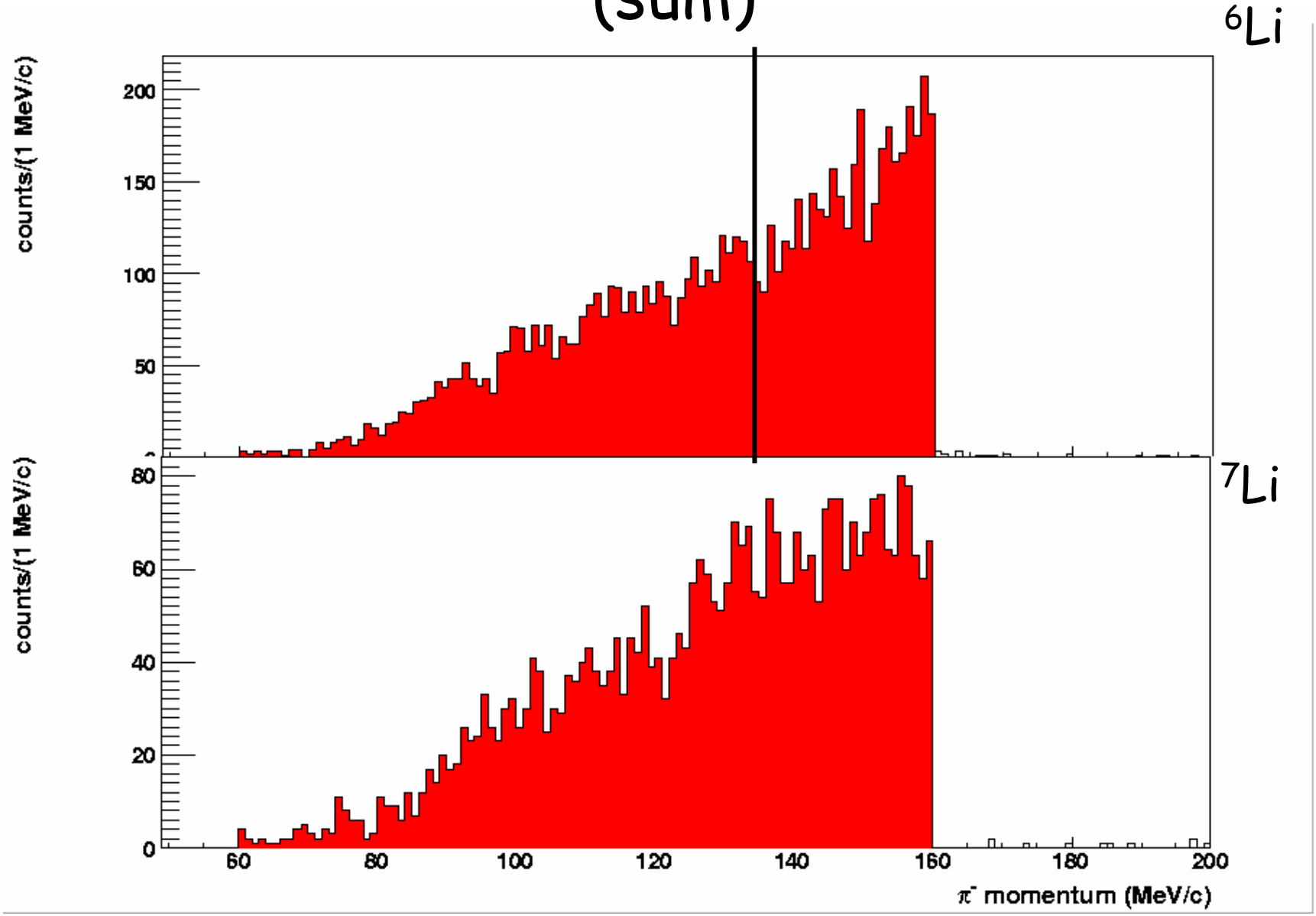




Multy-layer dedx+Tof+Φ sum



π- coinc with multy-layer dedx+Tof+Φ π+ (sum)



