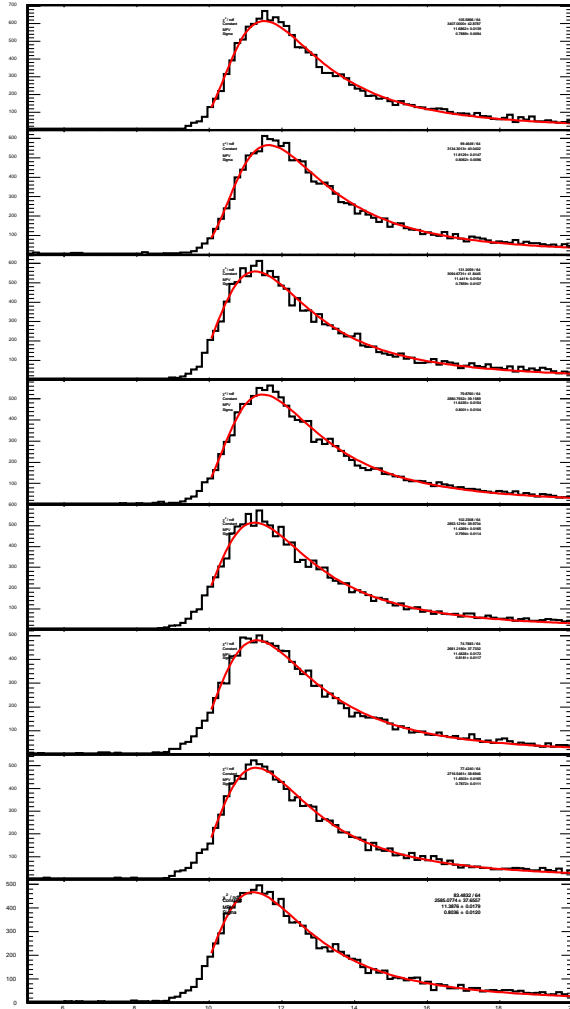


Calibration with pions in SPS

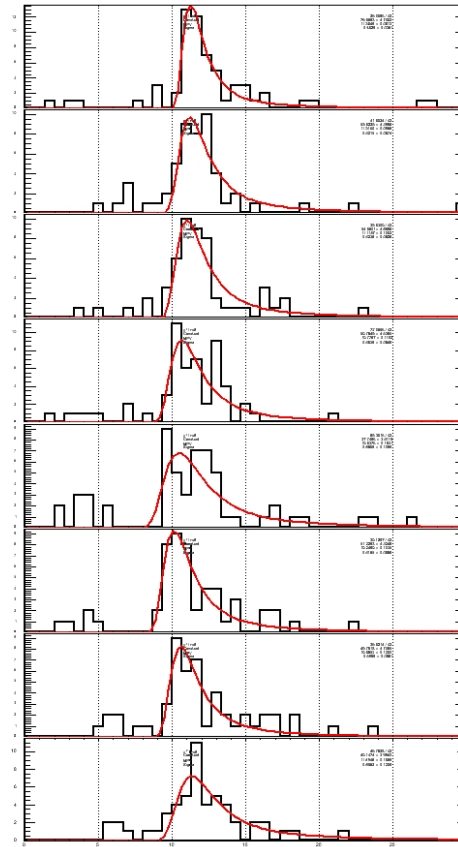
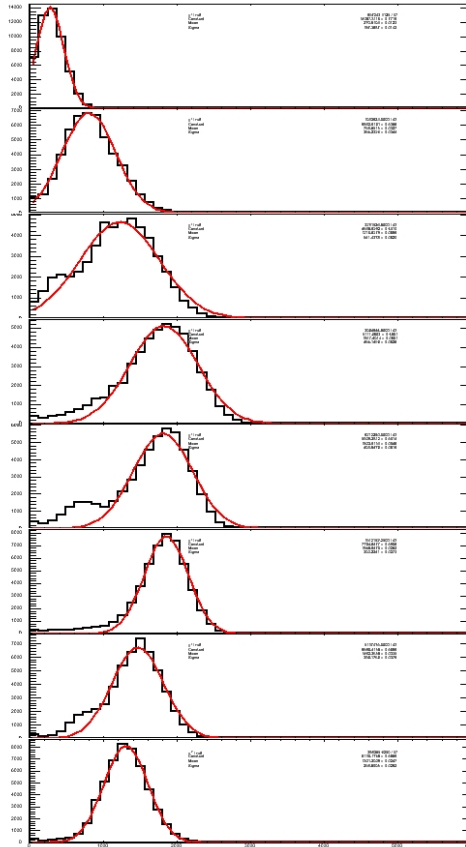
- Discrepancy between MC and data in deposited CAL energies at SPS.
- Check if π contamination in electron runs can correct the energy scale in single CDE.
- Study done on electron runs 2082 (20 GeV), 2039 (50 GeV) and 2024 (100 GeV) - higher energies have not enough pions left.
- Identify π peak in CDE, and mean deposited energy E_{dep} .

