Simulations for the HEC 1999 Beam Tests

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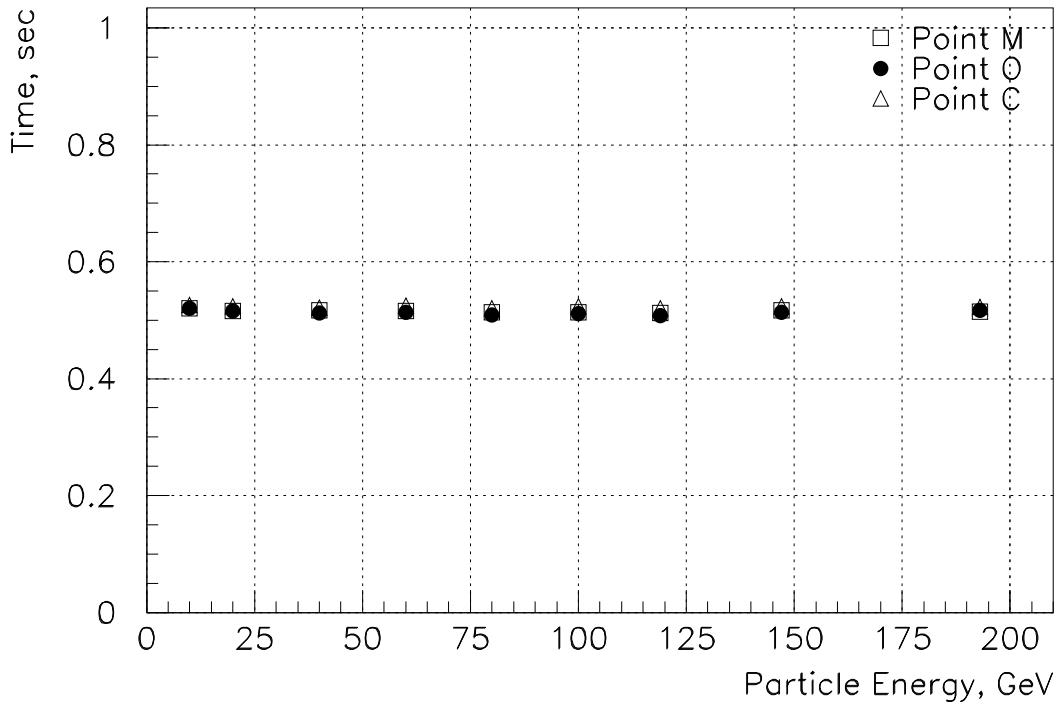
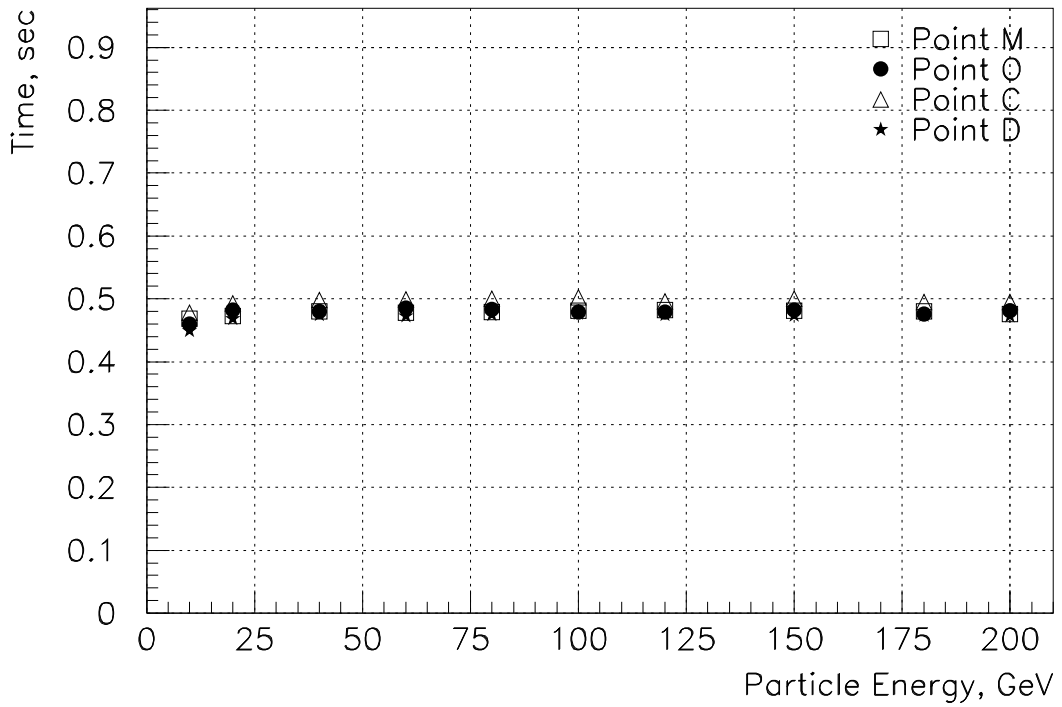
- **Web page:**
  http://wwwatlas.mppmu.mpg.de/HEC/tb31.html
- **Package HEC-BEAM 3.1**
- **Simulated data:**
  - **muons**
    120 and 200 GeV at point M (20 000 events)
  - **electrons**
    three energy scans (9 energies from 10 to 193 GeV):
    * **point C (2 000 events)**
    * **point M (4 000 events)**
    * **point O (2 000 events)**
  - **pions (*GCALOR*)**
    four energy scans (10 energies from 10 to 200 GeV):
    * **point C (4 000 events)**
    * **point D (4 000 events)**
    * **point M (4 000 events)**
    * **point O (4 000 events)**
- **Performance evaluation (for the whole module)**
- **Next steps:**
  - **position scans with pions**
  - **other requests?**