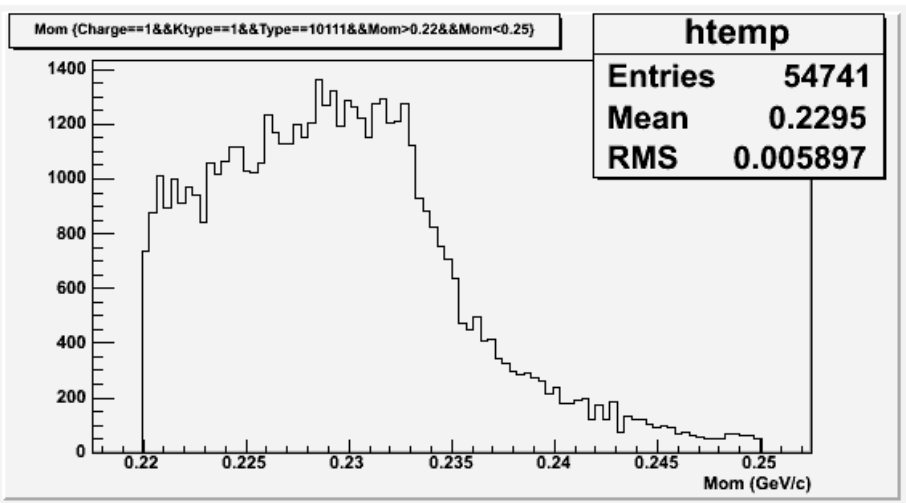
Comments

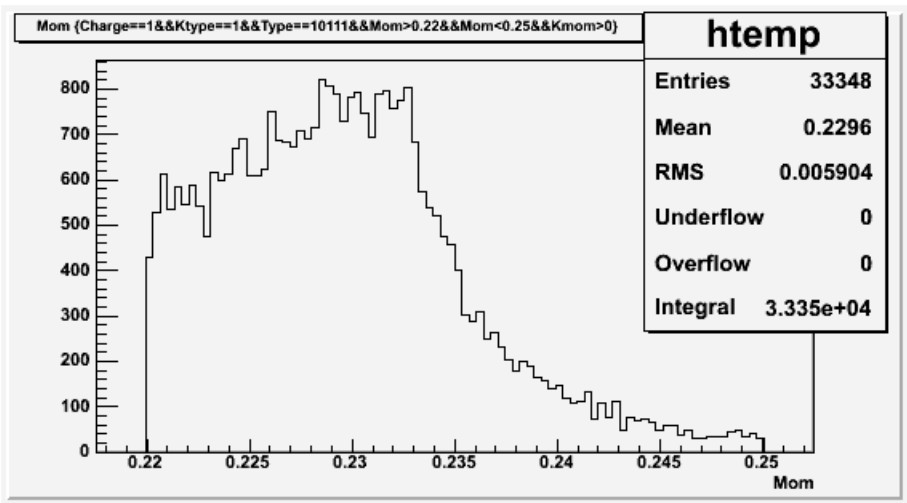
- V60403 vtxrec vs v60403-DEC07:
  - Overall $K^{-/+}_{stop}$ -12%
  - π^+ π^- (60<=p<=160 MeV/c) coincidence events ~ the same