Reference from π run

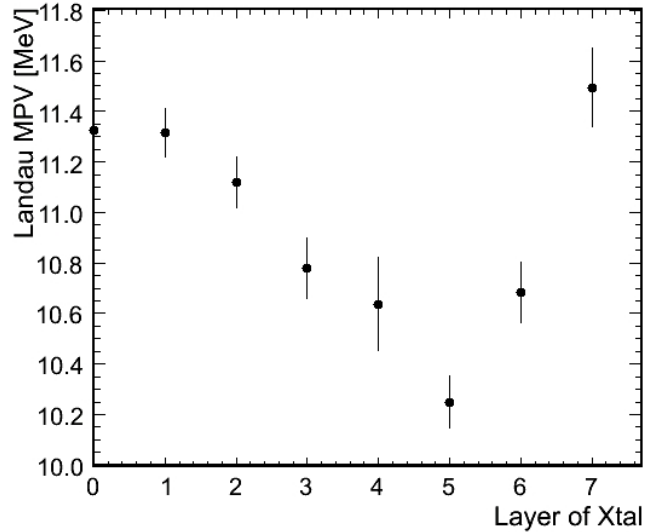
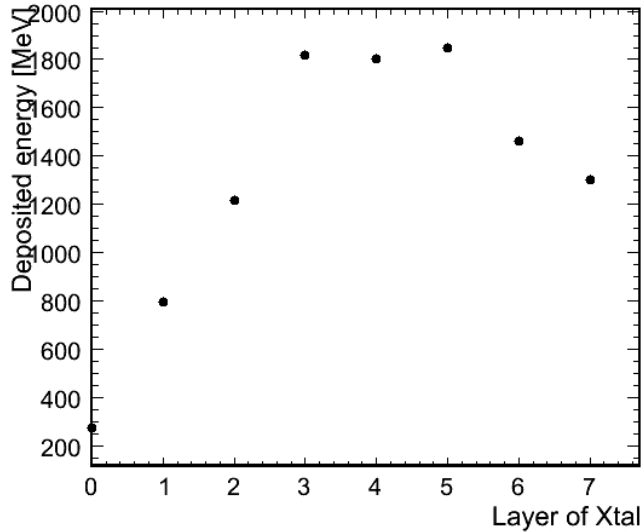


- Check π distribution in each layer from a dedicated 20 GeV π run.
- All layers have a 11.4 MeV peak.
- Should therefore have a similar value in π from 20 GeV electron run.

