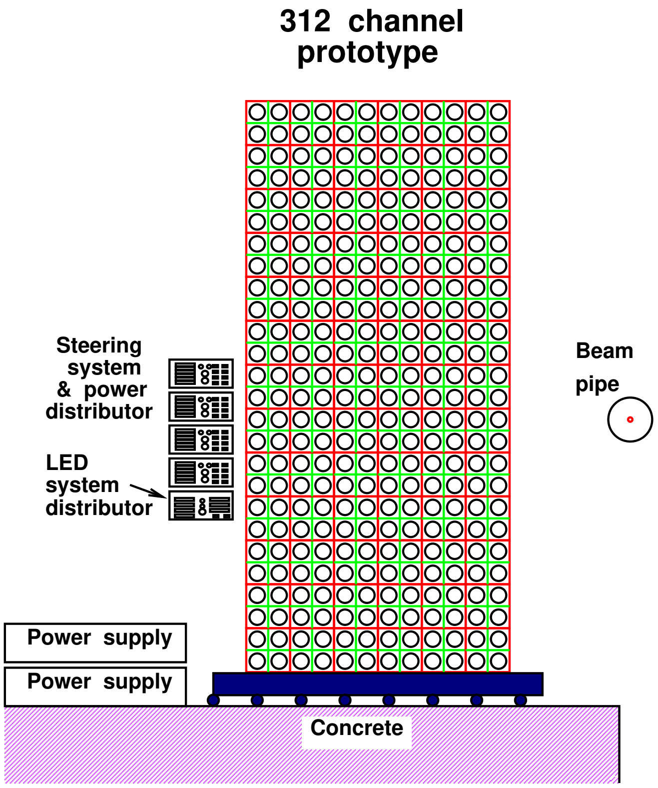
R.Kagan (ITEP)

ECAL Run'96 results

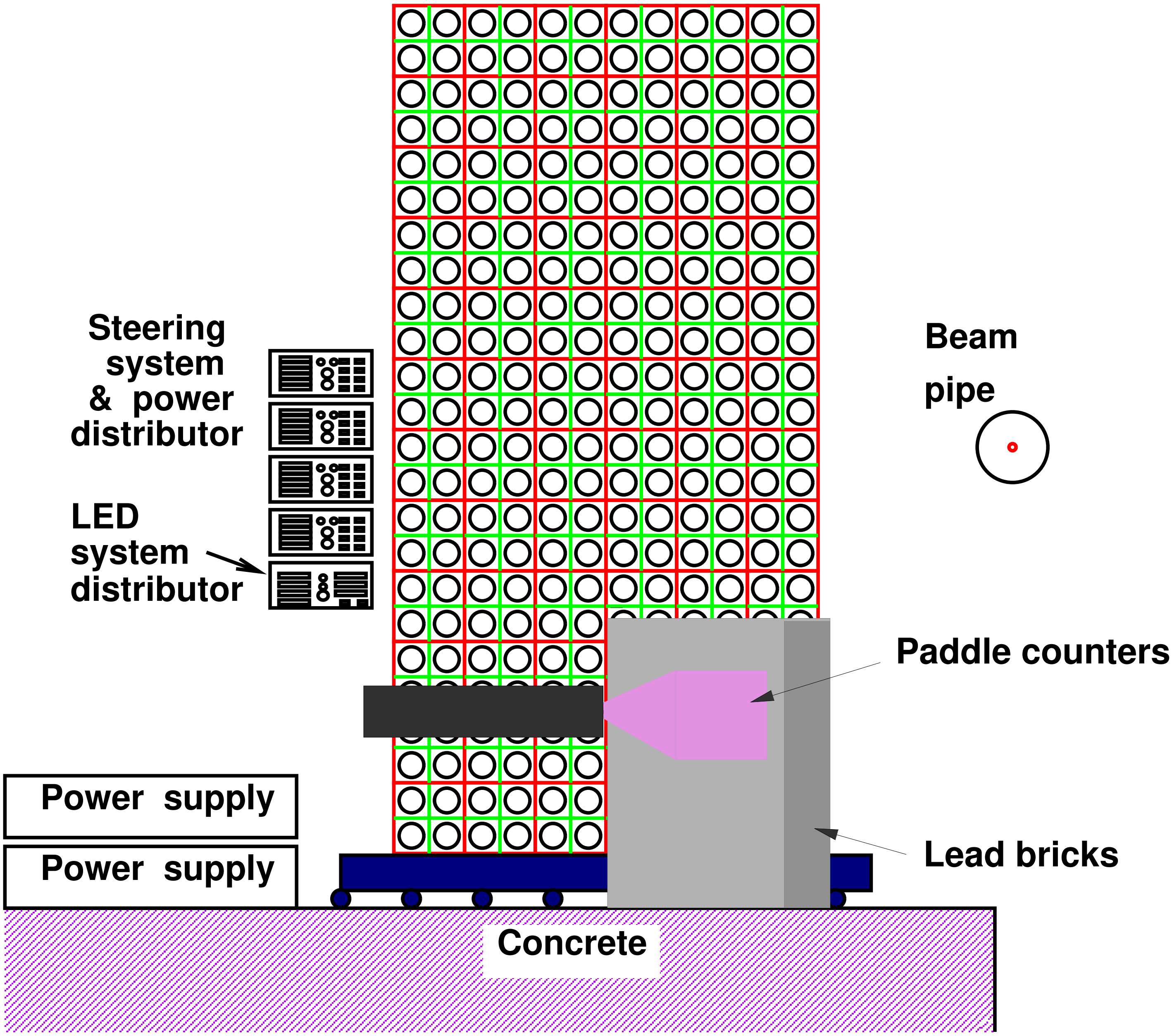
- ECAL prototype setup in the West hall
- MIP calibration
- LED calibration & light yield
- data *vs* MC
- summary