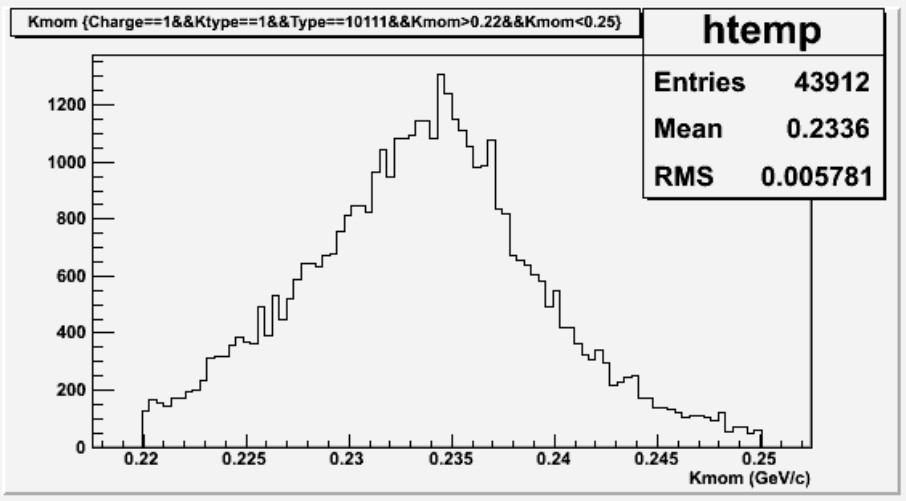
Kalman Filter status

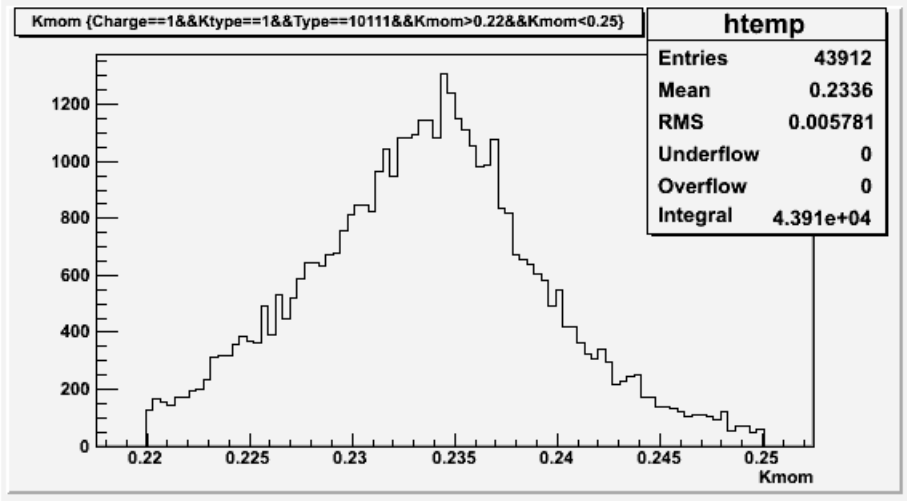
- Low efficency in fitted tracks (to be understood)
- Good μ^+ momentum estimation for 11110 tracks and tracks without the hit of one the DCH.
- No so good μ^+ momentum estimation for 11111 and 11112 tracks.

