



First Meeting 11.2012

ToF-Wall Activity Report

F. Balestra, F. Iazzi, R. Introzzi and H. Younis

INFN PoliT0

November 19, 2012



Overview



1 Z id Performance on MC

2 Lost statistics



Peak identification on MC hits

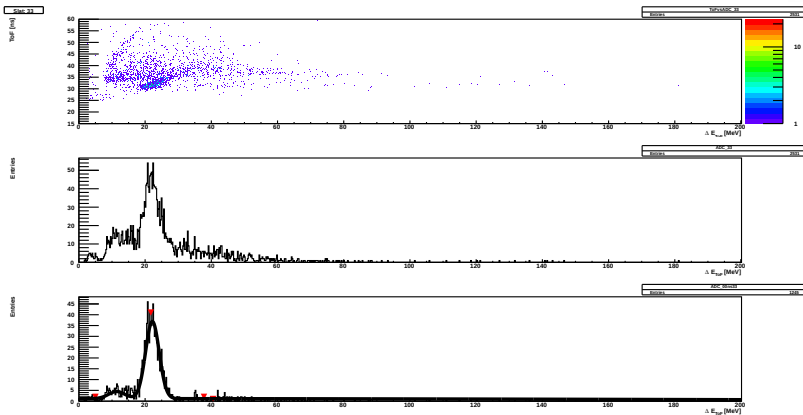


The same approach used for Z id on production data has been followed

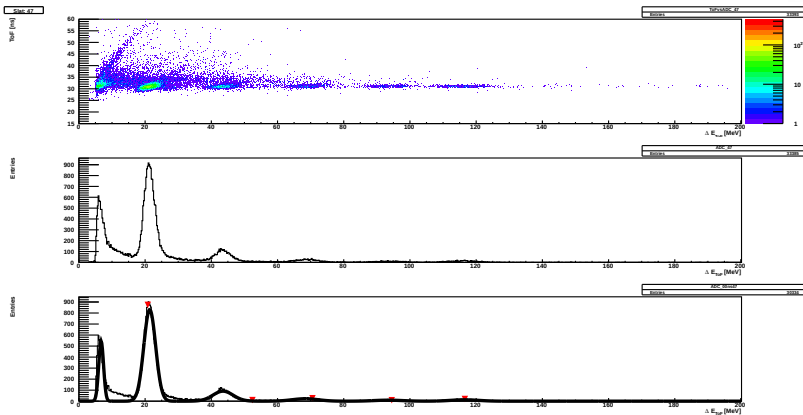
- ToF vs E_{loss} plots have been considered
- a ToF cut (± 3 ns) has been applied to isolate main spots
- a projection on the energy axis has been produced for each slat
- peaks have been identified on the energy axis
 - for each peak mean position and sigma have been recorded



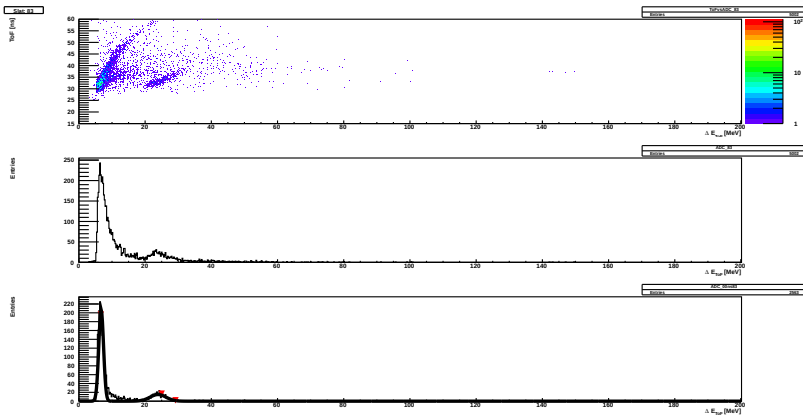
Peak identification on slat 33



Peak identification on slat 47



Peak identification on slat 83





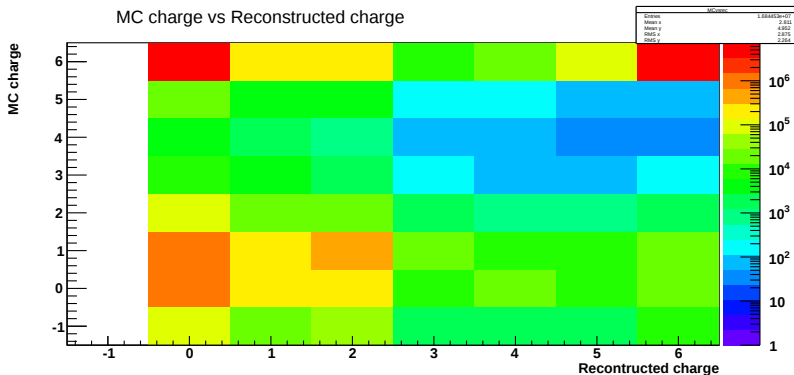
- Z is estimated on the basis of released energy in slats
 - when the released energy is within $n\sigma$ from a peak, the reconstructed Z is assigned accordingly
 - n can be tuned
- performances are evaluated by comparing the reconstructed Z and the simulated charge provided by MC



Comparison Failure!