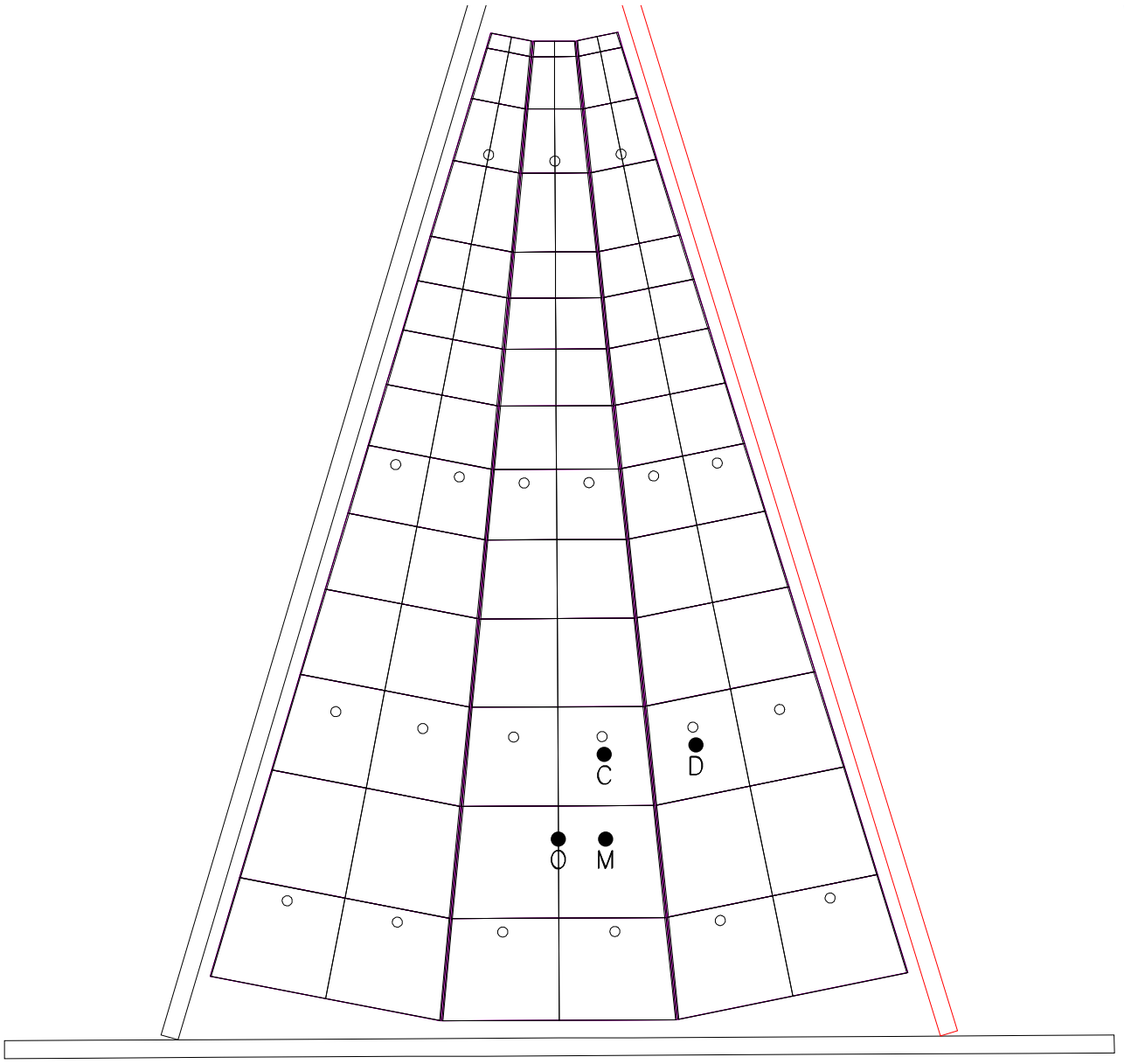
Time for Simulation : per Event per GeV



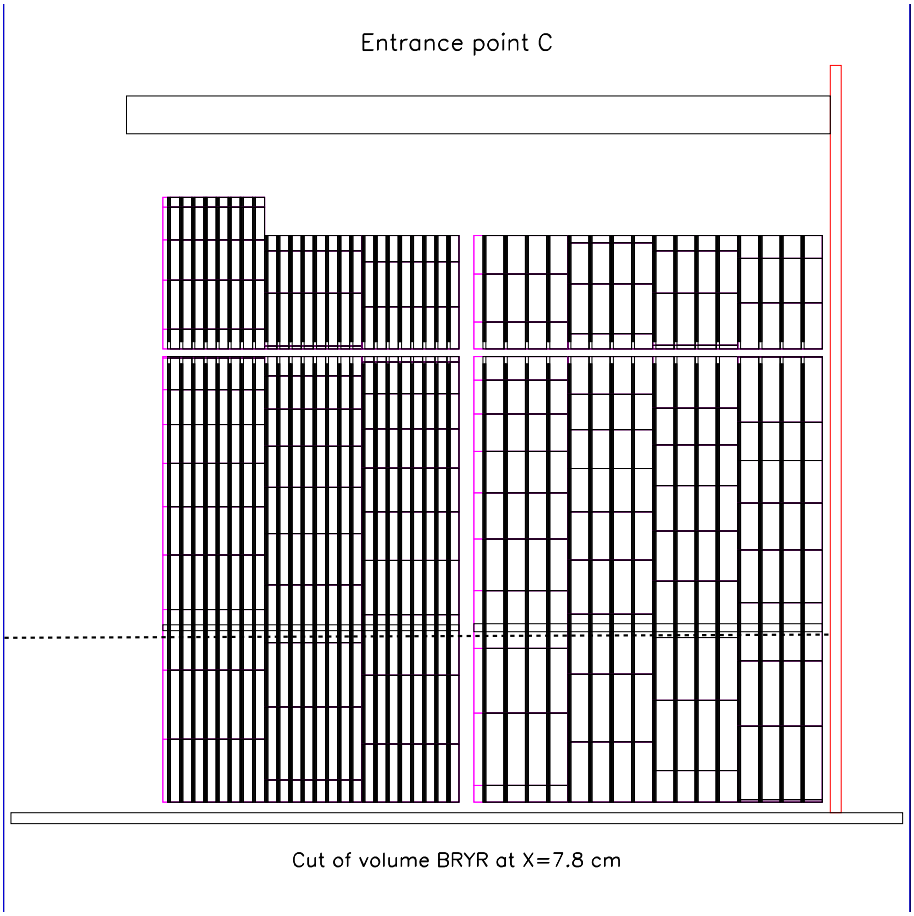
Electrons under Linux-pclbatch

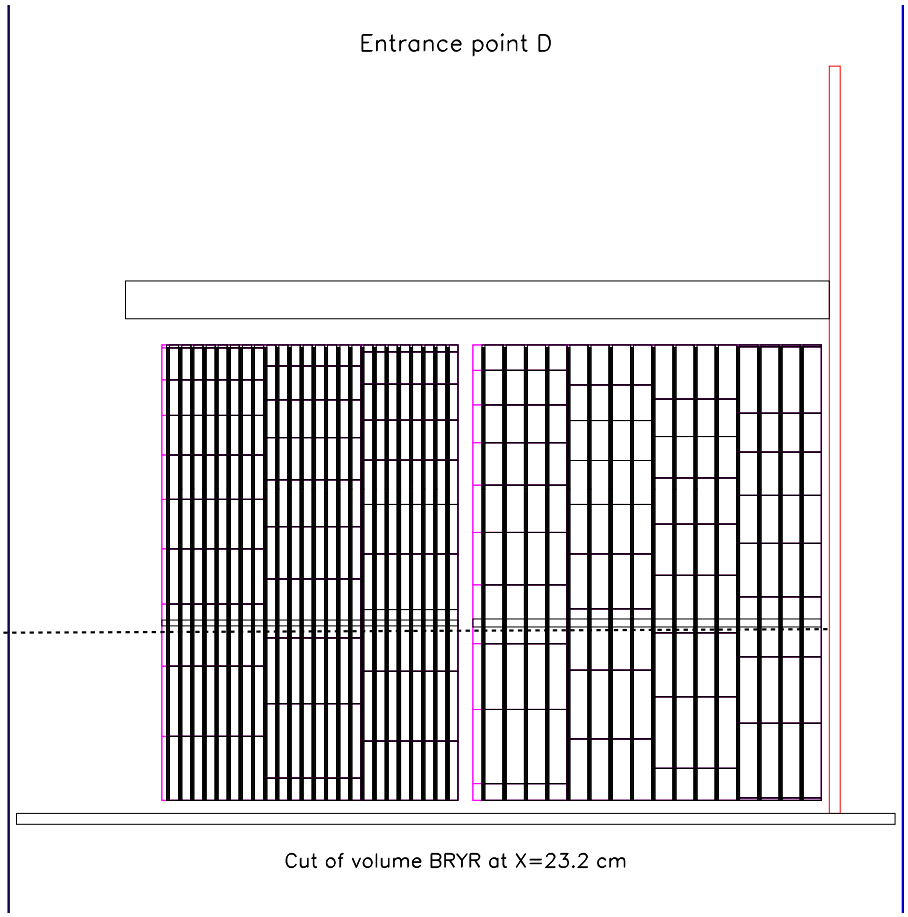