Setup



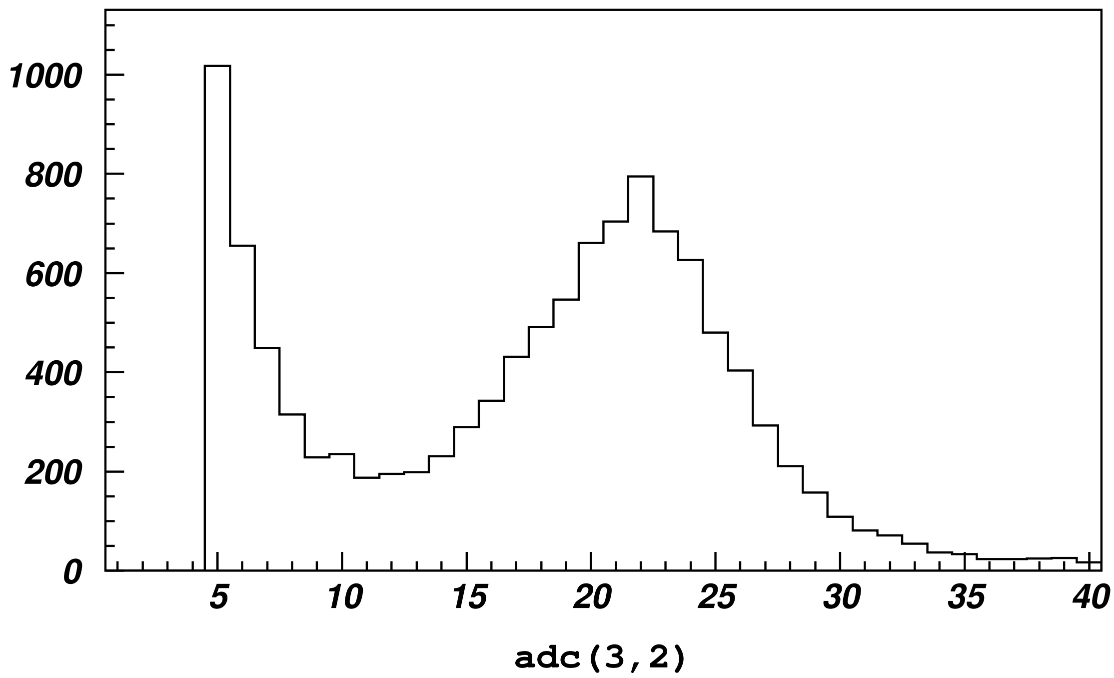
- PMT - FEU84/3
- PMT base - Cockroft–Walton, pilot design
- LED calibration system, pilot design
- readout - CAMAC ADC LeCroy 2282A, CAMAC–VME adapter, Cetia board

