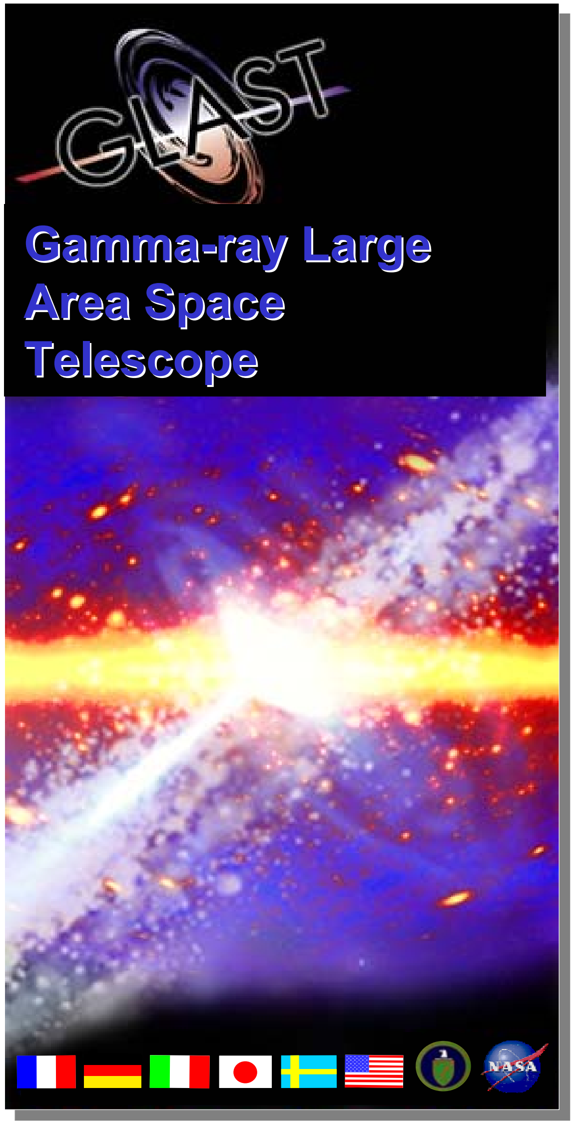
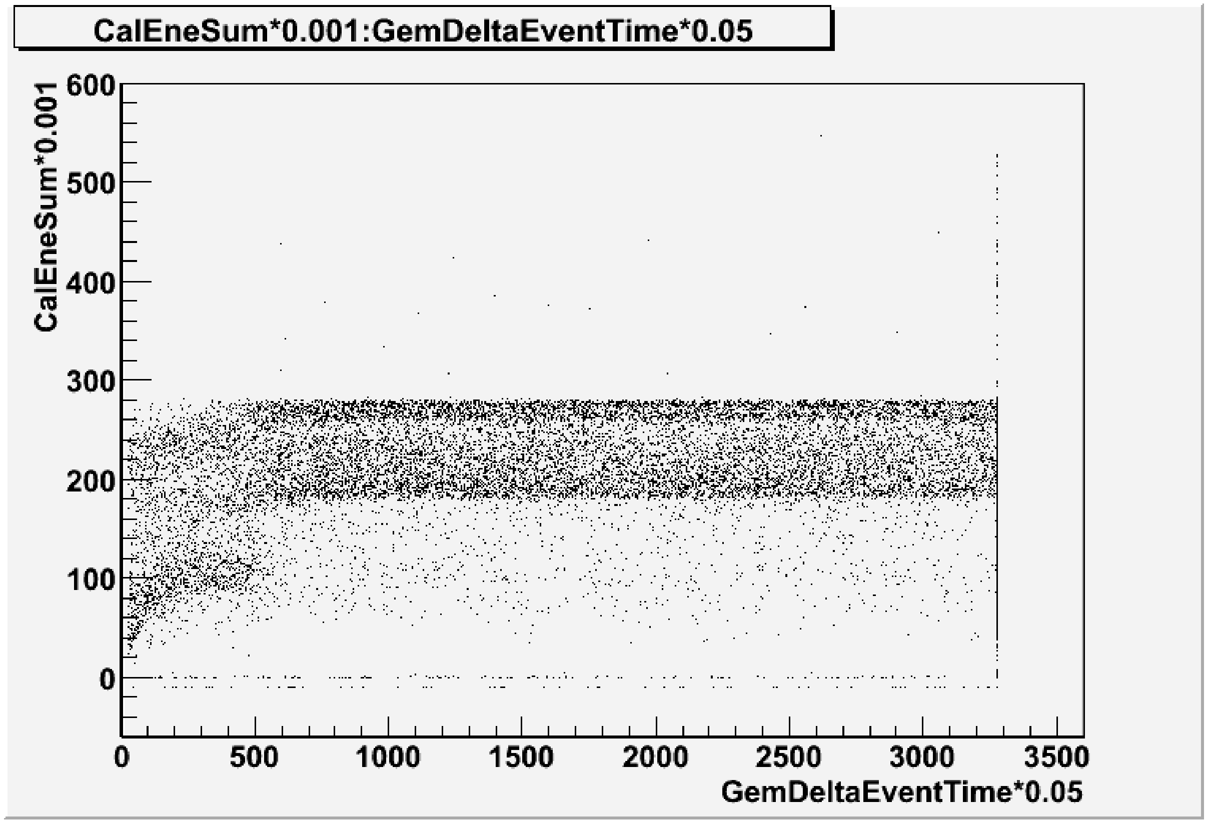