20 GeV e^- Edep and π distributions

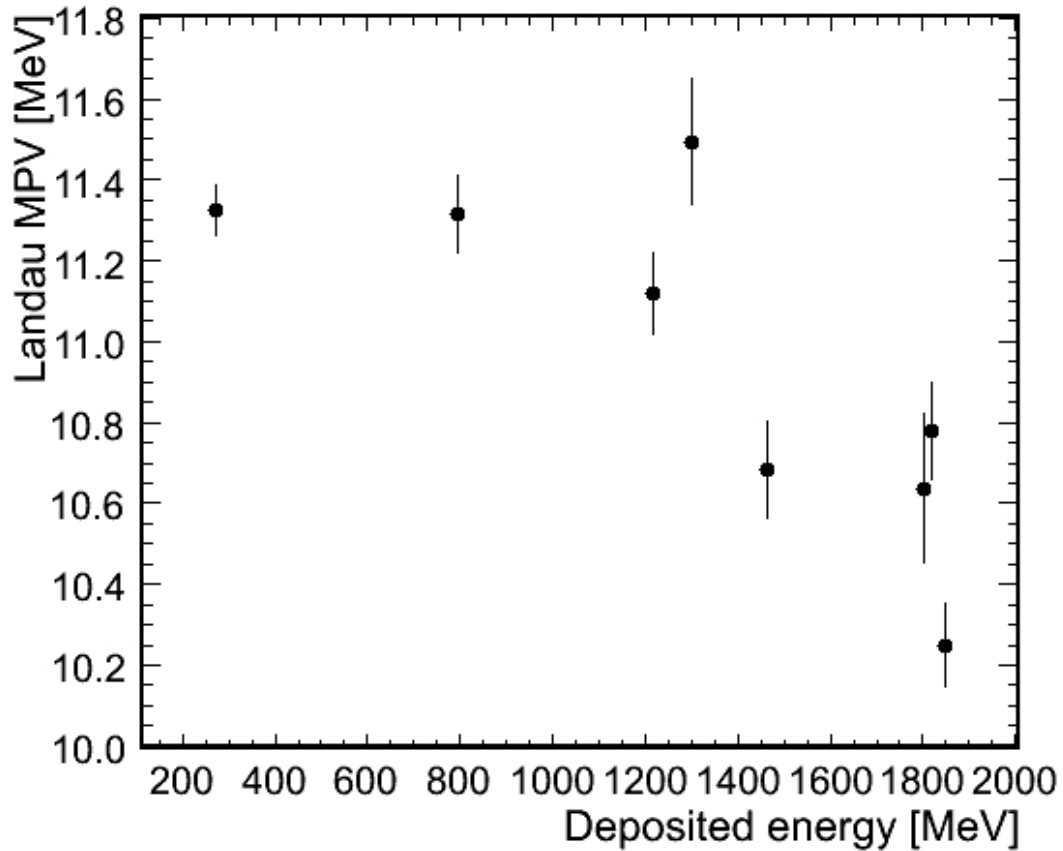


Edep peak and π MPVs



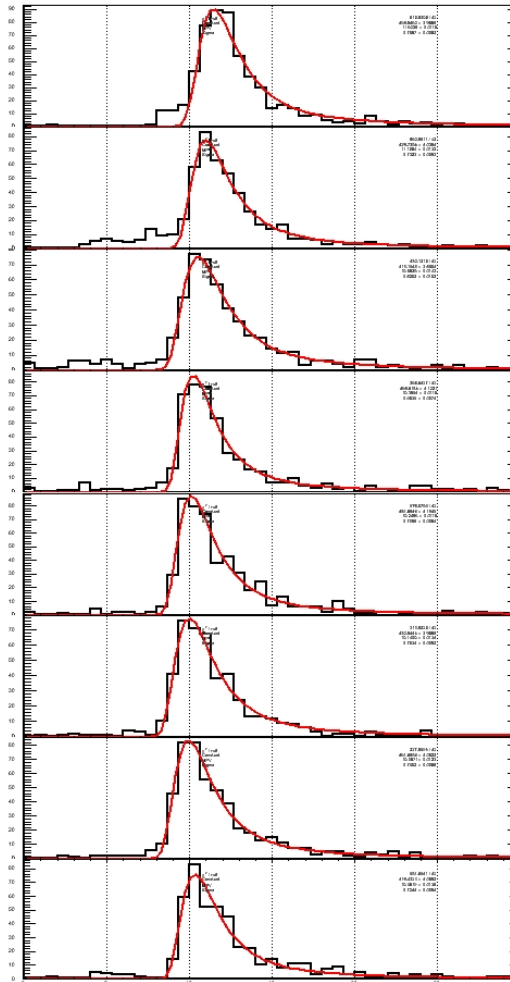
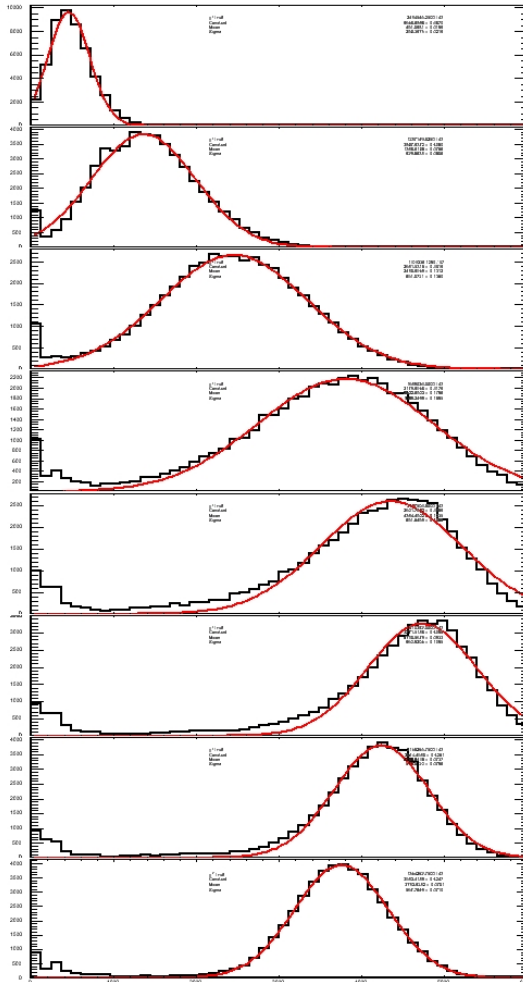