Setup November'96



MIP calibration

High background $\rightarrow$
use trigger on two scintillating counters *and* isolation criterium $\rightarrow$
see clean MIP signal in $3 \times 4 = 12$ **channels**



Muon system will probably allow us to do the same in the HERA-B environment

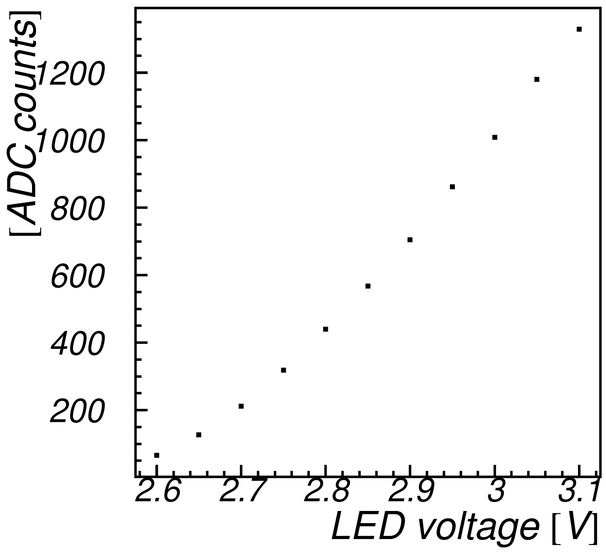
LED calibration

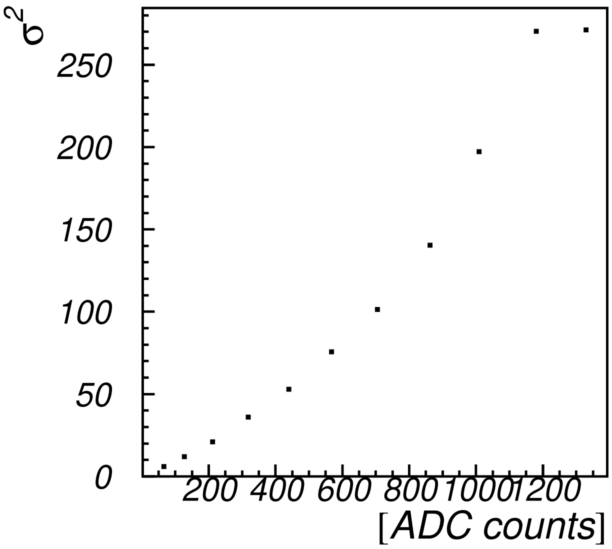
Idea:

$$G = \left[\frac{\#phe}{ADC count}\right]$$

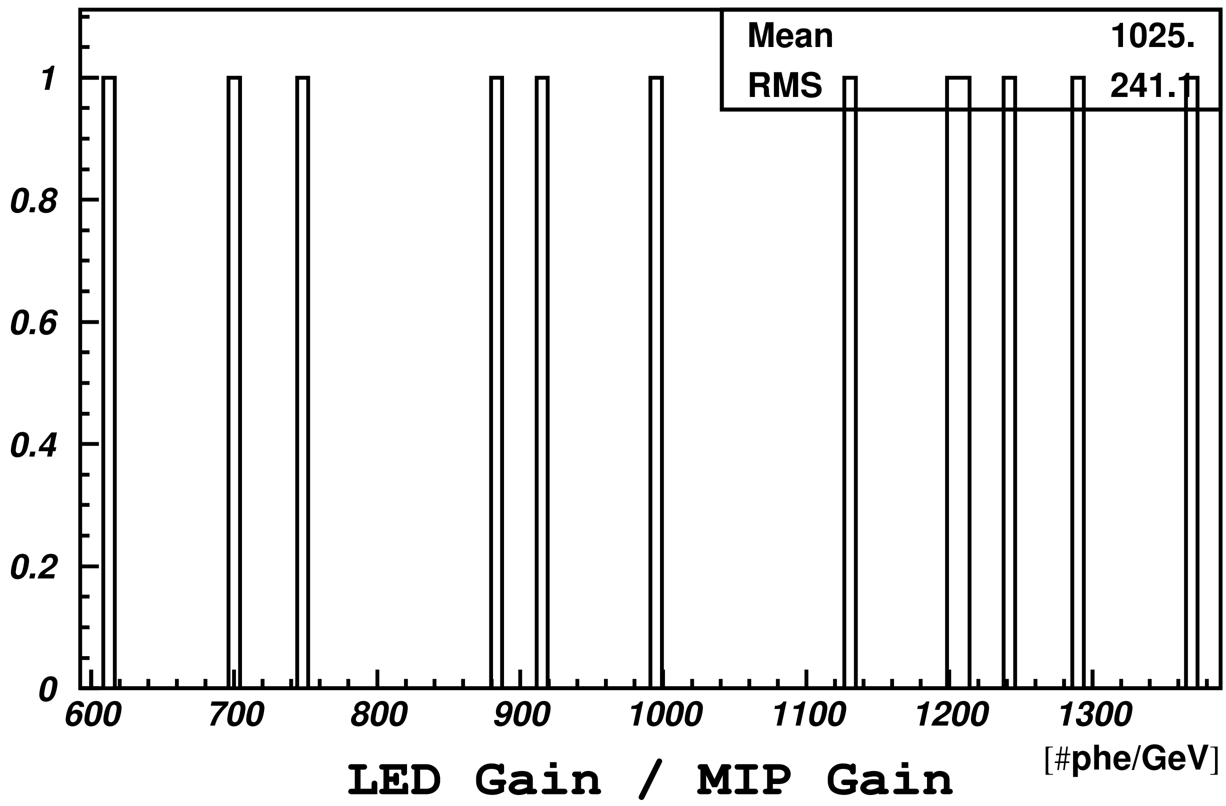
$$A = \frac{1}{G}N$$

$$\sigma_A = \frac{1}{G}\sqrt{N} \oplus ...$$



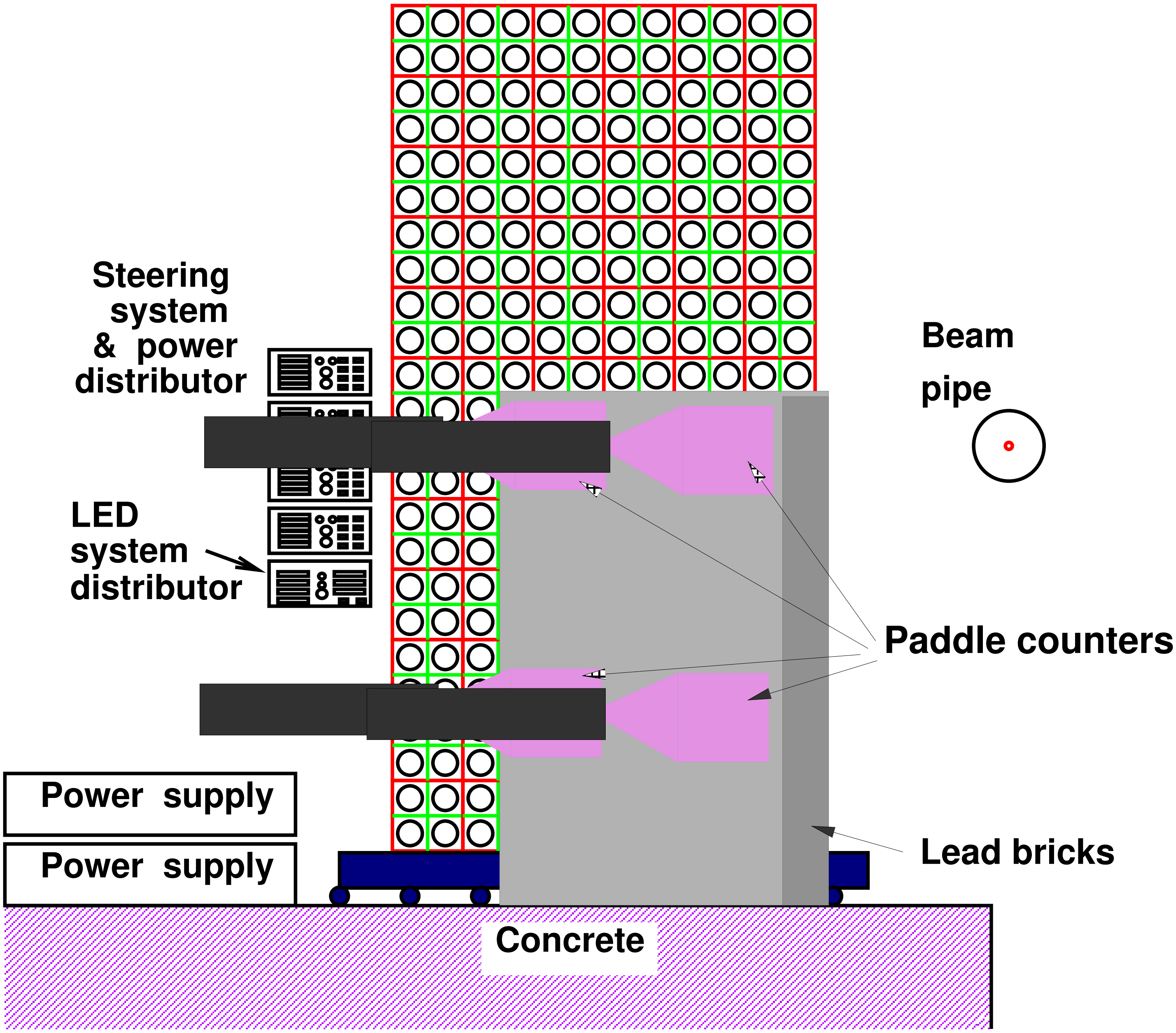


LED calibration