CAL energy resolution for horizontal 282 GeV electrons.

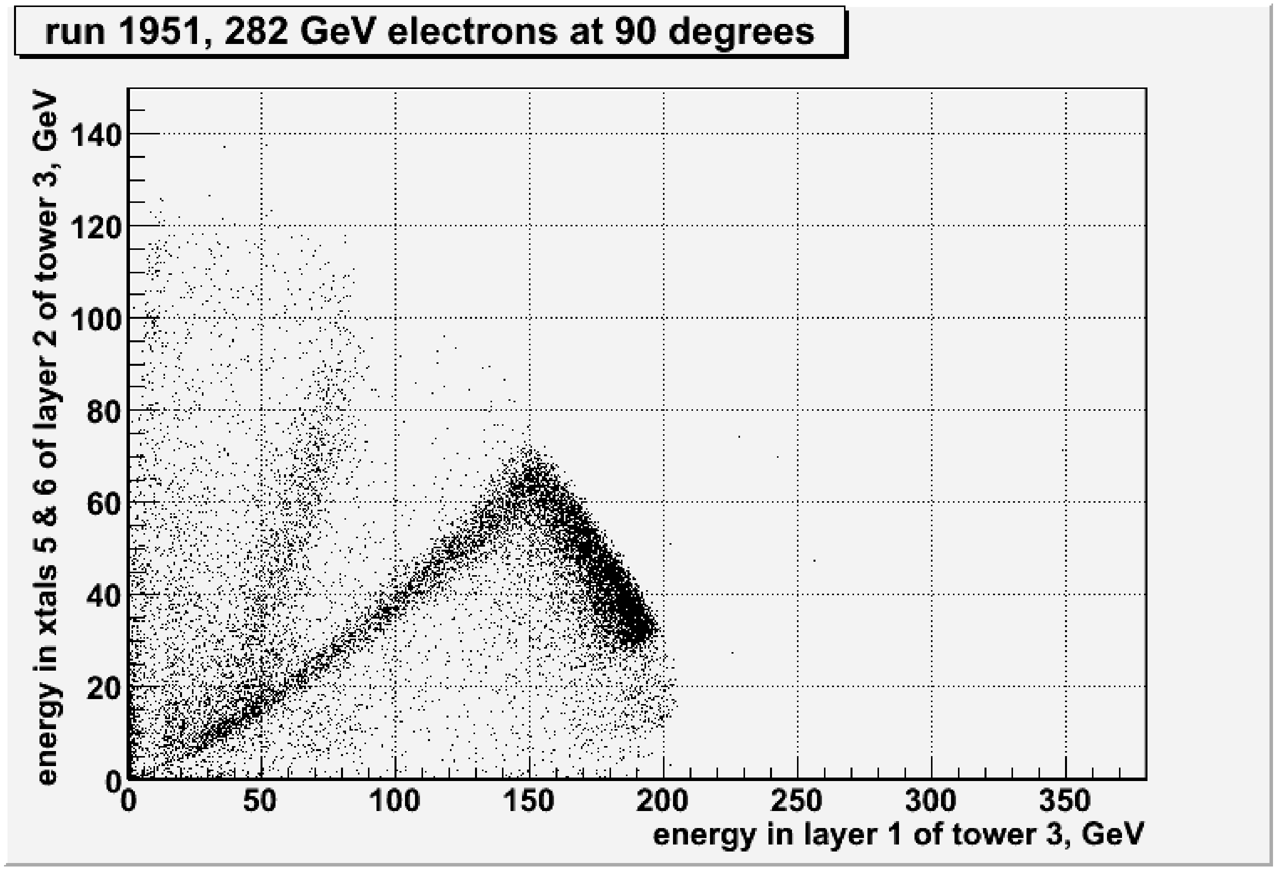
Alexandre Chekhtman
NRL/GMU

Run 1951: 282 GeV electrons at 90 degrees