Single Pions (GCALOR) under Linux-pclbatch

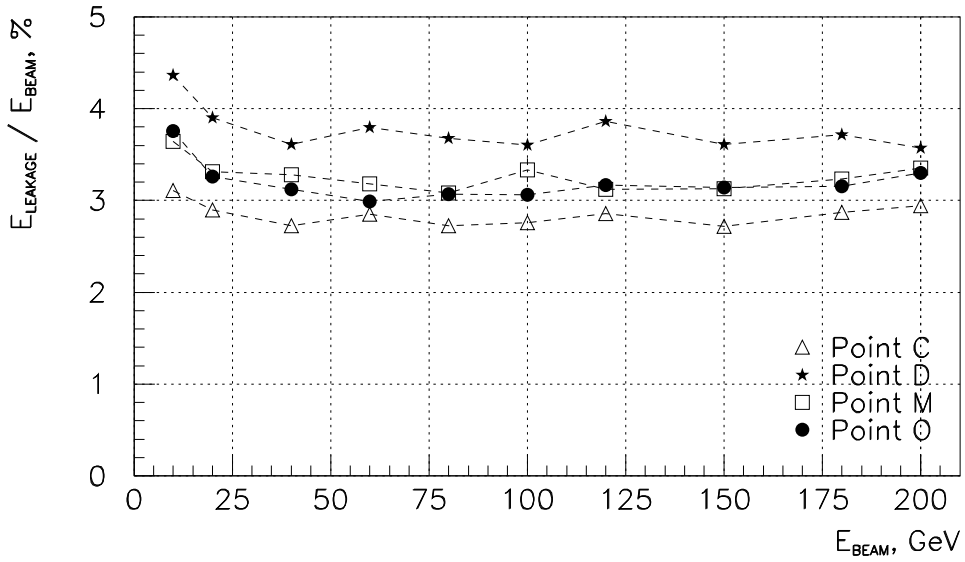


Cut of volume BRYI at Y=−79.5 cm
(first LAr gap)

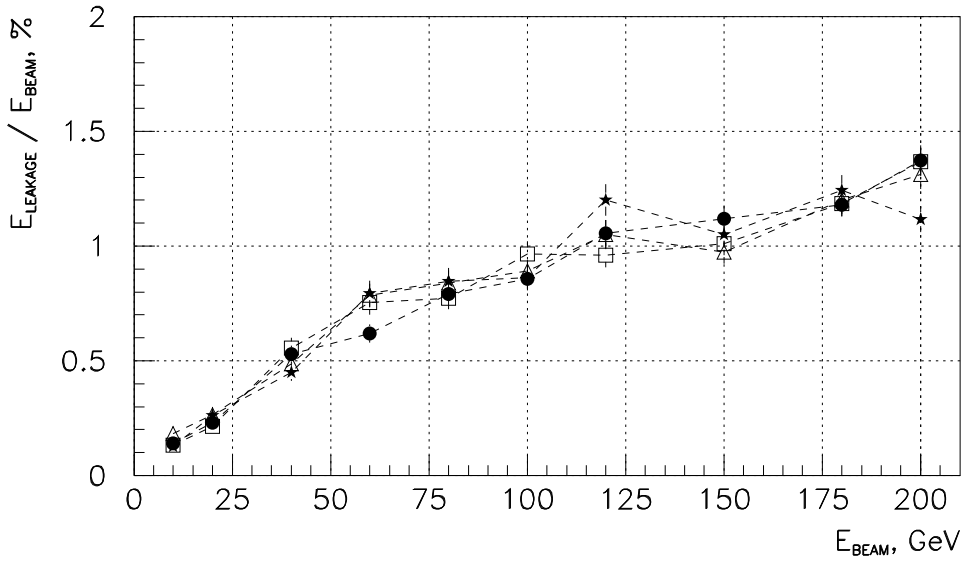

