Distribution of the ALIBAVA system

Marco-Hernández, R.[a]

[a] *Instituto de Física Corpuscular (IFIC), Universidad de Valencia-CSIC,Valencia, Spain.*

Manuel Lozano

Centro Nacional de Microelectrónica IMB-CNM (CSIC), Barcelona, Spain

Gianluigi Casse

University of Liverpool, UK

Outline

- Production status
- Quality control tests
- System distribution
- ALIBAVA distribution status
- Low temperature problem and solution

Production status

- We produced 5 prototypes of the system in January of 2008.
- We have produced a batch of 22 systems in 2009
- We have machined 20 boxes for the MB
- We have assembled 20 flat cables
- We have purchased the rest of items for distribution (AD/DC, USB cable, HV connector).
- There is a software version for Linux operational and we expect to have a Windows version in the near future.
- There are also software installation and quick start guides for the system.

Quality Control tests

- **PCB inspection before population**
  - **Visual inspection and continuity test in critical signals.**
- **PCB tests after population**
  - **Continuity test: visual inspection of ICs and continuity in critical signals.**
  - **PS test: power supply levels verification.**
  - **FPGA programming: FPGA operation checking and programming.**
  - **Functionality test: operation of MB with DB and software for configuration, calibration laser setup and RS setup.**

System distribution

- We distribute with each system:
  - 1 MB with box.
  - 1 DB with box.
  - Software copy.
  - Documentation.
  - 1 power supply (AC/DC adaptor).
  - 1 flat cable.
  - 1 USB cable.
  - 2 fanin sets glued to two detector boards.
  - 1 pack of extra fanins (6 extra fan_int_det).
  - 2 detector boards (one of each type).
  - 2 HV Lemo connectors for detector power cable.
- We are distributing the system from Valencia since April of 2009.
- We shipped the first systems without DB box, without extra fanins and just with one detector board in order to speed up the process.
  - These items are included with the system.
  - They will be shipped as we receive them (coming week)

