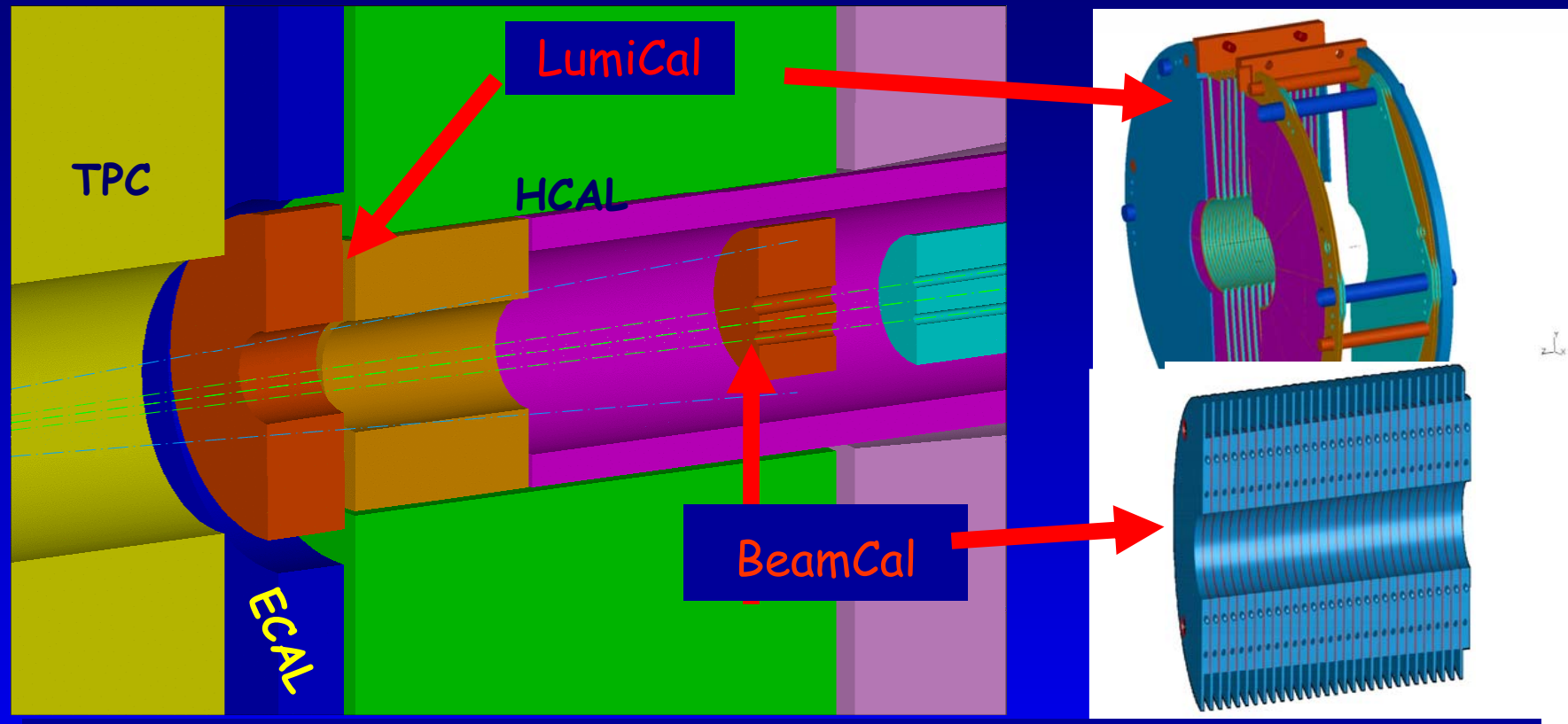


Conclusions of the Paris Meeting



Wolfgang Lohmann,
DESY

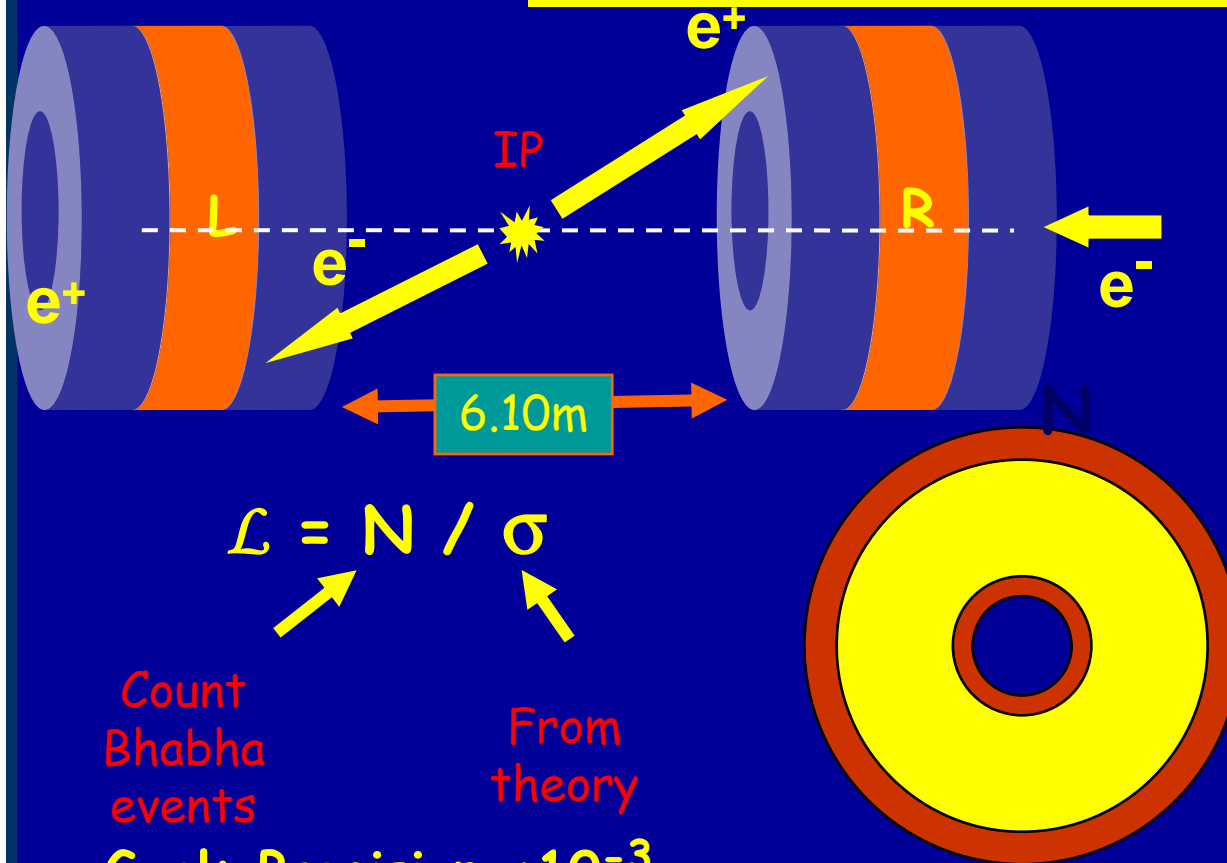
BeamCal and LumiCal (Example LDC, 14 mrad):



- precise (LumiCal) and fast (BeamCal) luminosity measurement
- hermeticity (electron detection at low polar angles)
- mask for the inner detectors
- GamCal ~150 m downstream for fast luminosity

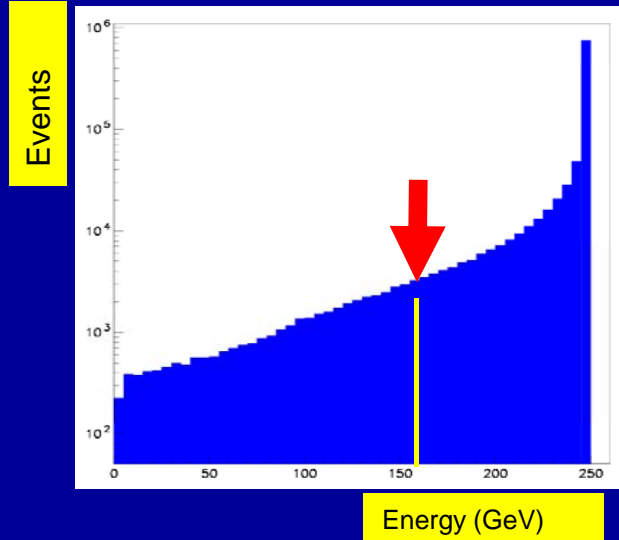
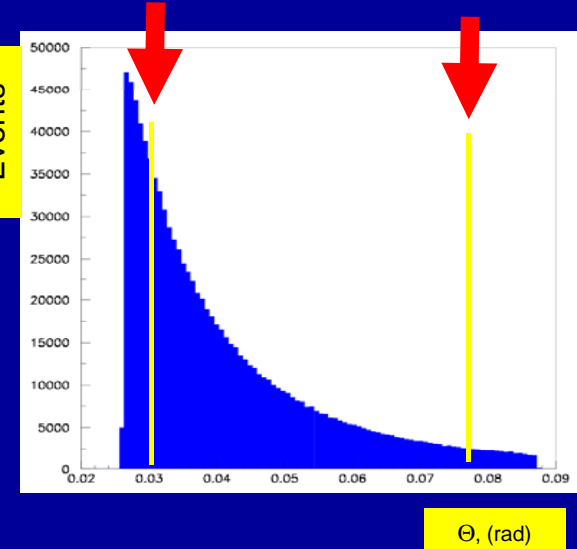
Physics Justification: Talks by A. Djouadi, Z. Zhang

Measurement of \mathcal{L}



Goal: Precision $< 10^{-3}$

- Inner acceptance radius : $< 10 \mu\text{m}$
- Distance between Calorimeters: $< 600 \mu\text{m}$
- Beam position inside Calorimeter: $< 1000 \mu\text{m}$



Talks by L. Zaweijski, I. Sadeh, B. Pawlik, P. Ruzicka

Where we are:

- Design studies of the calorimeters relatively advanced
- Lots of details need further studies
 - beam-pipe design, how much material in front of LumiCal can be tolerated
 - realistic detector, including calibration uncertainties, cross talk, noise.....