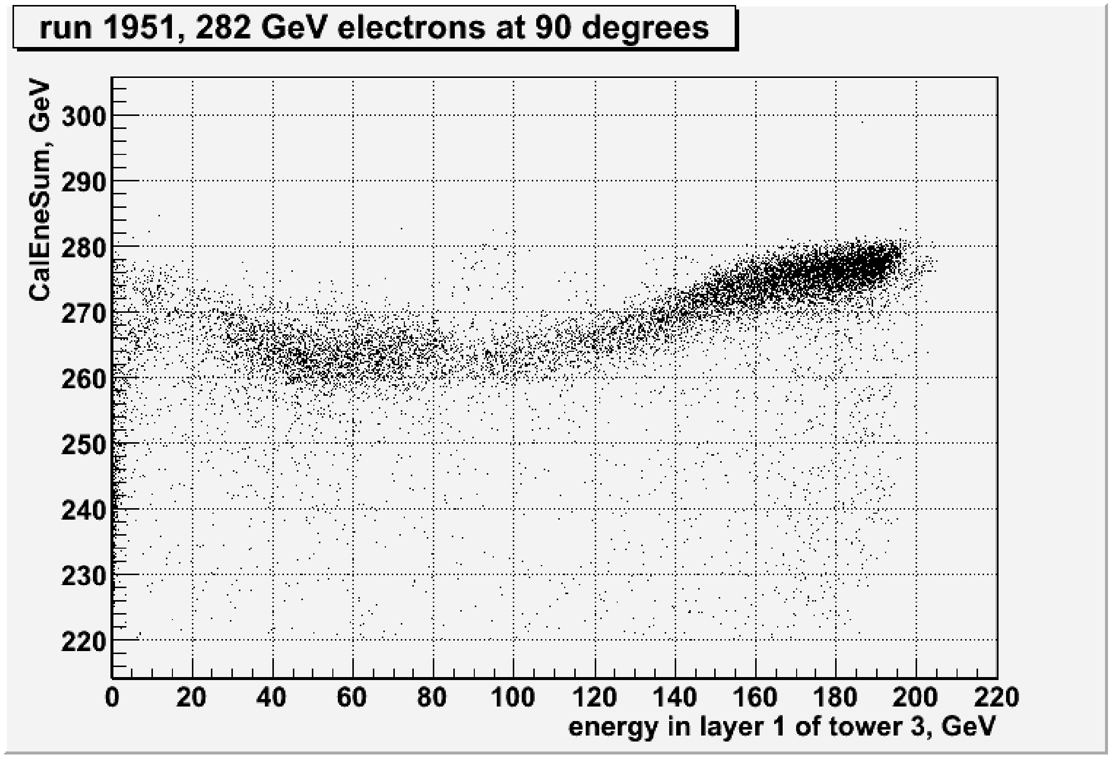
- To avoid pedestal drift: GemDeltaEventTime>1000 us
- To avoid saturation:
  - CalXtalEne[3][2][5][0] <70000
  - CalXtalEne[3][2][6][0] <70000