Tracks missing DCH2

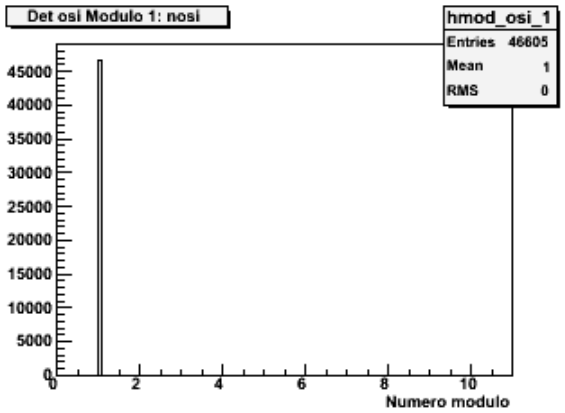


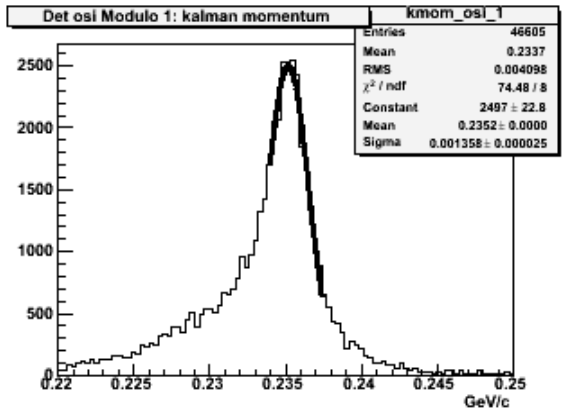


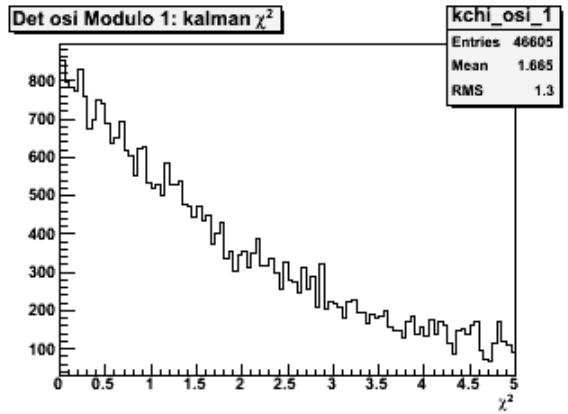


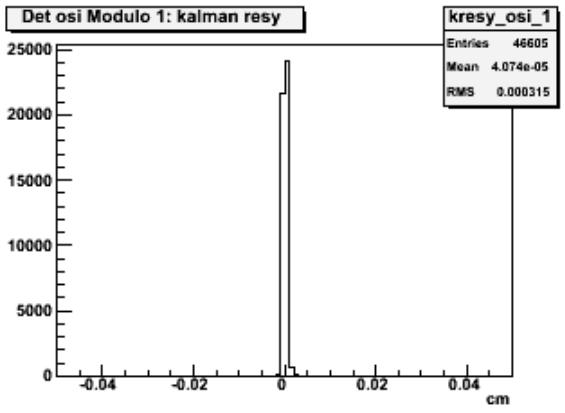


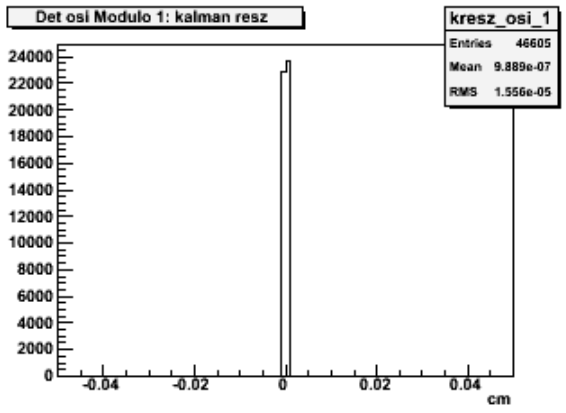
Kalman typetrack=11110 : Osim 1 residuals