- Edep and π distributions not fitted optimally - obviously not gaussian or Landau.
- π MPV appear to be dependent on layer or Edep.

Edep peak vs π MPV

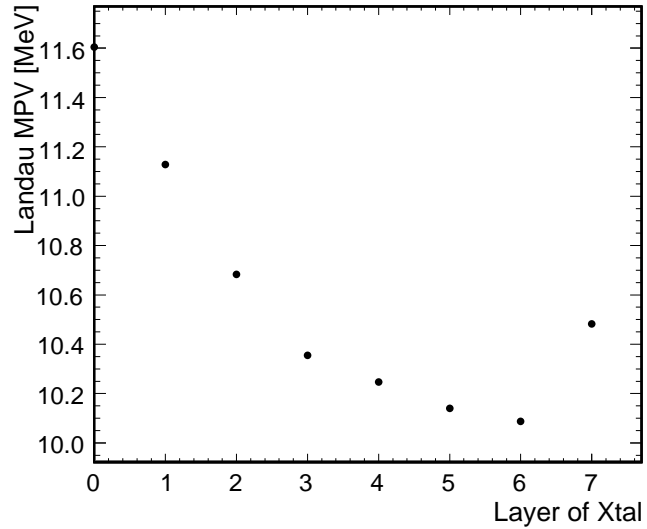
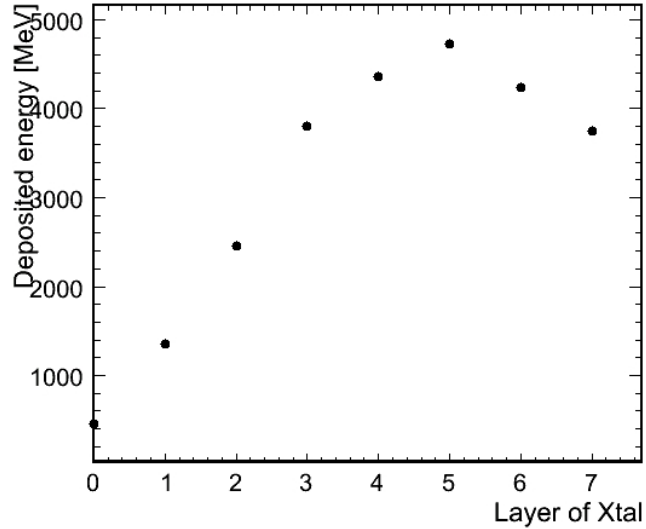