Practical Issues:

Fix Geometry and Segmentation

Occupancy per bunch train (> 0.25 mip)

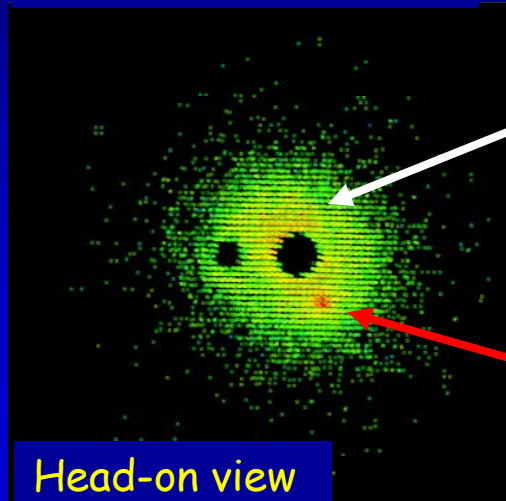
Signal spectrum \rightarrow Input for FE ASICs

Working group: Bogdan, Ivanka, Iftach

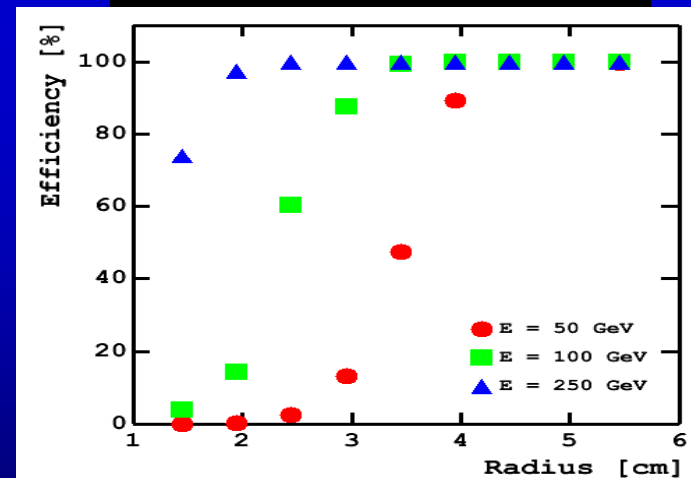
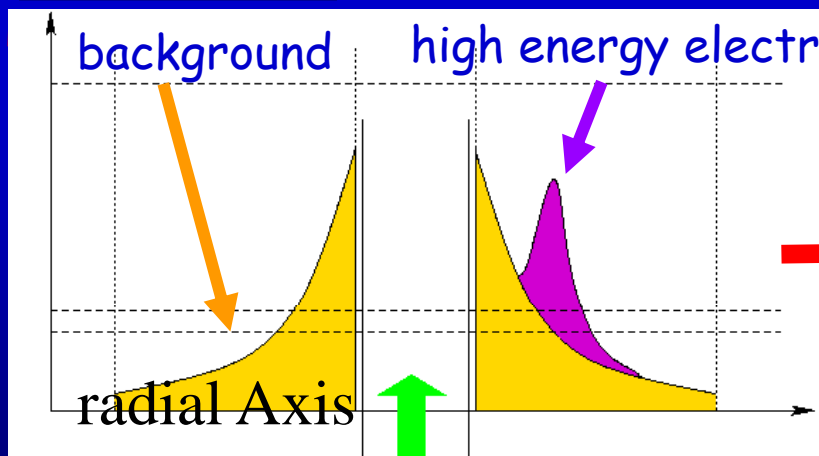
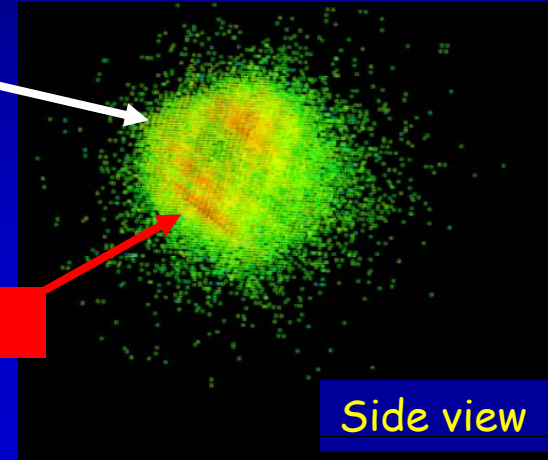
Goal: produce a paper (EUDET note) with the relevant numbers before end of the year, including all processes we know so far at CMS energies 350 and 500 GeV