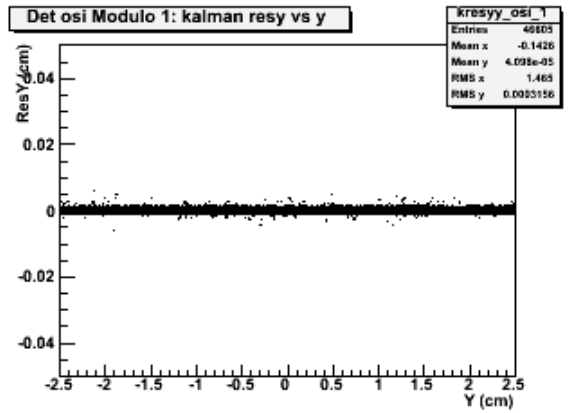


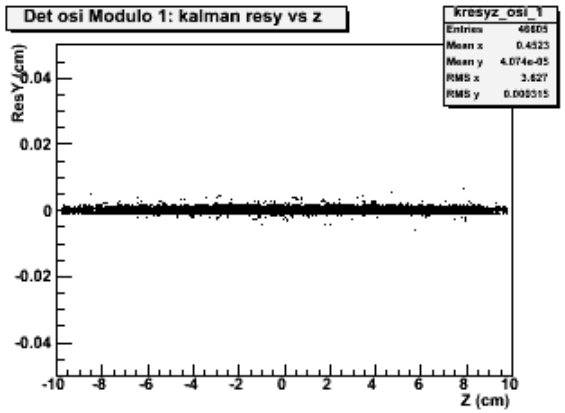


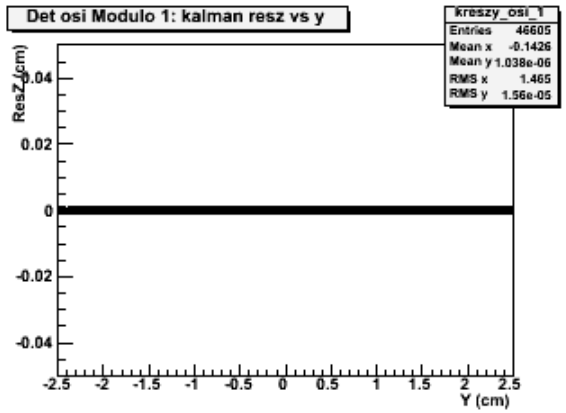


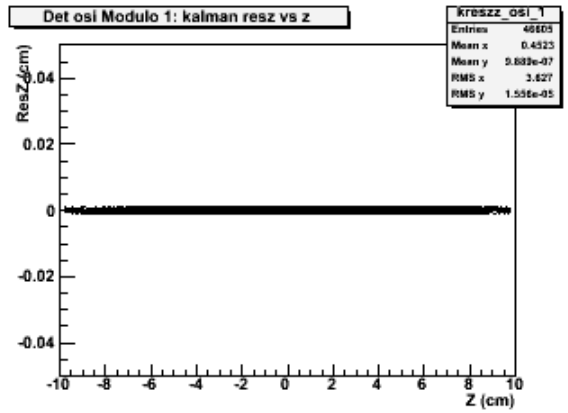




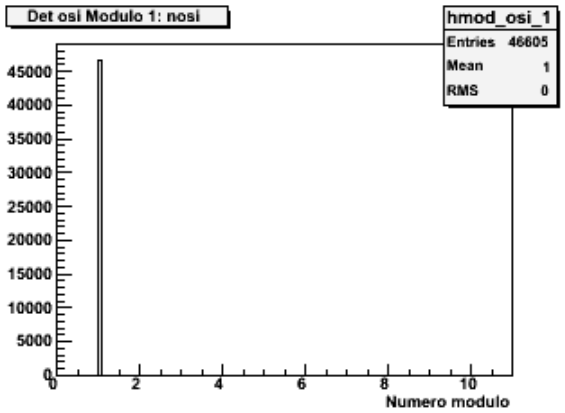


