ECal Overview

Raphaël Dupré
For the ECal group

IPN Orsay
CNRS-IN2P3
Université Paris-Sud

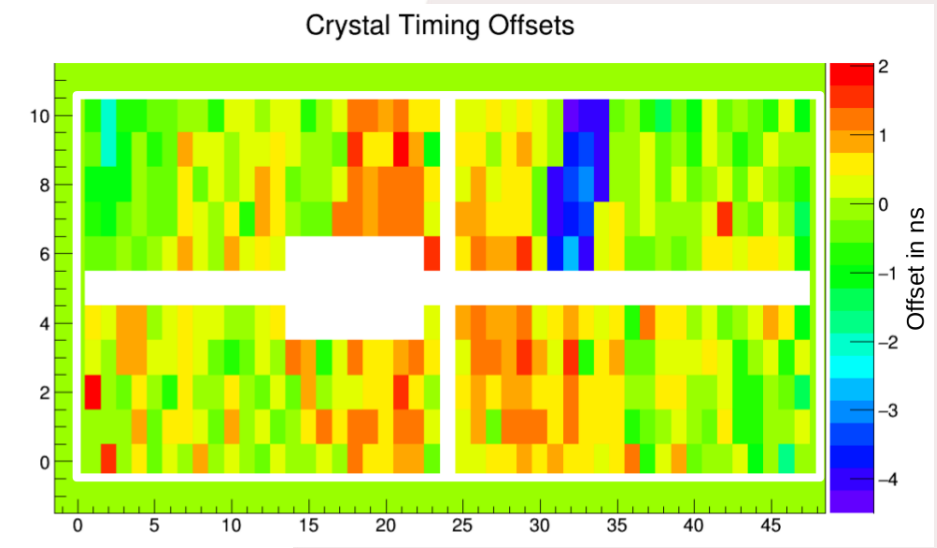
Unité mixte de recherche

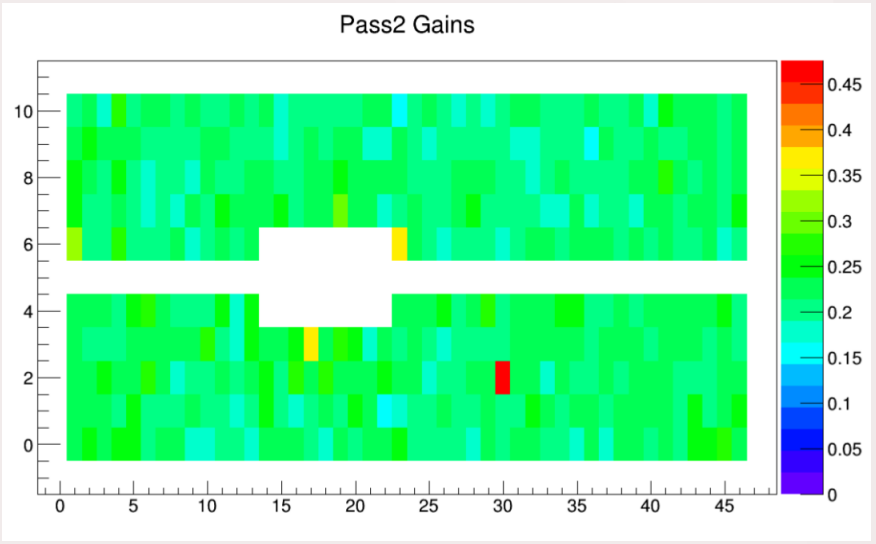
CNRS-IN2P3
Université Paris-Sud

91406 Orsay cedex
Tél. : +33 1 69 15 73 40
Fax : +33 1 69 15 64 70
http://ipnweb.in2p3.fr

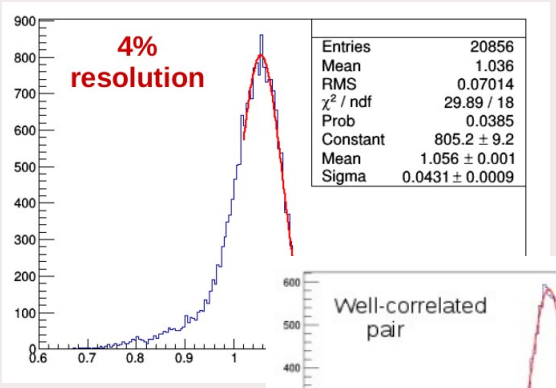
PROJET FINANCÉ PAR L'ANR - PROJECT FUNDED BY THE ANR