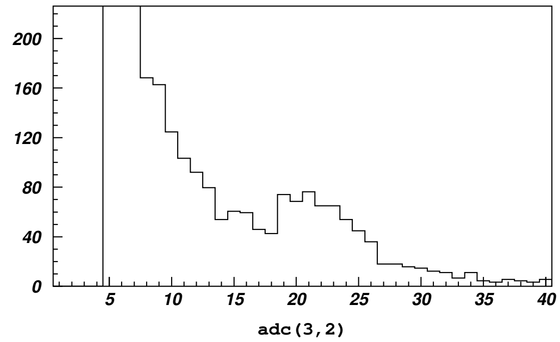


Precalibration of PMTs and new design of Cockroft–Walton bases should help

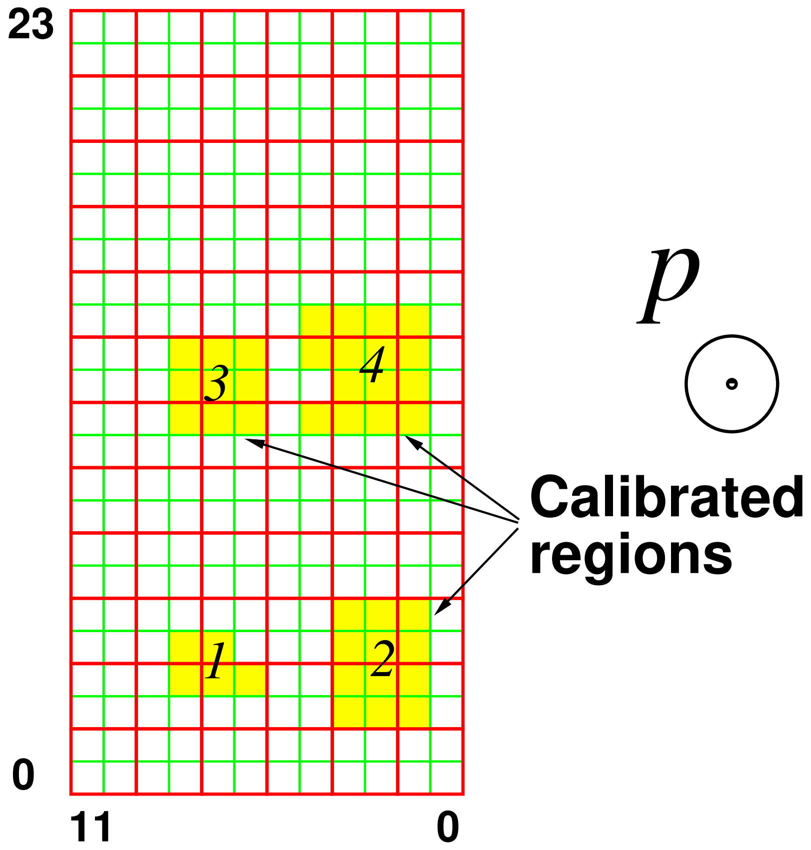
Setup December'96



More MIP calibration in December