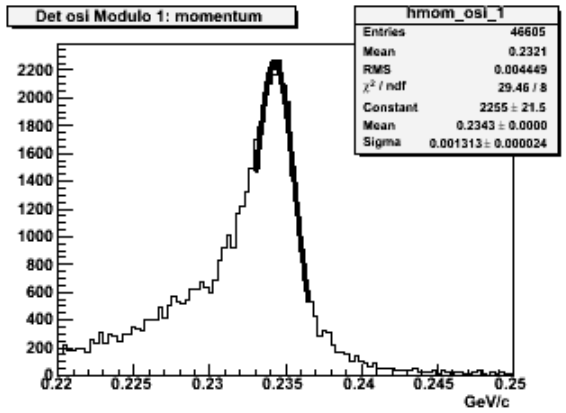


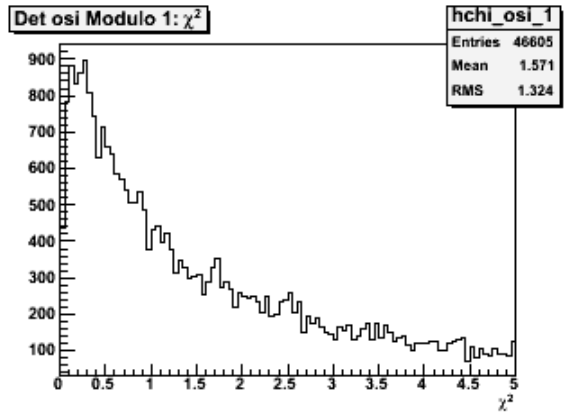


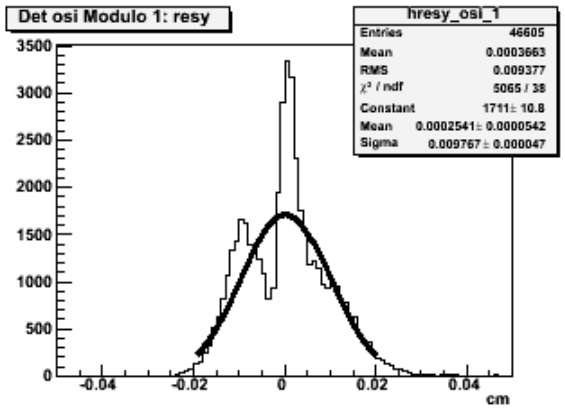


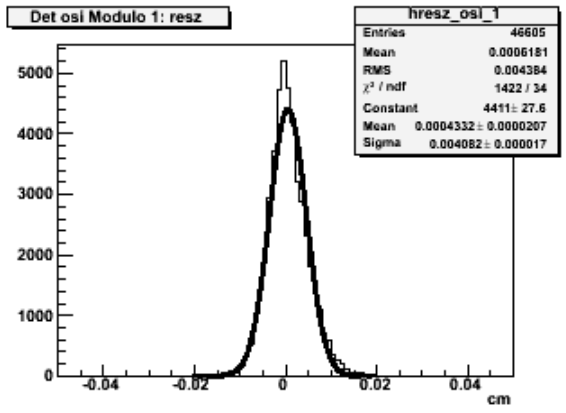
Spline typetrack=11110 : Osim 1 residuals

