Preliminary checks on SCEPCal Simulation

Flavia Cetorelli[2,3],   Marco Lucchini[1,2], Wonyong Chung[4], Chris Tully[4]

1. Università degli Studi di Milano - Bicocca
2. INFN Milano-Bicocca
3. CERN
4. Princeton University

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Sanity checks

SCEPCal Repository:
https://github.com/SCEPCAL/SCEPCAL/tree/master

Ongoing work to produce performance plots of SCEPCal to **validate the simulation**:

- Reconstructed energy resolution and linearity vs particle energy
- Comparison of energy deposits in front and rear segments
- Correlation between deposited energy and number of cherenkov photons produced
- Angular resolution (weighted eta of hits vs eta of MCtruth, and same for phi)
- …

Some **very preliminary** results in the next slides.

Hits Multiplictity
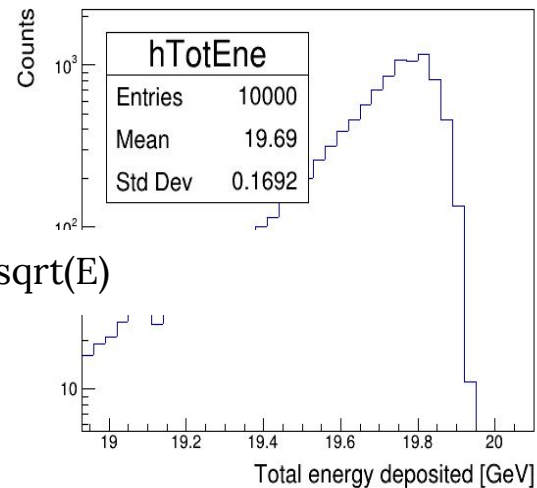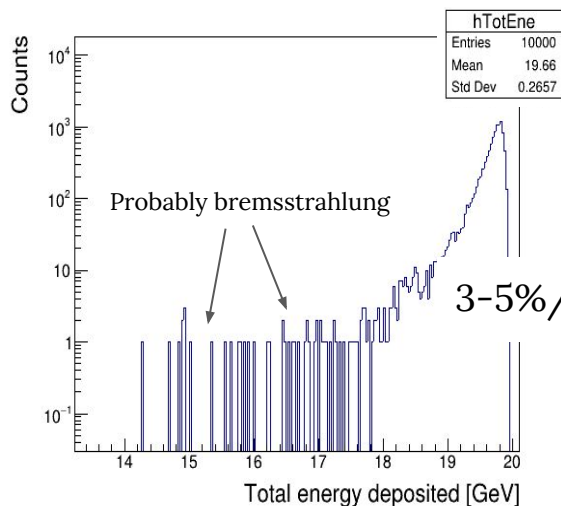
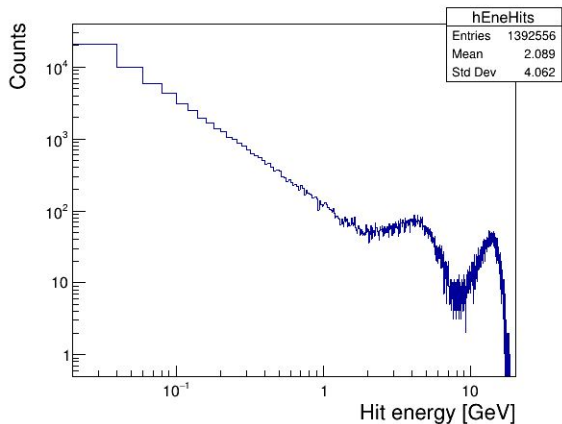20 GeV electrons, 10k events
50x50 mm² crystal size

Saving both the energy deposited in the crystals and the number of Cherenkov.
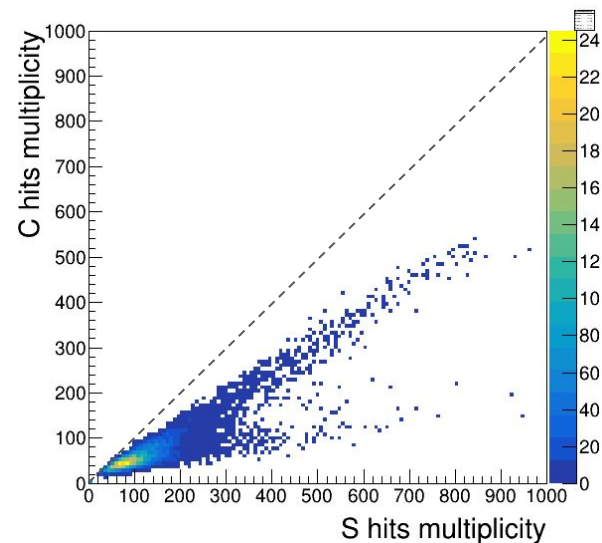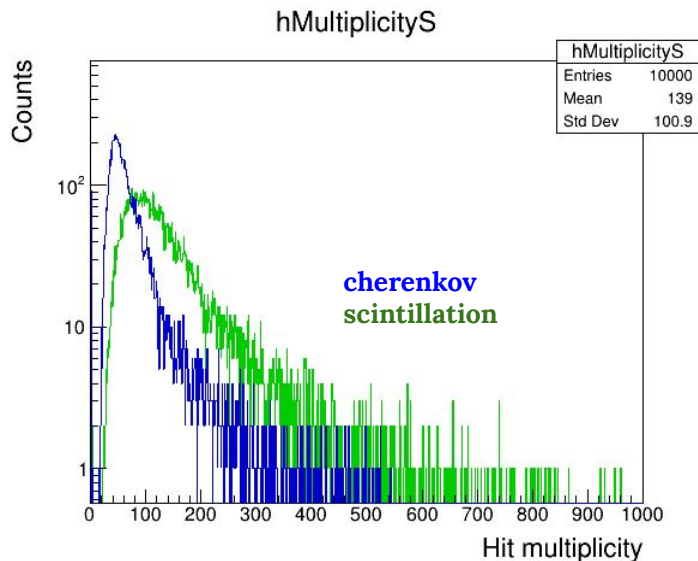
Energy - per Hits and Total

20 GeV electrons, 10k events
50x50 mm² crystal size

★ Sum all the energy hits of an event → **total reconstructed energy compatible with 20 GeV**
★ Some tail in the total reconstructed energy due to bremsstrahlung

Probably bremsstrahlung

3-5%/sqrt(E)

Total energy VS eta/phi

20 GeV electrons, 10k events
50x50 mm² crystal size

★ Looking at total reconstructed energy (sum of all hits) as a function of phi/eta of the Hit with maximum energy ("seed")

★ **Response seems uniform**: need to repeat as a function of MC e- eta and with more granularity (and over full range)