Layer 1 vs layer 2



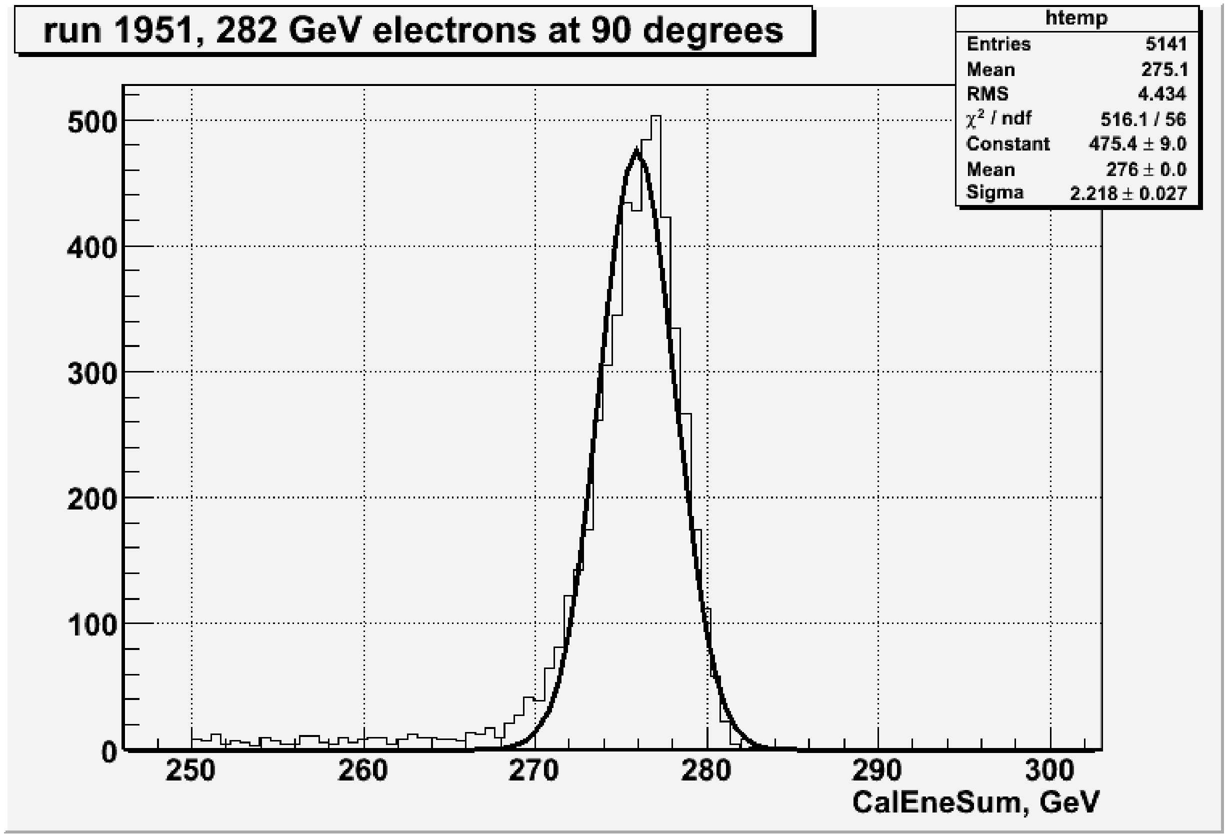
- Population with Elayer1>150 GeV – shower develops in layer 1 with part of energy in layer 2 (Elyr1+Elyr2 ~ const)
- Population with Elayer2<150 GeV – shower penetrates through the gap between layer 1 and layer 2 to the next tower 2 – energy drops in both layers

Esum vs layer 1



- Elayer1 > 150 GeV – shower develops in tower 3
- Elayer1 < 150 GeV – shower develops in tower 2, Esum at different level
- Let's select Elayer1>160 GeV for our analysis

Energy resolution



- Energy resolution peak is very narrow:
  - Sigma/mean=0.8%
- This means that calorimeter crystals are correctly intercalibratied with comparable precision

- Peak position is 2% smaller than the beam energy
  - The estimation of side leakage done by Philippe is 5%
  - So the energy excess is 3% only - not 10-15% as Philippe obtained for vertical beam