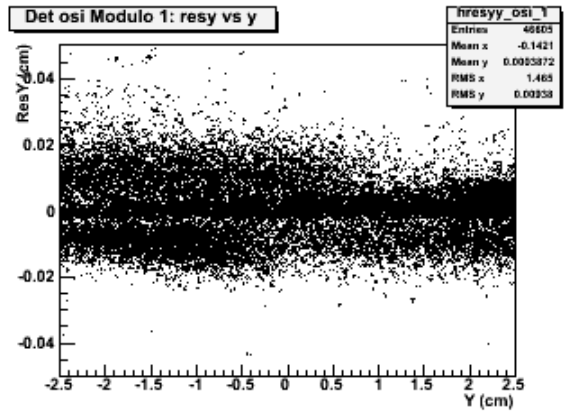


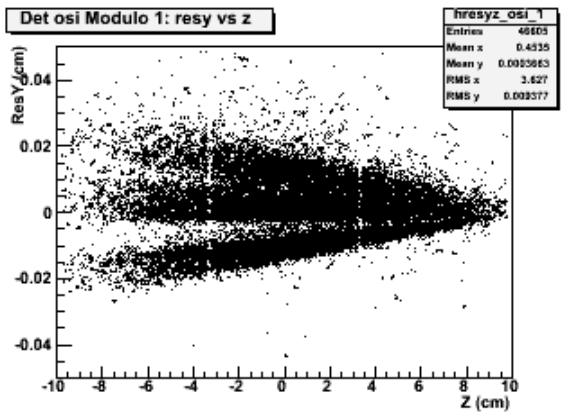


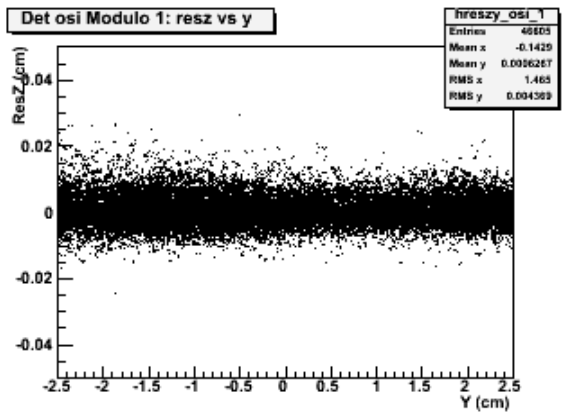


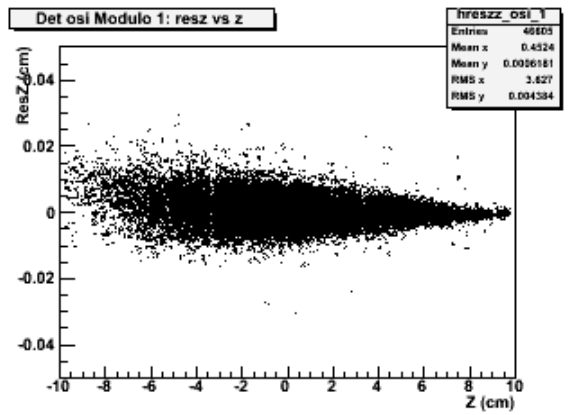




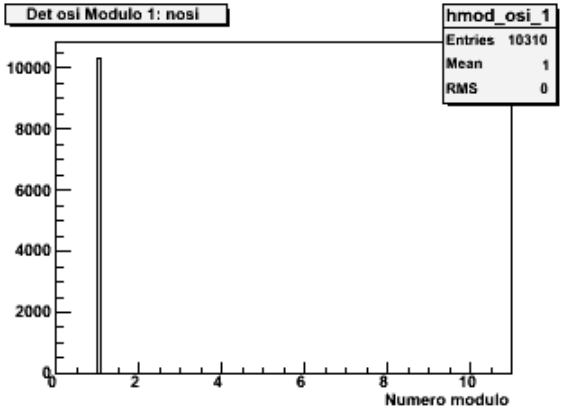


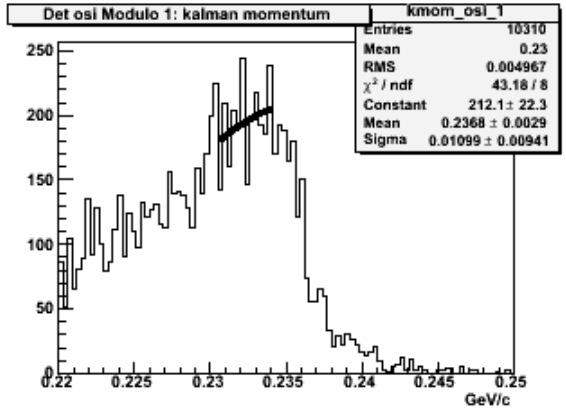


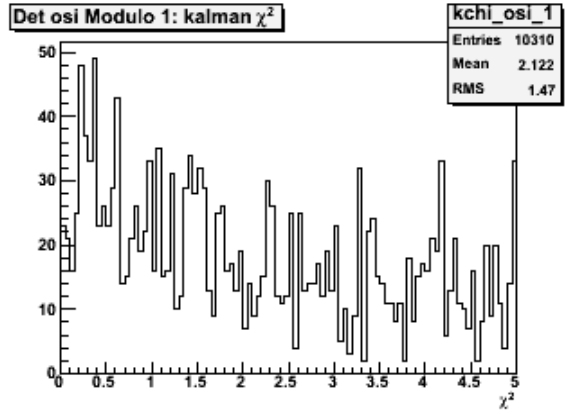


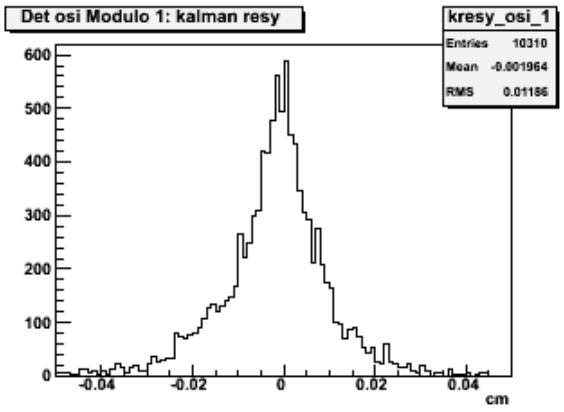