with offline selection of counter amplitude

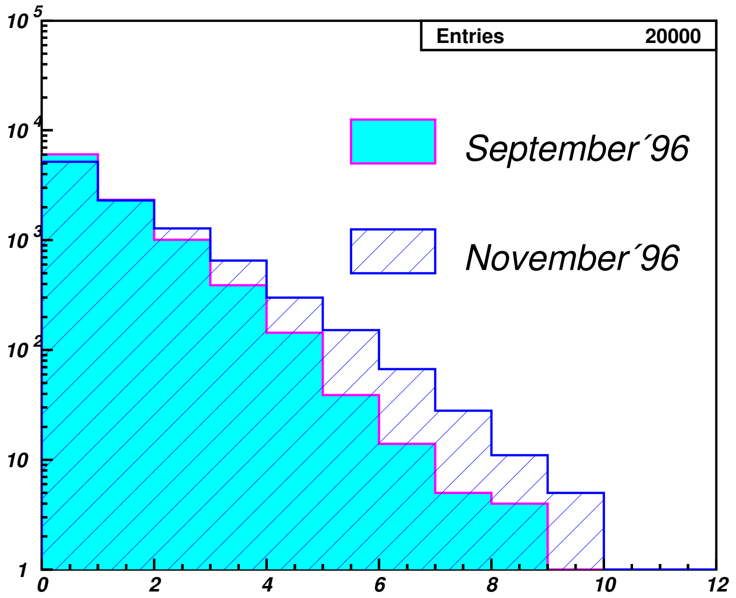


Improvement in MC

Bugs fixed (in public GEANT version also):

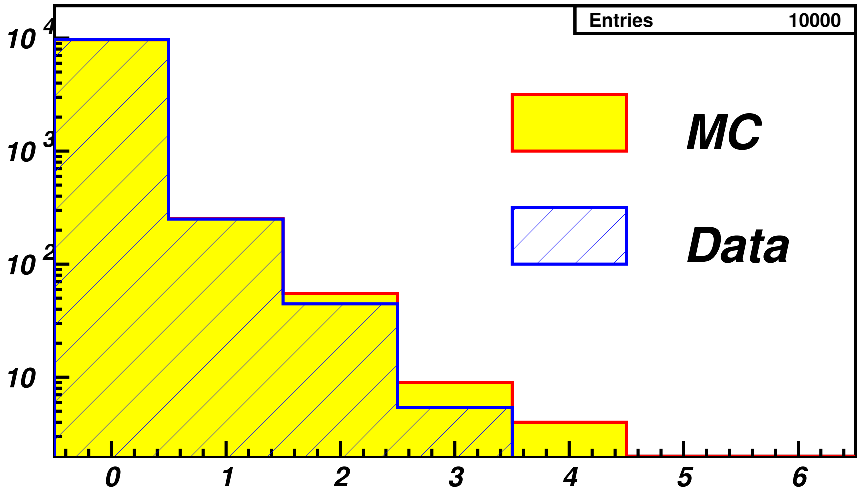
- wrong ECAL geometry
- incorrect shower development