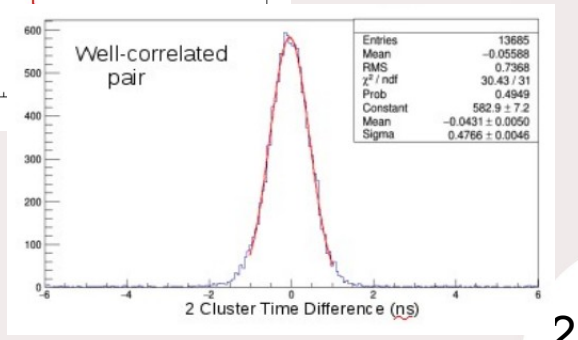
Calibrations



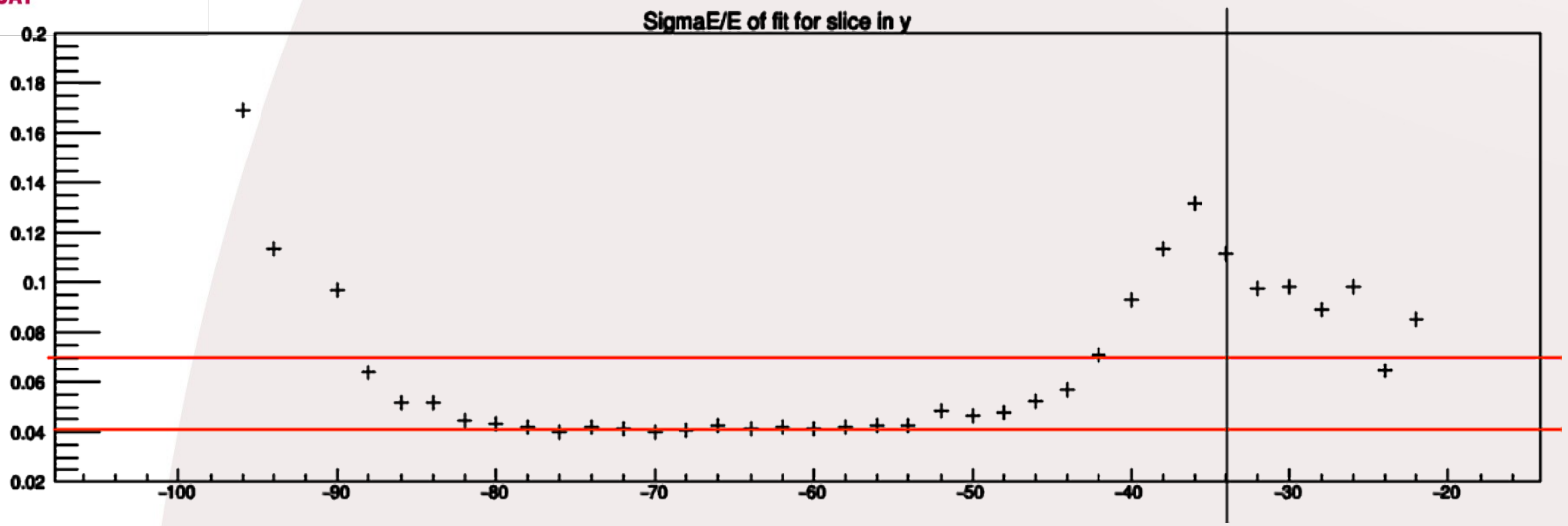


- **Time calibration**
  - Performed using the RF time as reference
  - Time resolution ~400ps
  - Vary with energy
- **Energy calibration**
  - Uses both cosmics and FEE
  - Resolution max ~4%
    (see Holly's talk)





Understanding the ECal



- **Understanding why resolution is 4%**
  - Simulation predicted 3.6%
  - Check pre-amps noise, loss of photons due to imperfect wrapping or crystal spacing
- **Understanding the loss of resolution on sides**
  - Simulation gives very clear indications
  - These need to be checked with data
  - It works well at FEE energy, studies are now extended to Mollers/pi0
- **Track matching**
  - Affected by geometry and depth correction

  (See Holly's talk)