BeamCal Functions

E.g. from UC Boulder



Efficient detection of high energy electrons is essential for search experiments



Finely segmented, compact calorimeter with fast readout

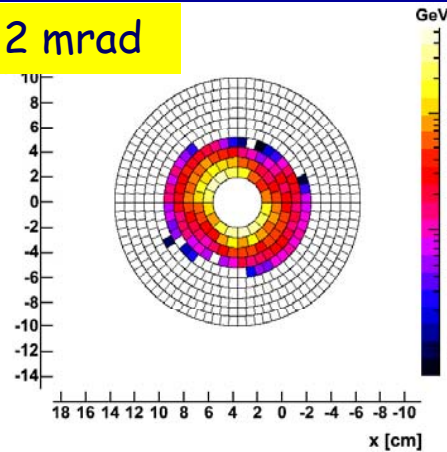
October

Talk by Uriel & Co, background issues: Ch. Grah, O. Dadoun

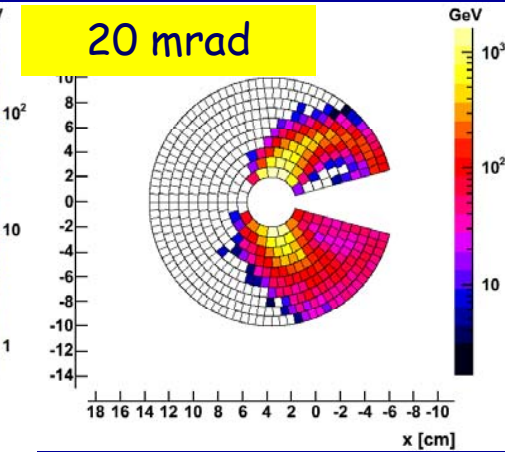
BeamCal & GamCal

Determination of beam parameters from beamstrahlung depositions on BeamCal:

2 mrad

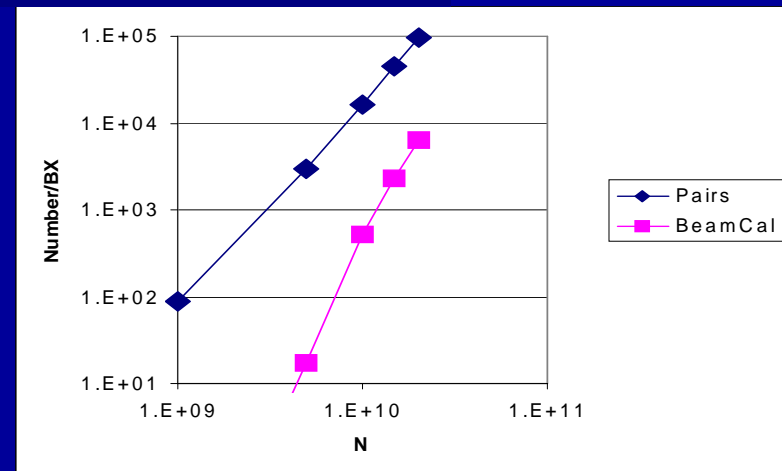
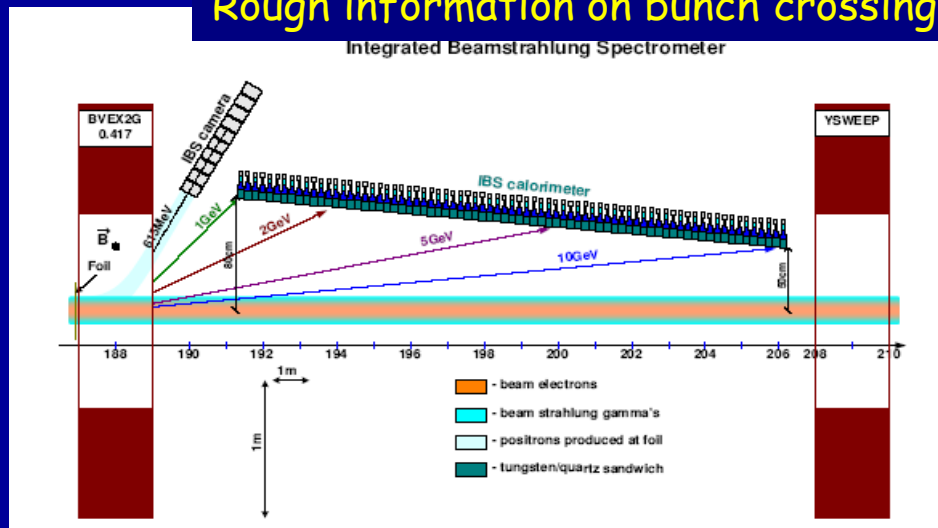


20 mrad



Quantity	Nominal Value	Precision
σ_x	553 nm	2.9
σ_y	5.0 nm	0.2
σ_z	300 μm	8.5

Rough information on bunch crossing at low bunch charges



Talks by M. Zeller, Ch. Grah

Where we are:

- Design studies of the calorimeters relatively advanced
- Open issues
 - realistic detector, including calibration uncertainties, cross talk, noise.....
 - realistic beam transport simulations
 - beam-pipe shape
 - design studies for GamCal

BeamCal & LumiCal Geometry:

Previous geometry was summarized by Christian.