π appears to be Edep dependent - check with higher energies.

50 GeV e^- Edep and π distributions

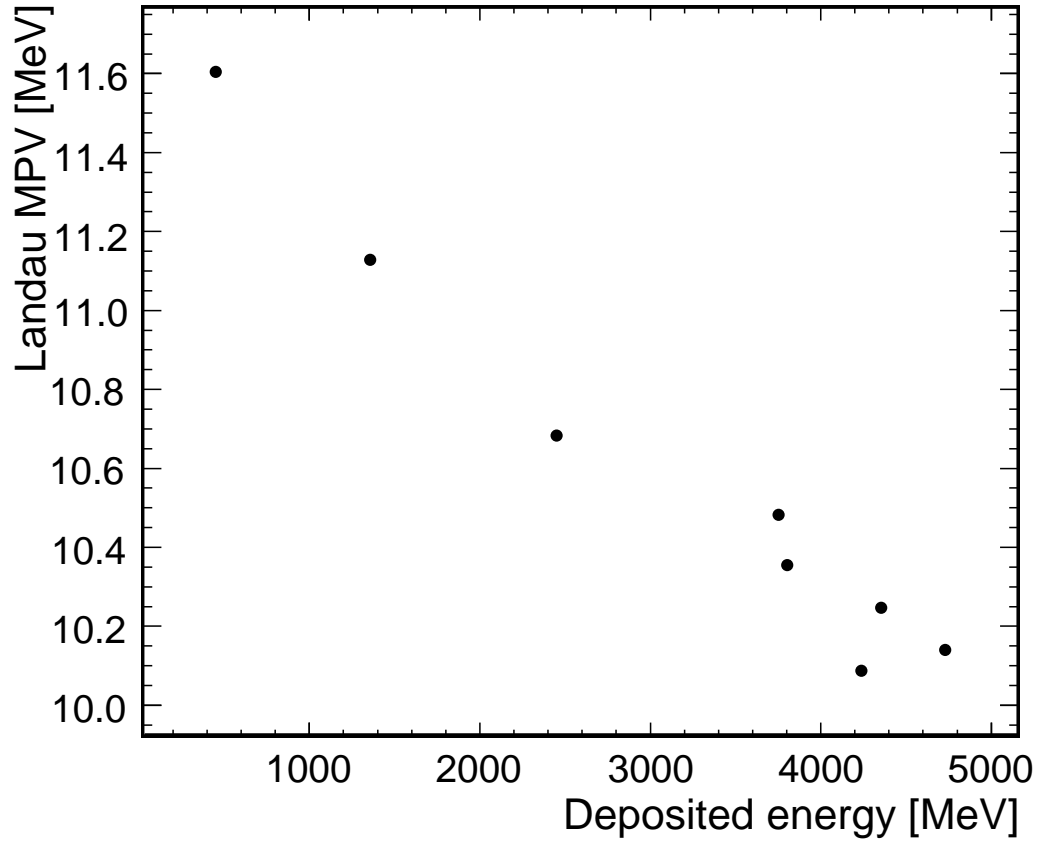