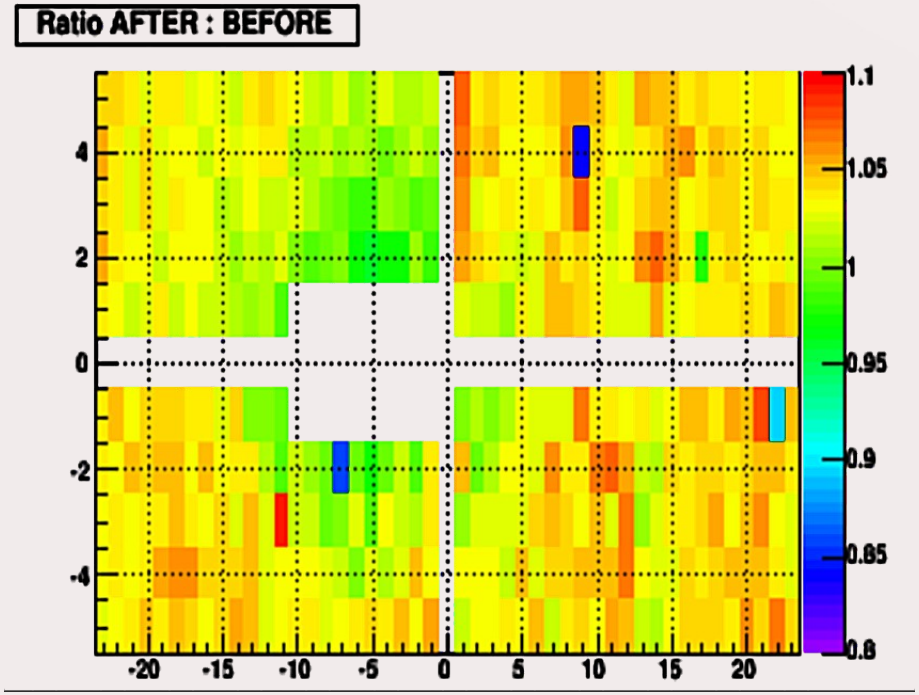
Position Calibration

	Oct 14			Mar 15					
	X	Y	Z	X	Y	Z	X	Y	Z
CTOP_A	-297.99	233.3	937.85	-298.42	233.64	939.16	**-0.43**	**0.34**	**1.3**
CTOP_B	-297.66	233.43	1087.8	-298.01	233.81	1089.09	**-0.34**	**0.38**	**1.29**
CTOP_C	517.26	233.27	937.23	516.81	233.17	938.23	**-0.46**	**-0.1**	**0.99**
CTOP_D	517.76	233.34	1087.27	517.38	233.22	1088.19	**-0.38**	**-0.11**	**0.92**
CBOTT_A	-299.57	-232.09	937.21	-299.9	-232.19	937.27	**-0.33**	**-0.1**	**0.06**
CBOTT_B	-296.38	-232.45	1086.18	-296.76	-232.51	1086.27	**-0.38**	**-0.06**	**0.09**
CBOTT_C	517.58	-231.25	936.03	517.23	-231.68	935.71	**-0.35**	**-0.42**	**-0.33**
CBOTT_D	517.82	-231.24	1086.11	517.54	-231.72	1085.8	**-0.27**	**-0.48**	**-0.32**

	Mar 15			Aug 15					
	X	Y	Z	X	Y	Z	X	Y	Z
CTOP_A	-298.42	233.64	939.16	-298.67	233.7	939.11	**0.25**	**-0.06**	**0.05**
CTOP_B	-298.01	233.81	1089.09	-298.25	233.86	1089.02	**0.24**	**-0.05**	**0.07**
CTOP_C	516.81	233.17	938.23	516.53	233.26	938.25	**0.28**	**-0.09**	**-0.02**
CTOP_D	517.38	233.22	1088.19	517.07	233.24	1088.29	**0.31**	**-0.02**	**-0.1**
CBOTT_A	-299.9	-232.19	937.27	-299.94	-232.07	937.16	**0.04**	**-0.12**	**0.11**
CBOTT_B	-296.76	-232.51	1086.27	-296.81	-232.44	1086.27	**0.05**	**-0.07**	**0**
CBOTT_C	517.23	-231.68	935.71	517.21	-231.41	935.97	**0.02**	**-0.27**	**-0.26**
CBOTT_D	517.54	-231.72	1085.8	517.44	-231.45	1086.01	**0.1**	**-0.27**	**-0.21**

- **Position has been resurveyed**
  - All are within 300 microns
- **Crystal position has been recalculated**
  - Taking box deformation into account
- **Position in software (simulation & reconstruction)**
  - Only global vertical (Y) position available
  - We need to be able to put angles and horizontal changes
  - We need to update the crystal spacing
    (see Annie's talk)

LED monitoring



- **LED system has been working during the spring run**
  - However that was not the focus we lack some data
  - Stability looks good
  - We can see some radiation effects at 2-3% level ?
    - LEDs or crystals?
- **To be done**
  - More user friendly interface
  - Test the continuous mode
  - Take more data during run to study radiation damage (see Andrea's talk)

Slow Controls - Docs

- **Slow controls evolve**
  - Single window controls for the ECal
  - Will simplify the documentation a little

Summary

- **Ecal is well calibrated**
  - Time and energy are done
  - Position is being finalized
- **We are now checking how well we can trust the Monte-Carlo**
  - Edge effects are critical
  - They very well reproduced at FEE energy
- **LED monitoring**
  - Works very well
  - Its full potential remains to be studied
- **Documentation is well advanced**
  - Already some calibration notes… in progress for more!