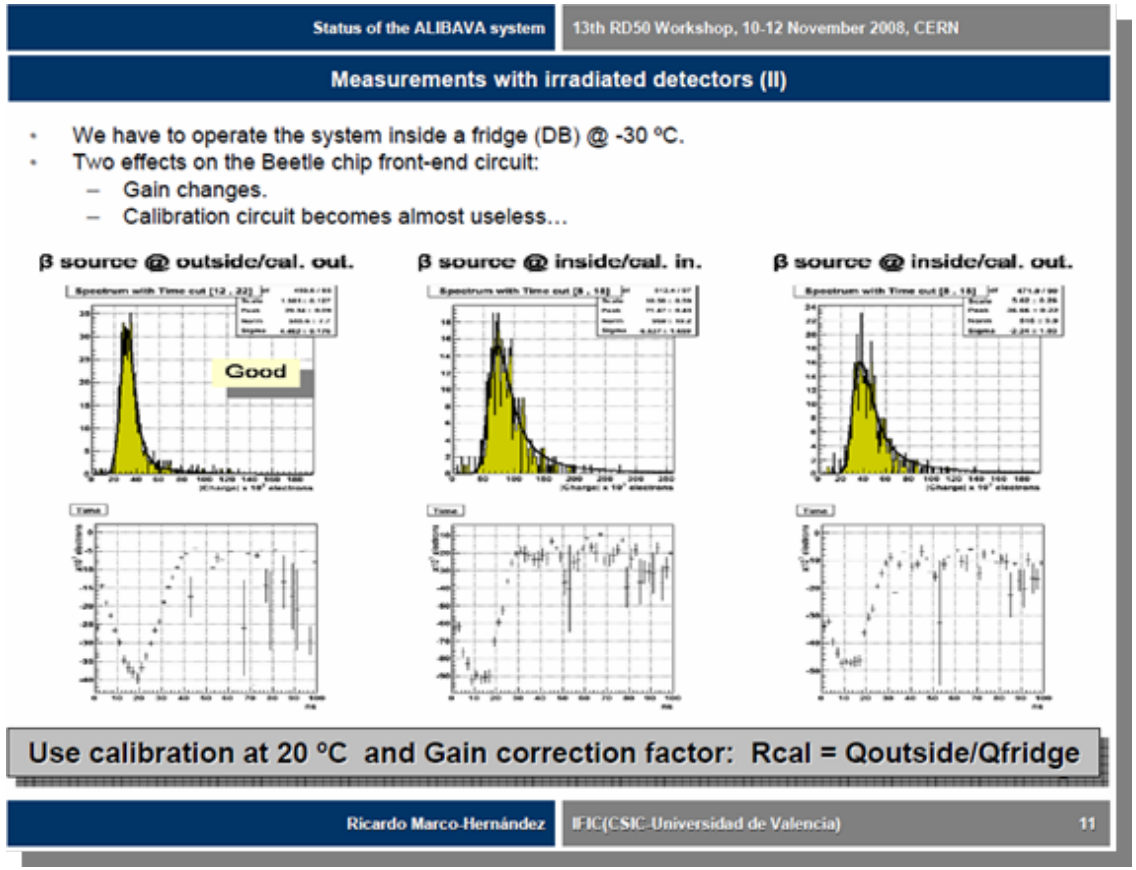
ALIBAVA distribution

- **We have up to now 16 customers for 18 ALIBAVA systems:**
- **10 customers are RD50 members**
  - **Subsidized 2,000 x 10 = 20,000 €**
  - **RD50 contribution = 9,000 € (13,600 CHF in components)**
- **Also orders for extra DBs.**
  - **Finishing their production**
- **We have proposed two methods of payment:**
  - **Directly through D+T Microelectrónica (fast)**
  - **By means of CERN EDH: D+T Microelectrónica is registered (waiting for CERN order)**

Calibration problem

- **At last RD50 meeting we presented a problem we discovered when operating the system at low temperatures**

- **It was tracked back to be related to a power regulator at the daughter board**



CCE as a function of temperature

Non-irradiated, 300 mm thick, n-in-p FZ

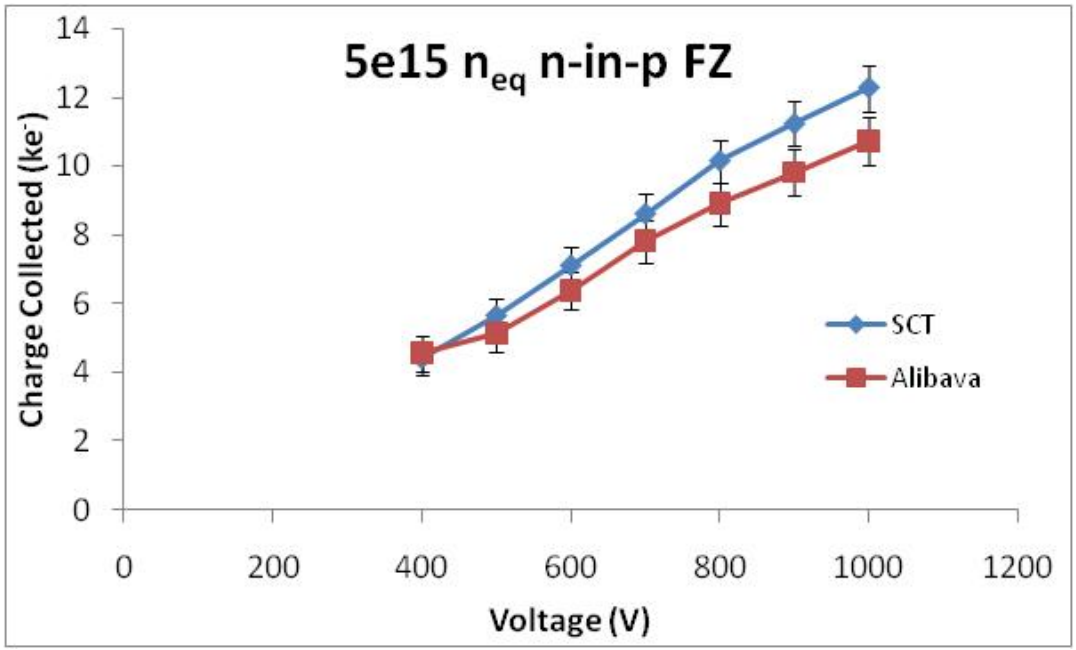
Temperature	Signal (ADC)	Gain (Unbonded)	Gain (Bonded)	Signal (Unbonded gain)	Signal (Bonded gain)
+ 20 C	206	118 e-/ADC	141 e-/ADC	24200	29000
– 20 C	230	102 e-/ADC	119 e-/ADC	23500	27400

After fix to daughter board, gain change accurately tracked by calibration. The default gain calibrations gives reasonable results, but suggest using MIP signals on non-irradiated sensors.

The gain is miscalculated if bonded to sensor as charge is shared to the neighbours in the sensors. It might be possible to use the other Beetle chip on daughter board to determine gain.

Cross-Calibration

- First comparison of SCT128 and Alibava (after daughter board fix) using same sensor
- Results are almost consistent even assuming only 4% calibration error on each system
  - Results are consistent with a 10% relative error in gain calibration



Daughter board replacement

- We will replace the Regulators on the 14 daughter boards that are currently in Liverpool.
- We will ship these boards (after wire-bonding etc.) to those sites which presently have DBs in exchange for their original DBs to have their regulators replaced at a later date.
- By doing this will ensure that inconvenience is kept to a minimum.