Geometry group: Christian, Bogdan, Sergey, Iftach, Woitek

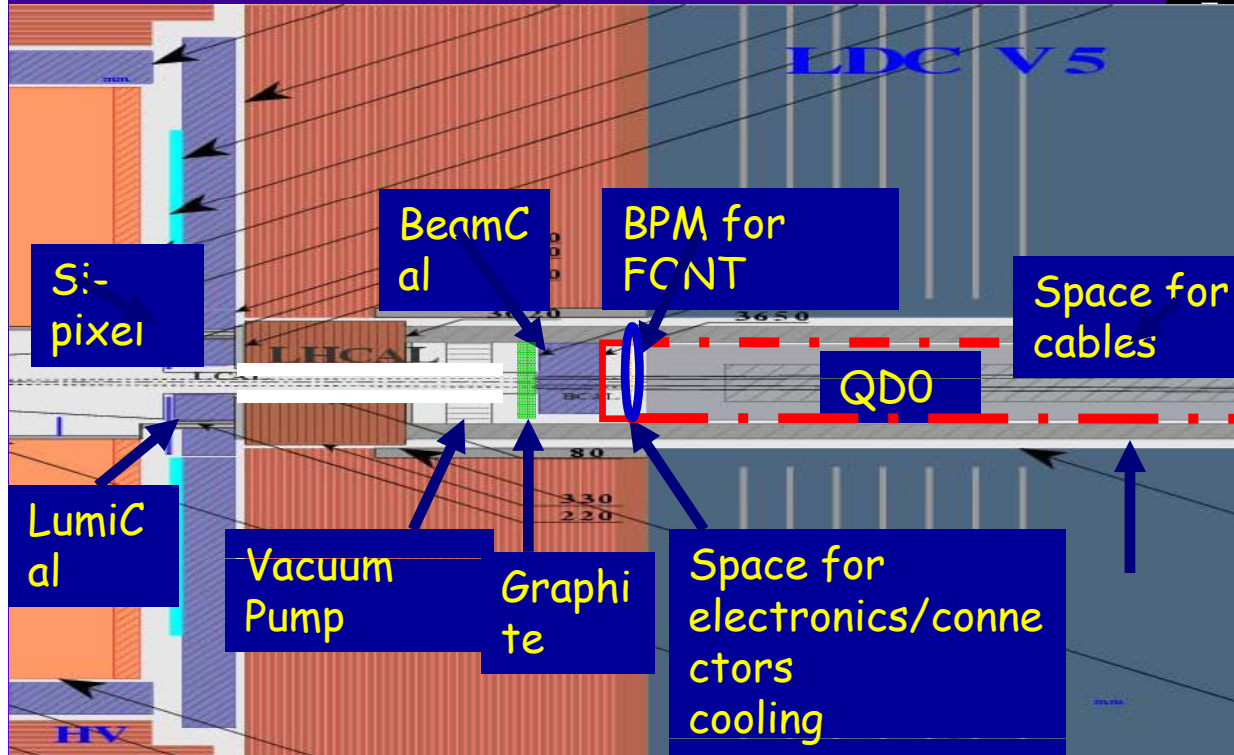
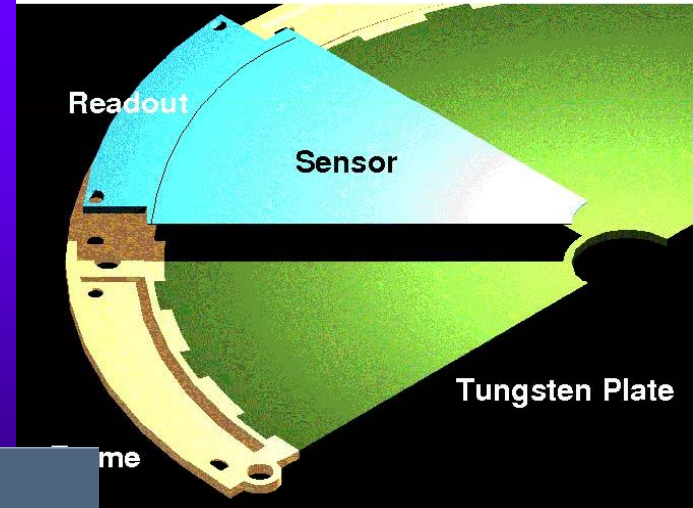
- Define the 'acceptance' areas of the calorimeters
- define the space needed for the calorimeters
- define the beam-pipe shape

And write it down!