Entrance point C
Cut of volume BRYR at X=7.8 cm


Entrance point D
Cut of volume BRYR at X=23.2 cm

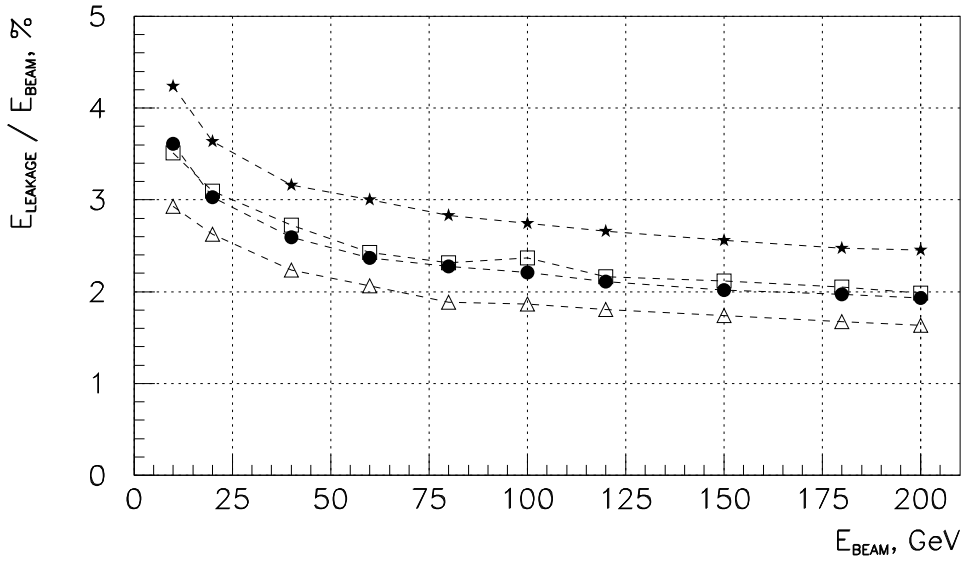
Energy Leakage for Pions (GCALOR)