Edep peak and π MPVs

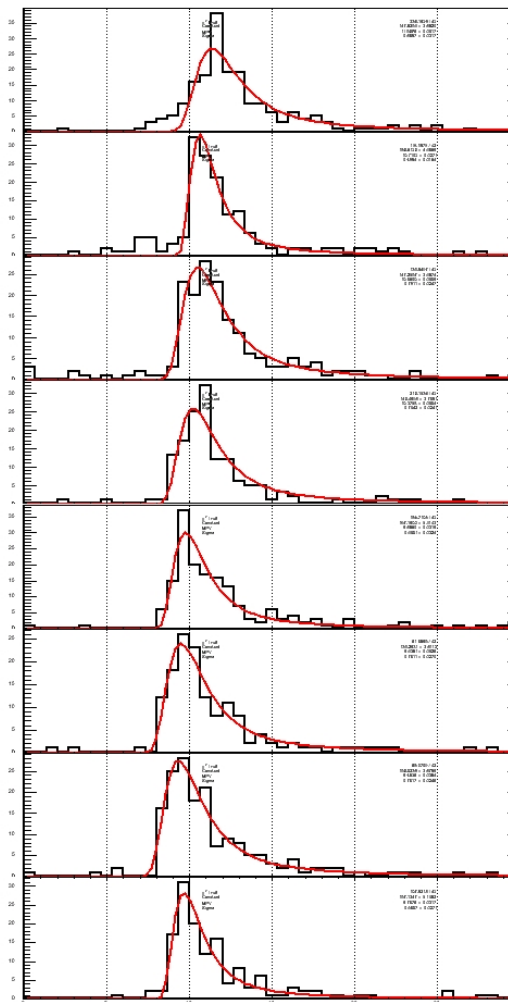
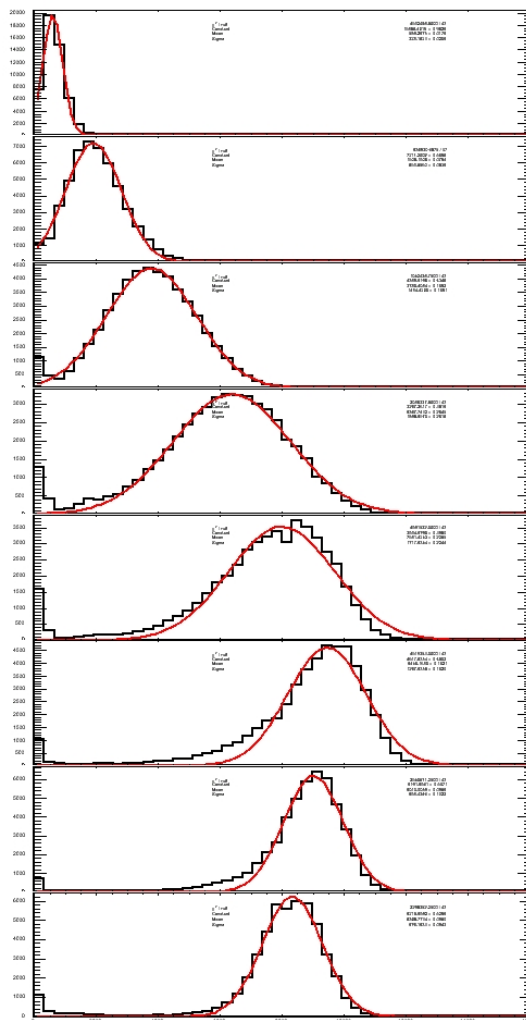


- π MPV clearly dependent on layer or Edep.