#cells with energy deposition above 1GeV per event:

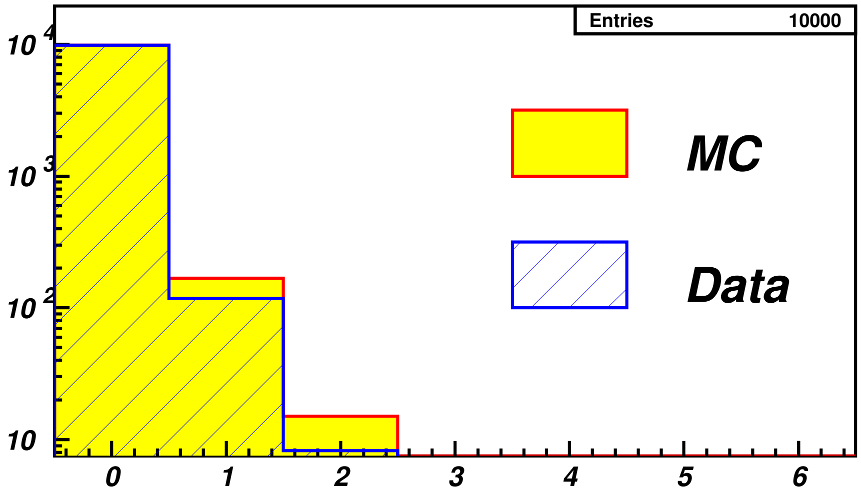


Occupancy

#cells out of the 12 calibrated ones with energy deposition above 1GeV per event



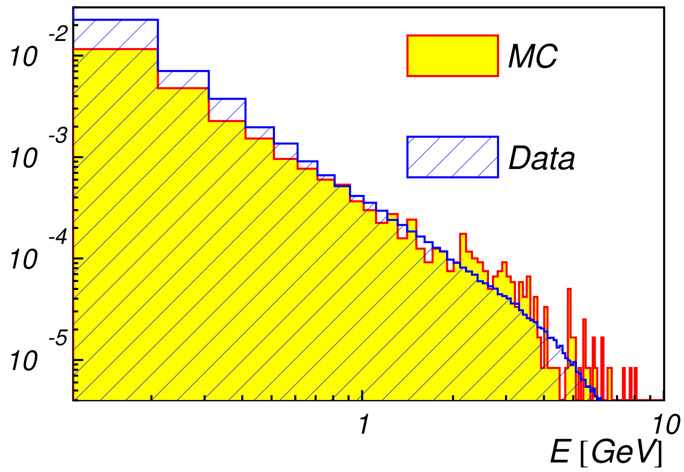
same for 2Gev



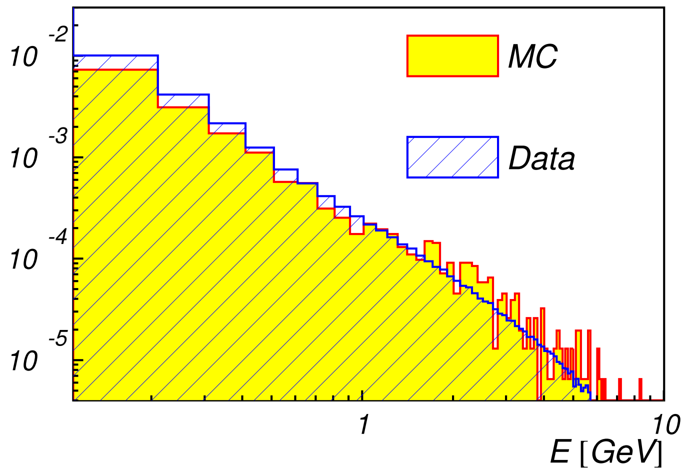
Data *vs* MC

Energy deposited in one cell per *interaction* in 12 calibrated towers

November'96 (with beam pipe protection):