Total leakage

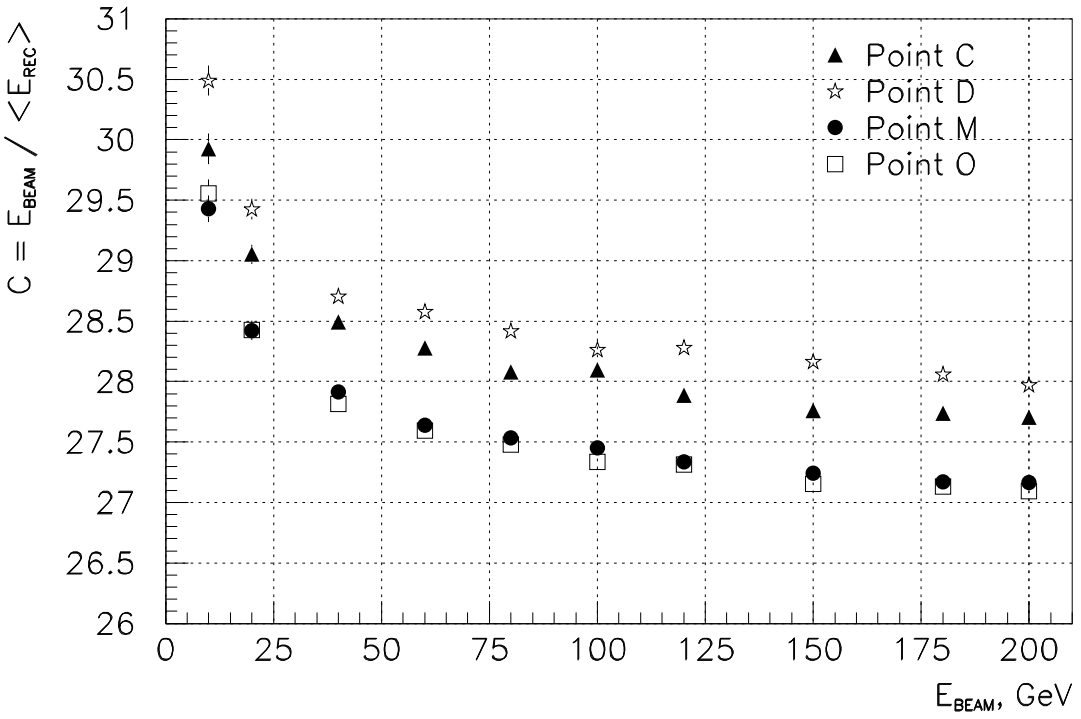


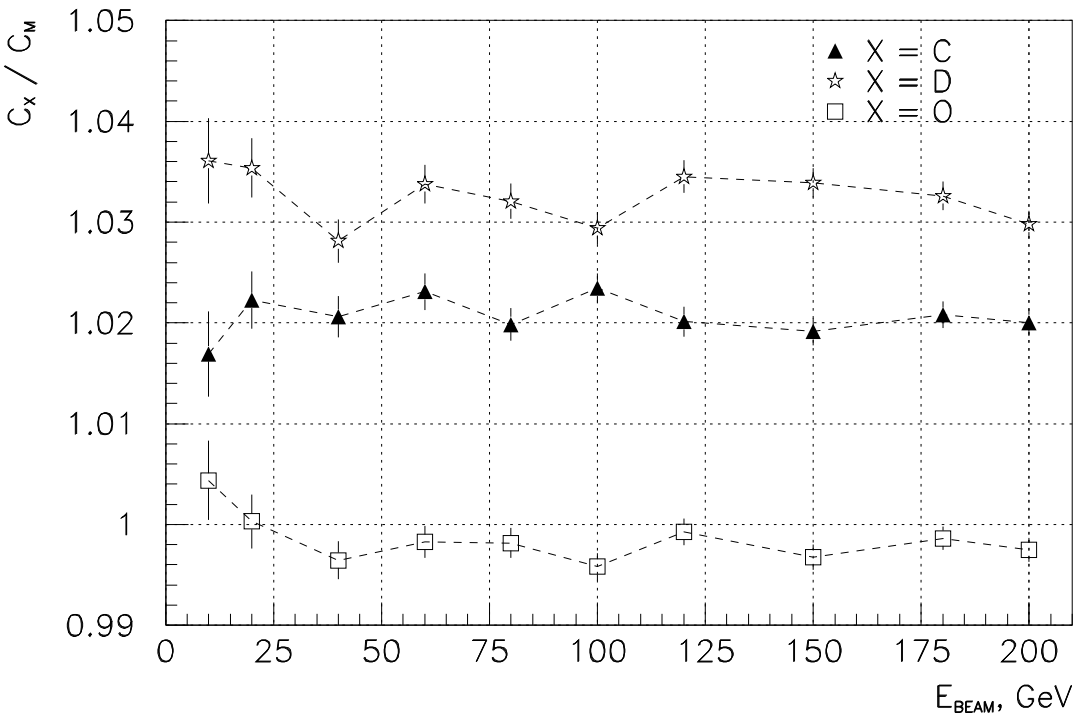
Longitudinal leakage



Lateral leakage