Mechanics

Talks by S. Schuwalow, W. Wierba

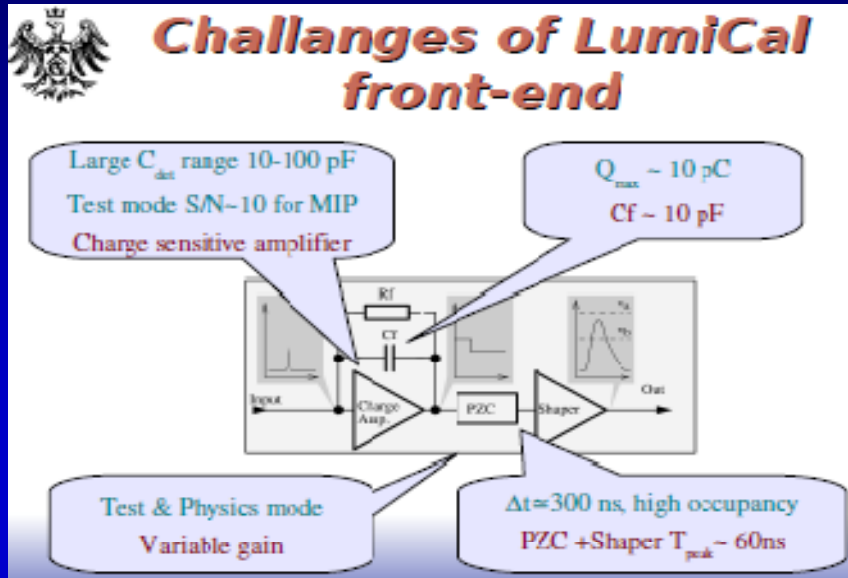
Sensor and R/O Hybrid



But:

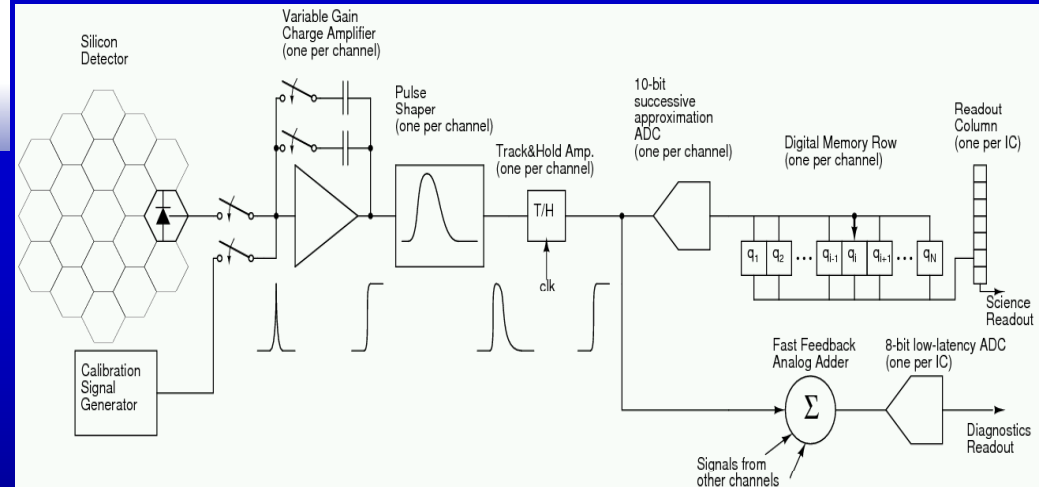
We have to enhance our effort for detector integration!

FE Electronics Development



First (few 10) pieces of FE ASICS
Produced and prepared for tests
Tests complete in December 2007
Submission based on a refined
design beginning of 2008

32 channels per chip
Large input signals, up to 40p
Low latency output, sum of all channels is read out after
each bx at 8 bits for beam diagnosis (fast feedback)
Radiation hardness requirements
Minimum power dissipation
Prototype in 0.18- μ m TSMC CMOS technology



Talks by A. Abusleme, M. Idzik, Ch. Swientek, K. Afanaciev

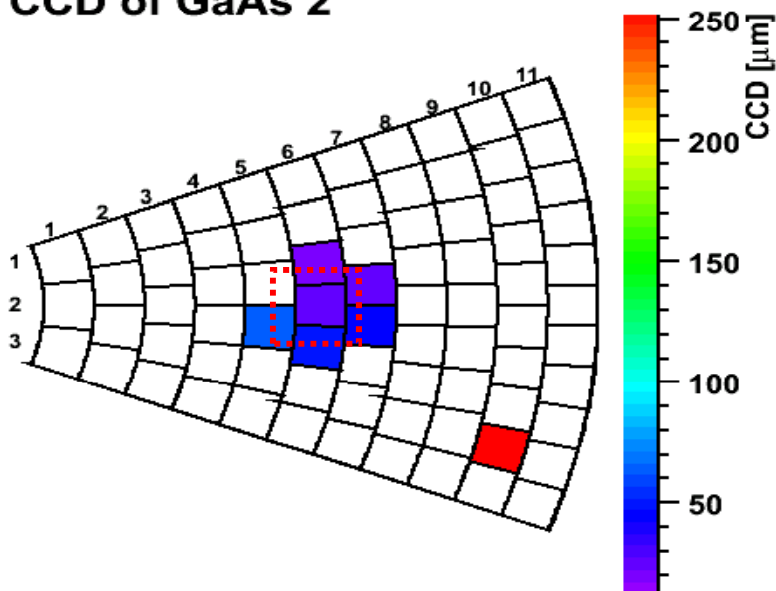
Real Progress, Input from simulations, realistic tests with sensors