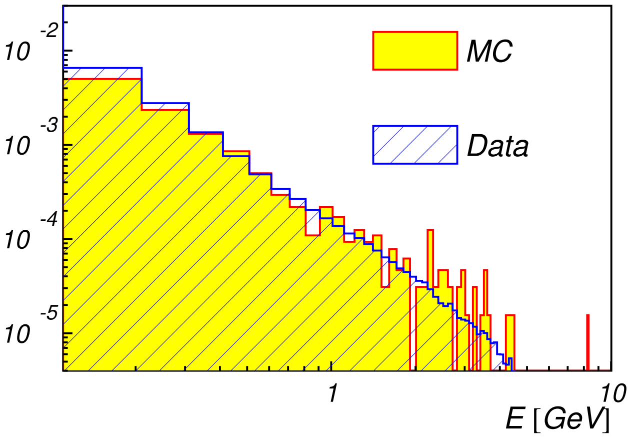
December'96 (without beam pipe protection):



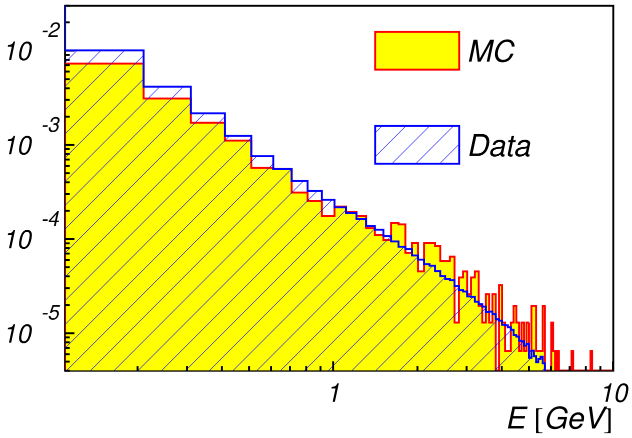
Data *vs* MC

Energy deposited in one cell per *interaction*

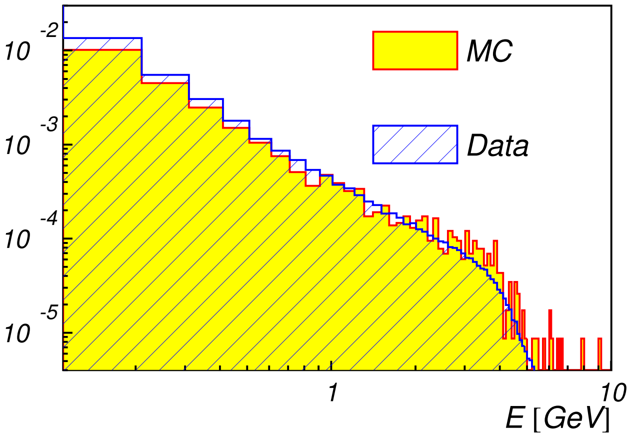
Region#1:



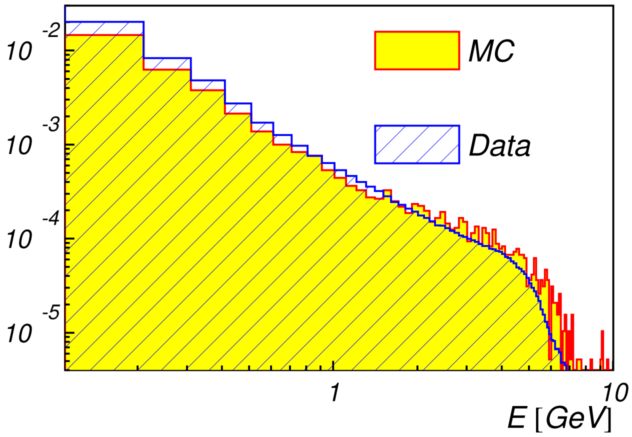
Region#2:



Region#3:



Region#4:



Data is in a *reasonable agreement* with (de-bugged) MC

Run'96 summary

- large scale prototype of the HERA-B ECAL works
- we were able to perform physical (MIP) calibration of 41 channel
- **occupancies in the calibrated towers are consistent with the Monte–Carlo predictions**
- LED system requires further studies
- **the new CW base design should be implemented a.s.a.p.**