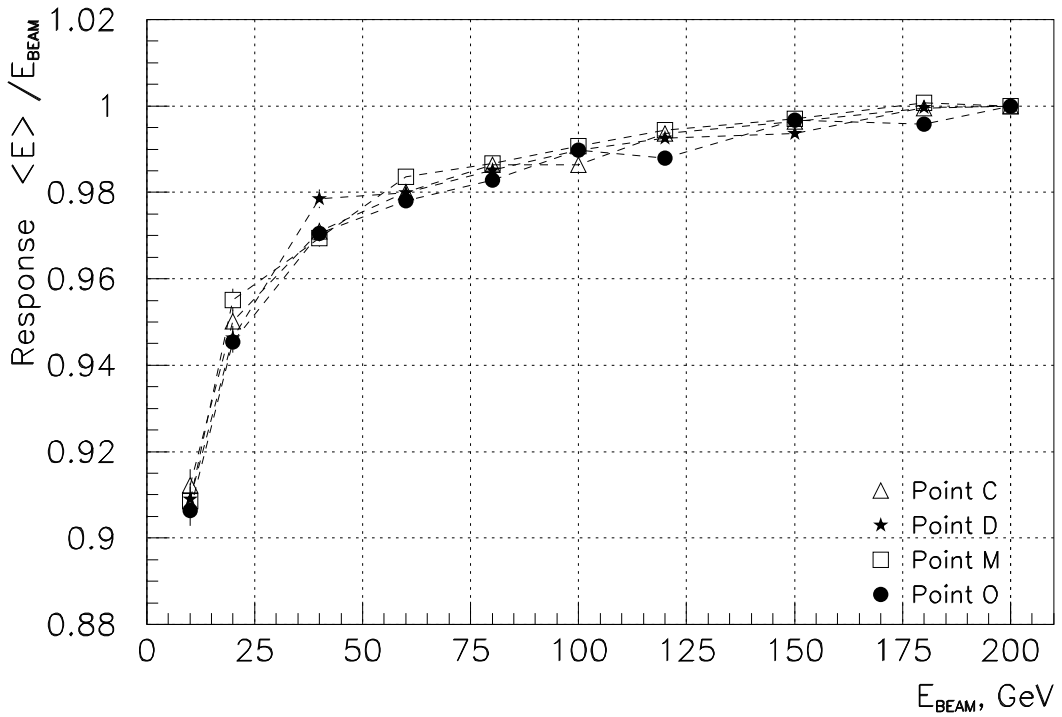
HEC-TB-1999 Simulation : Pions





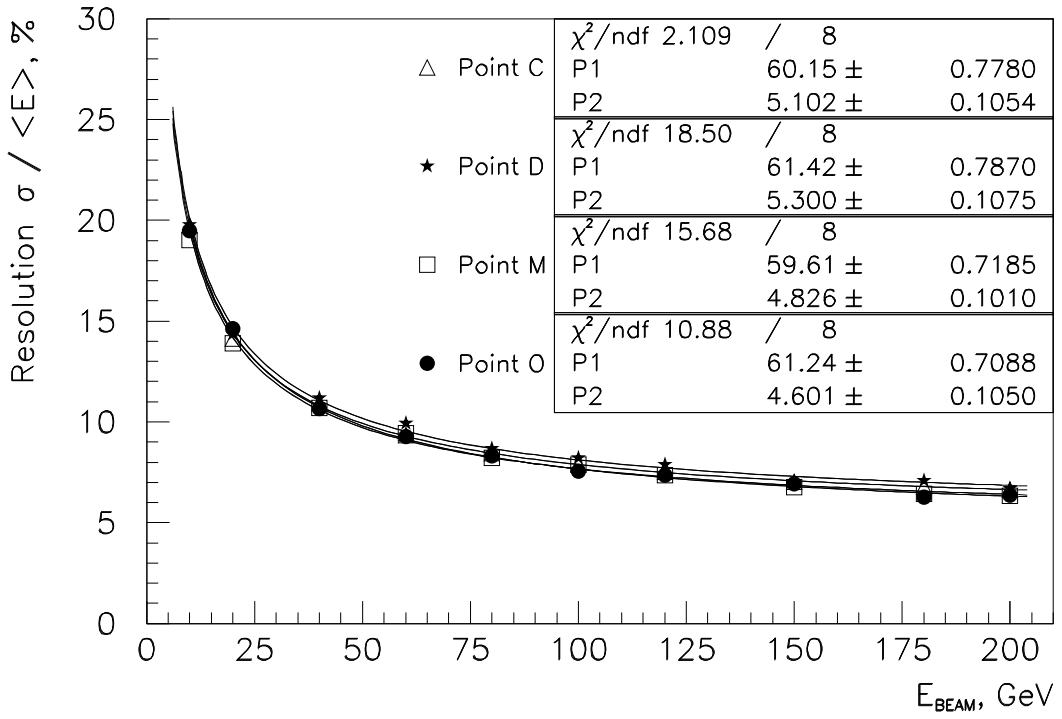
$C = E_{BEAM} / \langle E_{REC} \rangle$