Octobre 2007

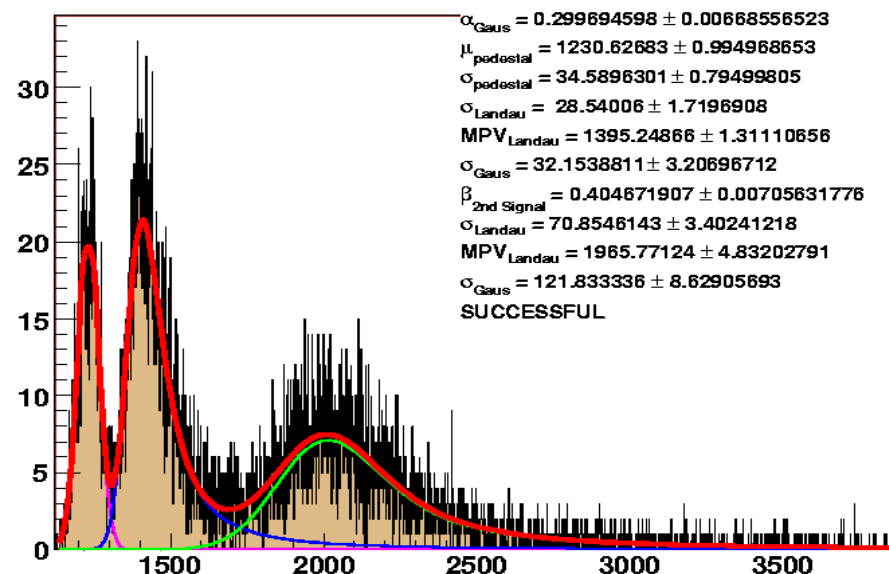
LAL Orsay

Sensor Development and Test

CCD of GaAs 2



GaAs2_05-09-07_+200V_r6p5_003

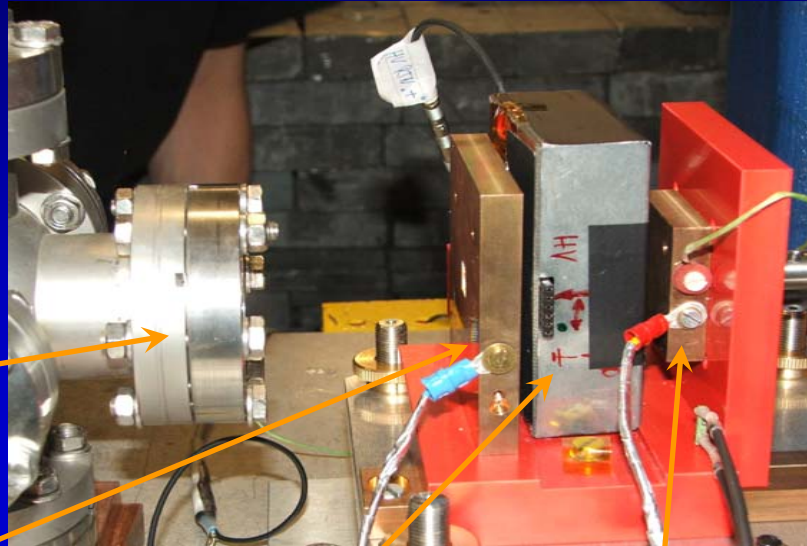


Talks by M. Ohlerich, A. Ignatienko, P. Bergonzo, S. Schuwalow, W. Wierba

Progress, but no solution so far!

- publish what we have
- Interaction with the producers for possible improvements, new collaborators (Saclay?)
- Preparation of tests within EUDET