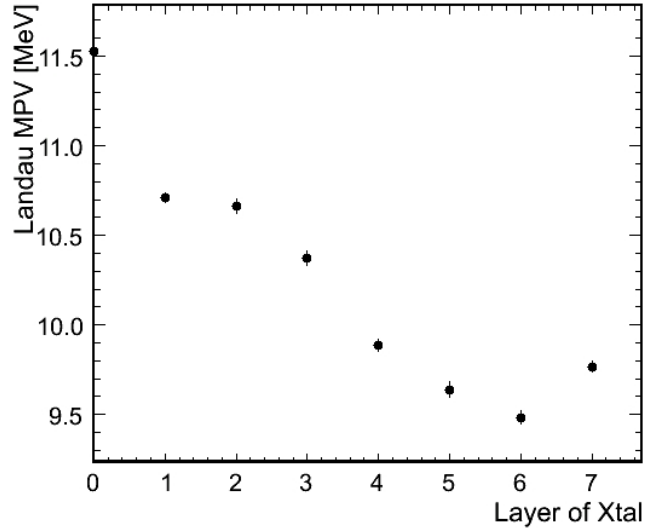
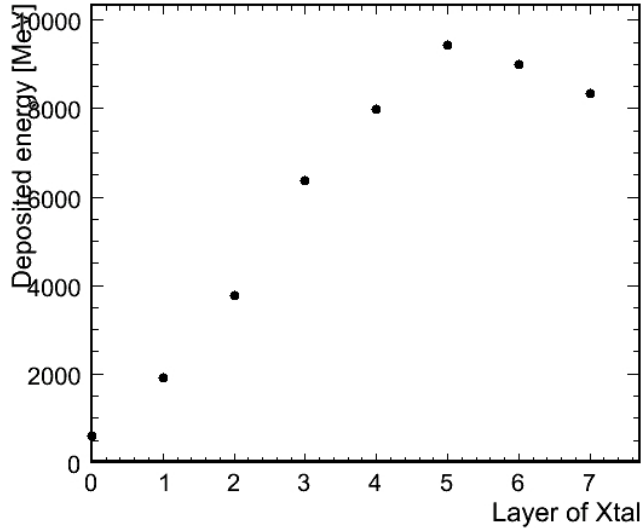
Edep peak vs π MPV