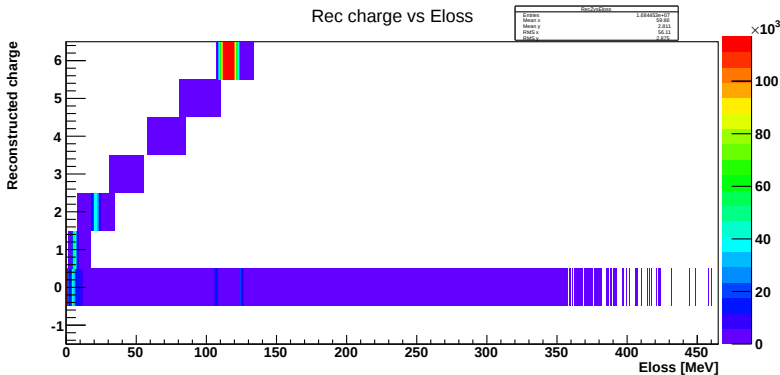


- a diagonal distribution was expected



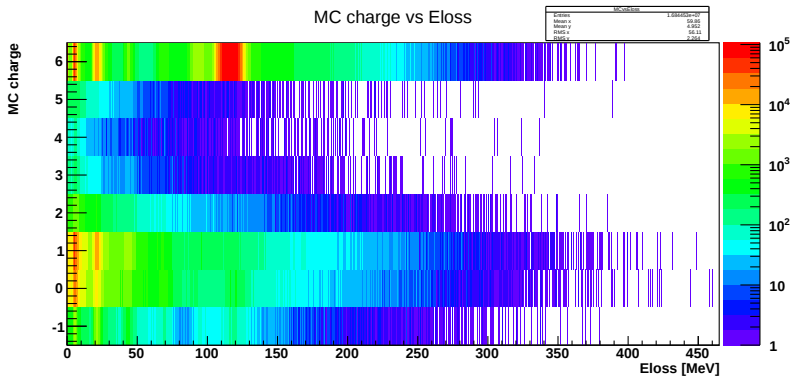
Reconstructed Z vs E_{loss} 

- the plot shows the reconstructed Z vs E_{loss} with 2σ acceptance for each peak
- all slats are considered

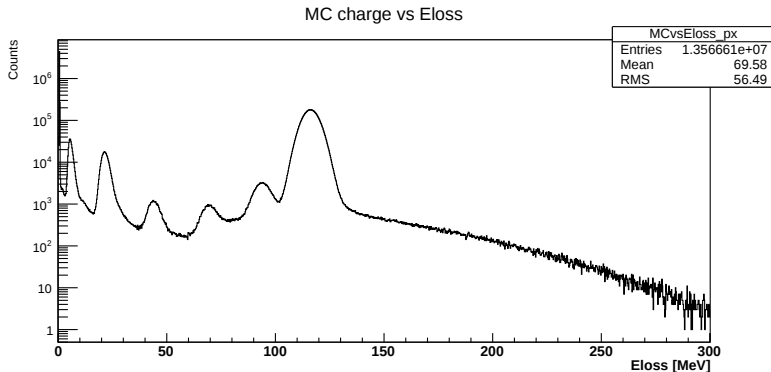


Simulated Z provided by MC vs E_{loss} 

- multiple E_{loss} peaks are present for single MC charge



- the energy distribution for MC charge = 6 (Carbon) is shown
- only the 116 MeV peak (E_{loss} of C @ 400 MeV/u) is expected



- problem under investigation



Under-threshold hits



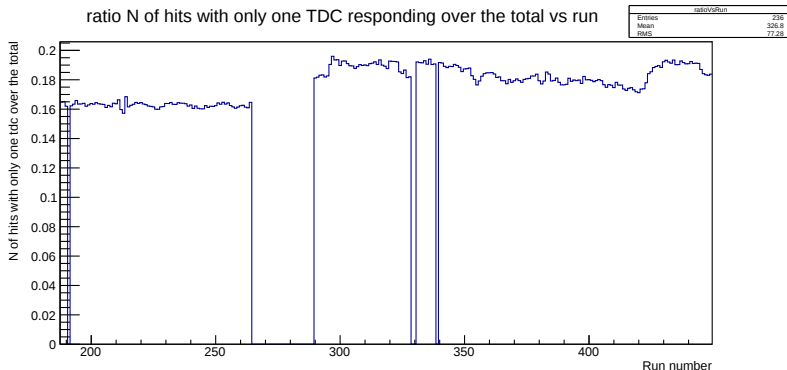
- several hits (mostly protons) release under-threshold energies
- only 1 TDC channel fired in the slat
- ToF and Y can not be computed



Under-threshold hits



- the plot shows the fraction of statistics that is lost not considering hits with a missing TDC



THE END



Thanks for your attention