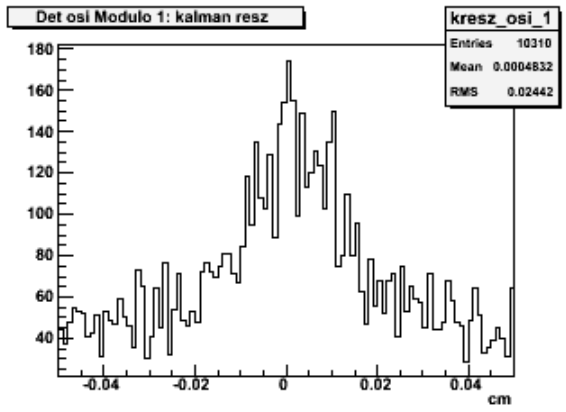
Kalman typetrack=11111 : Osim 1 residuals

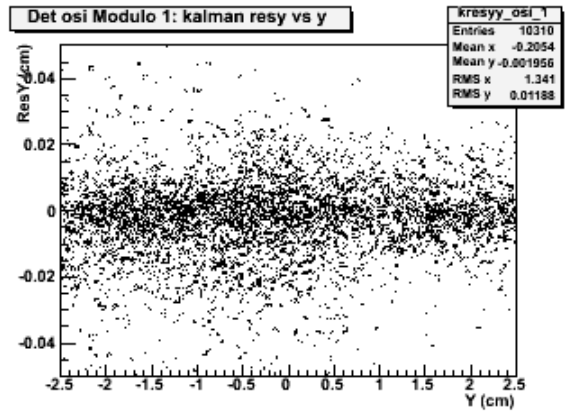


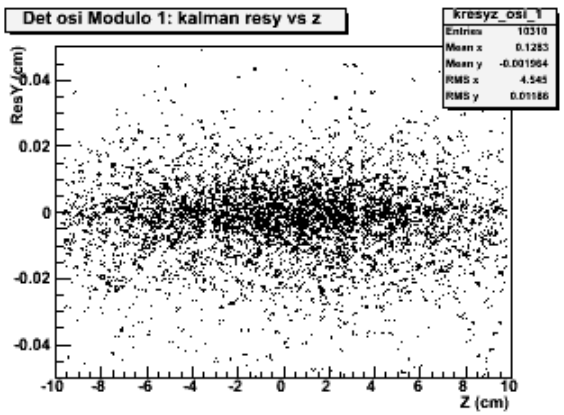


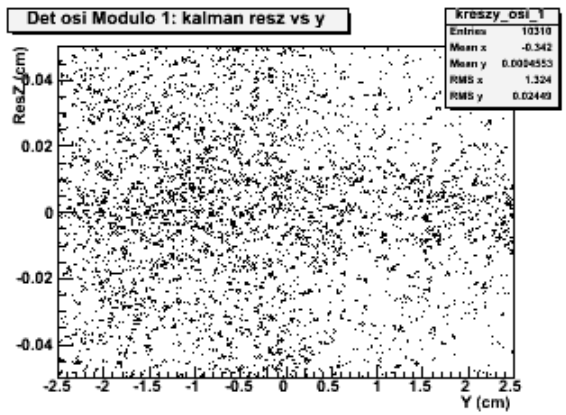


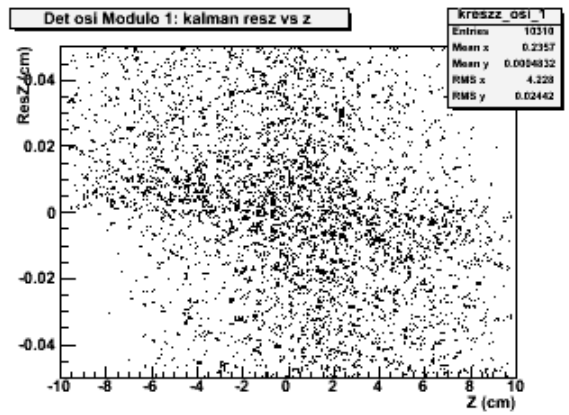












Spline typetrack=11111 : Osim 1 residuals