100 GeV e^- Edep and π distributions

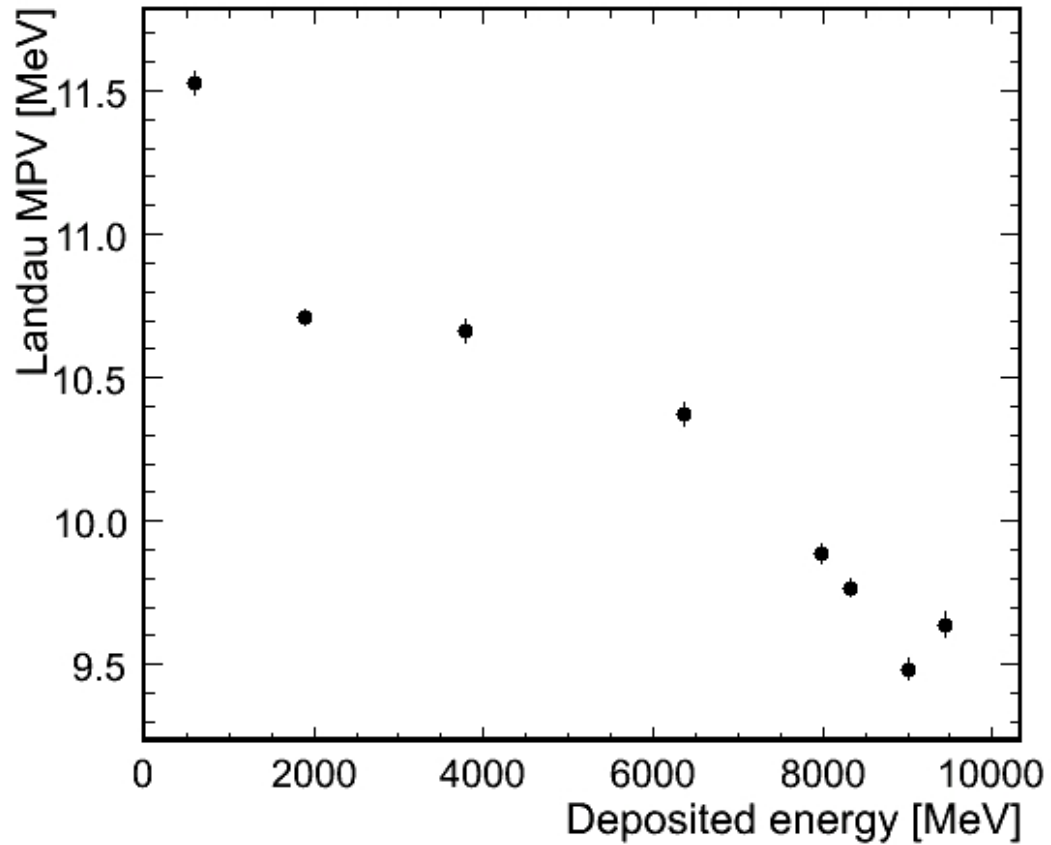


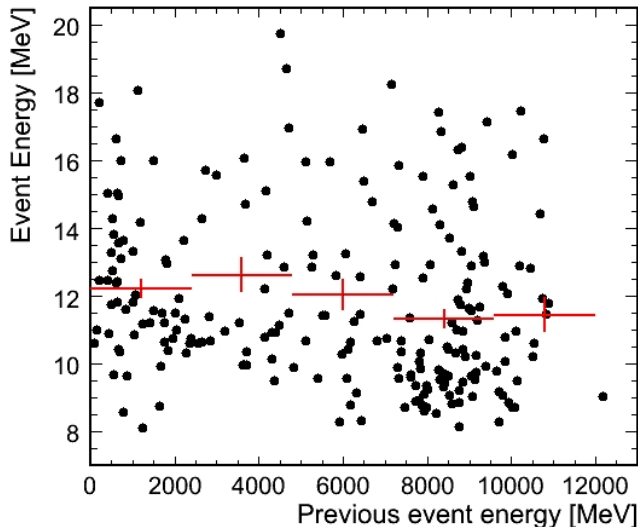
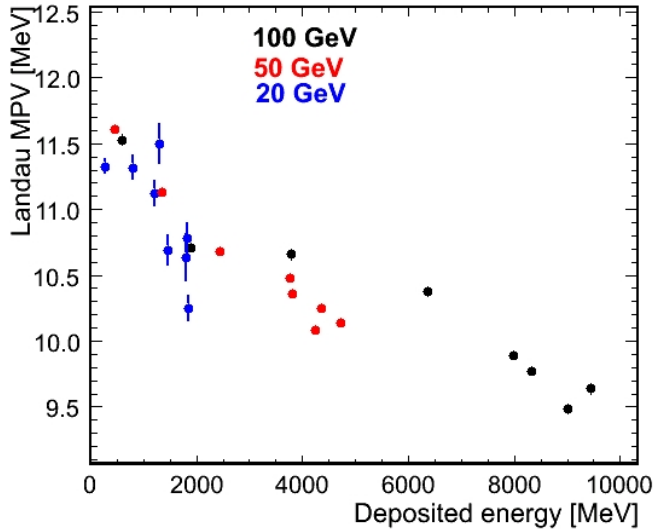
Edep peak and π MPVs



- π MPV clearly dependent on layer or Edep.
- Expecting a 4% increase in π peak compared to 20 GeV i.e. 11.9 MeV.

Edep peak vs π MPV





- π distribution correlated with the average energy deposited in the CDE.
- Equivalent Edep in a different CDE from a different beam energy shifts the MPV in the same way.
- Pion peak shift has *the wrong sign* - energy has somehow to be *added* to the data.
- Does the π peak shift have a threshold? A rate dependence? What precision could pions set on the beam energy?