Pions (GCALOR) : Whole Calorimeter Energy

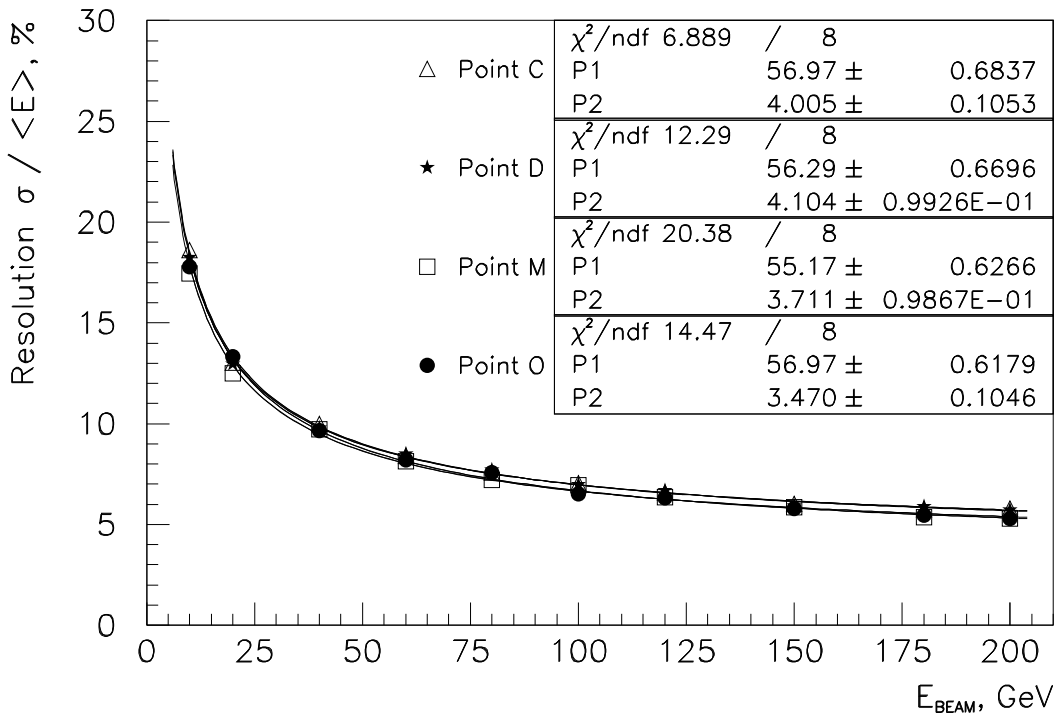


Whole Calorimeter Energy and Leakage Energy

Pions (GCALOR) : $\sigma/\langle E\rangle = P1/\sqrt{E_{BEAM}} \oplus P2$

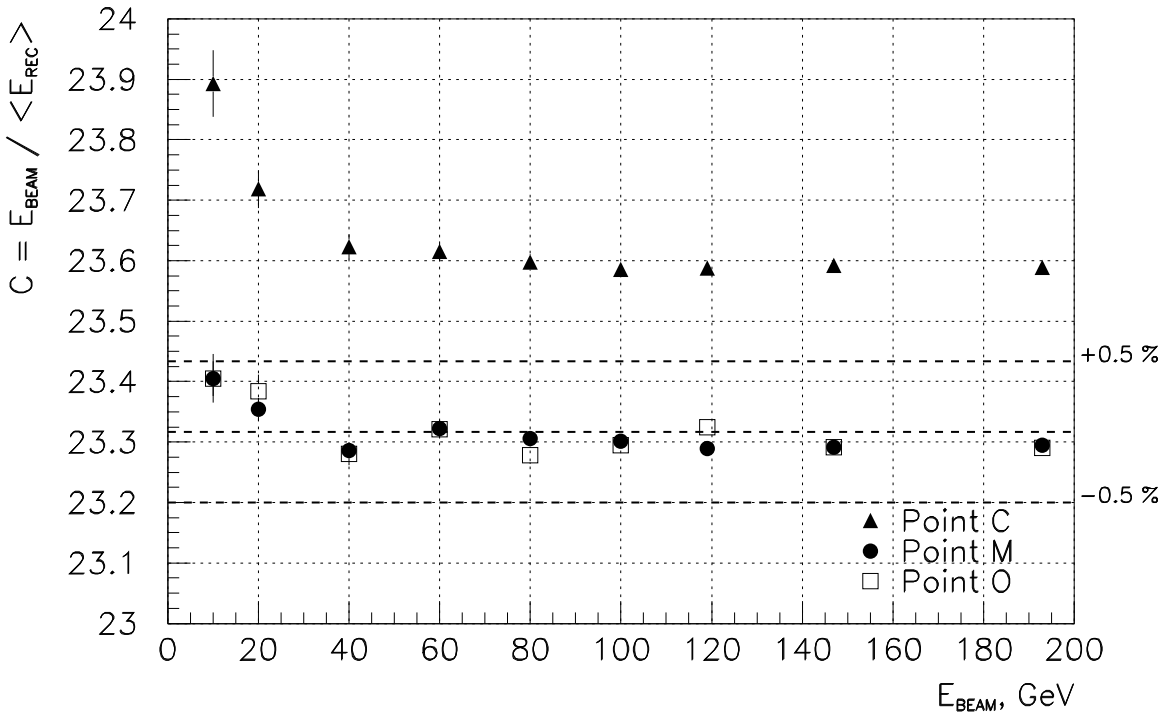