Testbeam 2008



exit window
of beam line

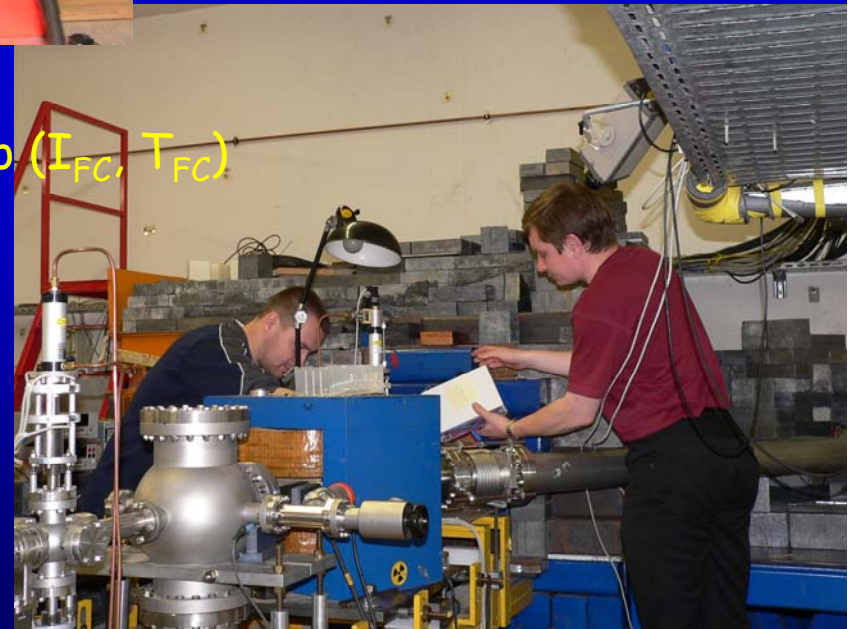
collimator (I_{Coll})

sensor box (I_{Dia} , T_{Dia} , HV)

Faraday cup (I_{FC} , T_{FC})

Test of several
sensor materials
delivered by
members of the
collaboration

we will apply,
We need personal support



Infrastructure for Sensor and FE Tests

We did not discuss detector prototyping. This will be a central issue of the next meeting;

Next Meeting: Where??

PRC, November 2007

One talk in the open Session, Proposal for the speaker:

M. Idzik

- We found new partners in US
- Japanese colleagues will join us
- We had an encouraging review by the global review committee

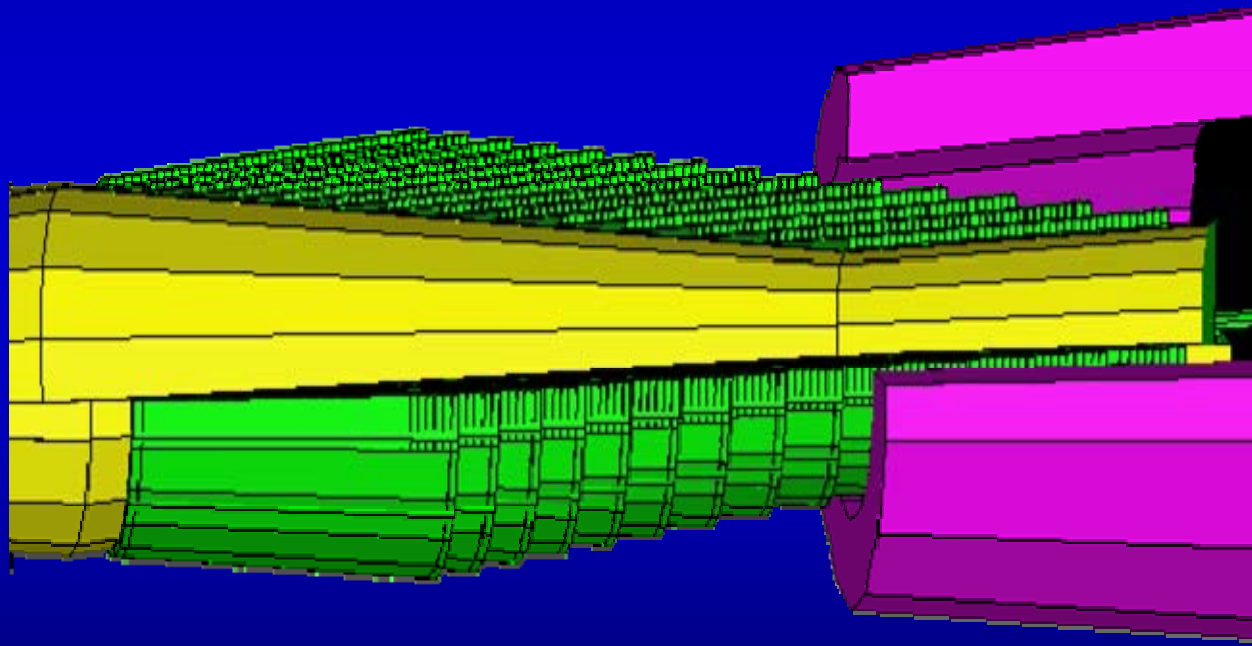
However:

- About 80 Physicists signed the report to the committee
 - here we are 20-30
 - in the table of 'FTEs' working for FCAL I count 25
 - engineering support is far from sufficient
 - funding in Europe is tight, in US it is far from adequate
 - support for testbeam activities is not sufficient.

We are here, in the creative atmosphere in Paris to conclude
On these problems;

Remember: EDR should be ready in 201x!

we would like to thank Leszek Suszycki for
his outstanding contributions to FCAL over
the last ~5 years !
Hope you will not leave us alone
In future !!!



First design of LumiCal by Leszek in 2002