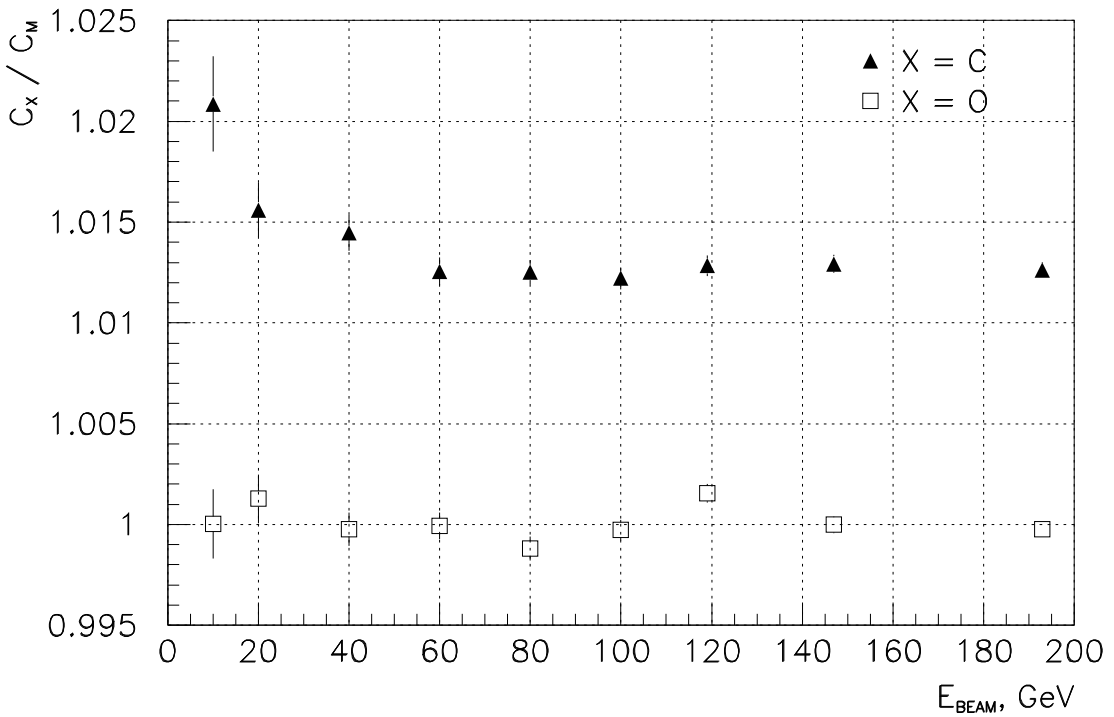
Whole Calorimeter Energy

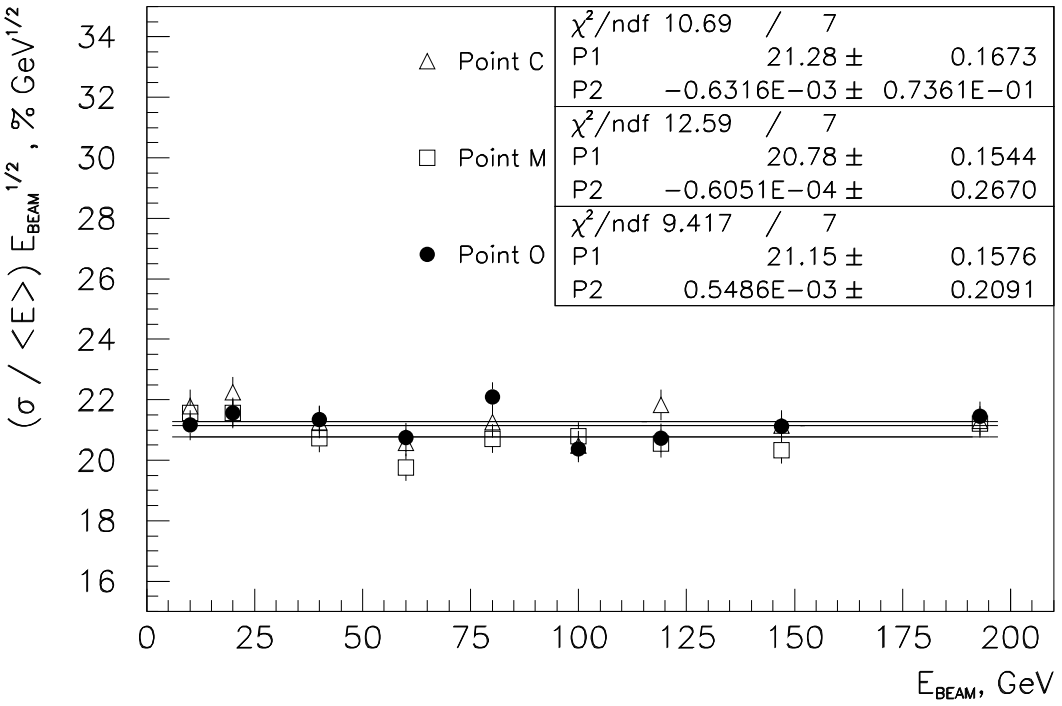


Whole Calorimeter Energy and Leakage Energy

HEC-TB-1999 Simulation : Electrons





$C = E_{BEAM} / \langle E_{REC} \rangle$

Energy Resolution for Electrons