CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE

CSNSM

IN2P3

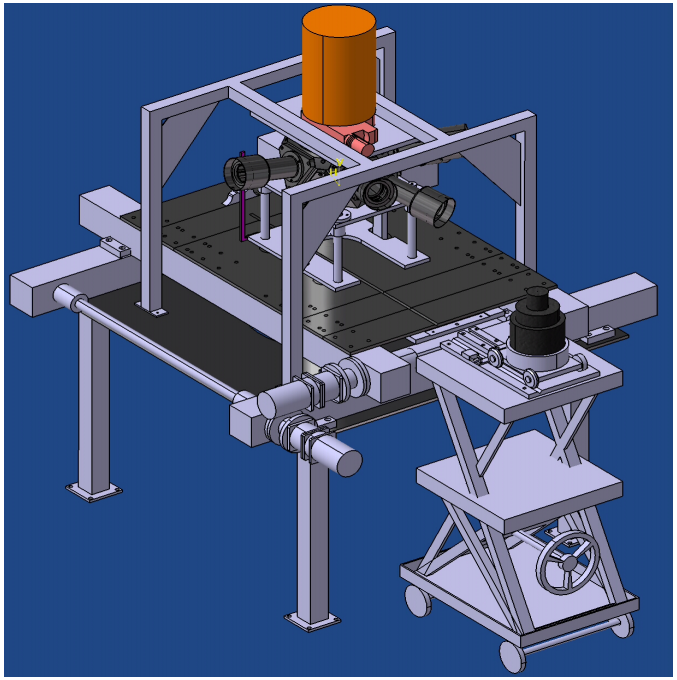
AGATA
ADVANCED GAMMA TRACKING ARRAY

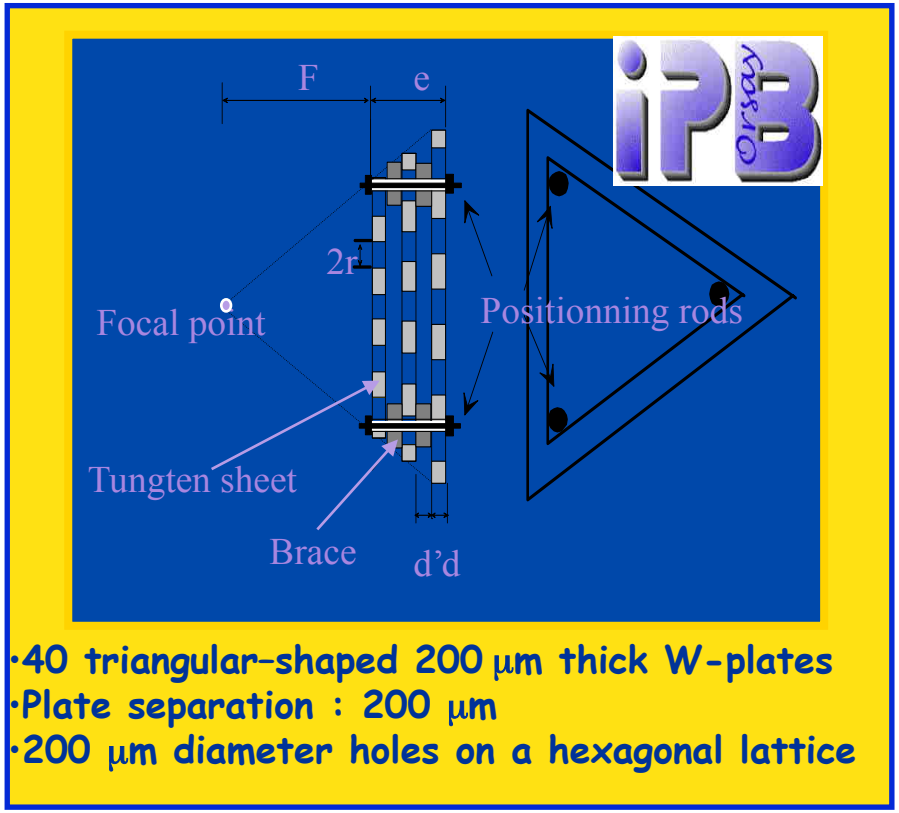
Status of the Orsay scanning System

AGATA week- Lyon 2010

Concept of the scanning set-up at Orsay

Agata detector : θ movment
Xy movment
Tohr : z movment
Coincidences : 6 NaI detectors



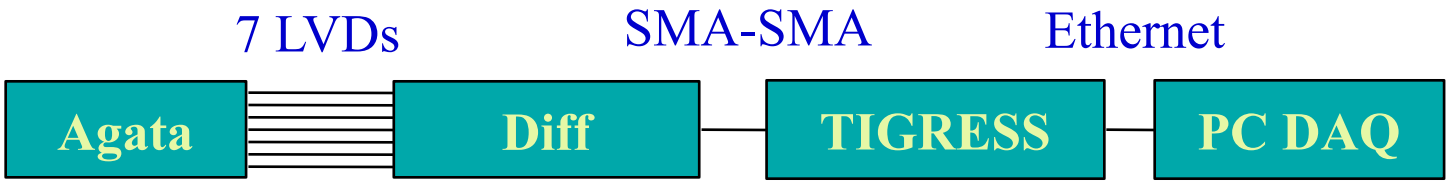


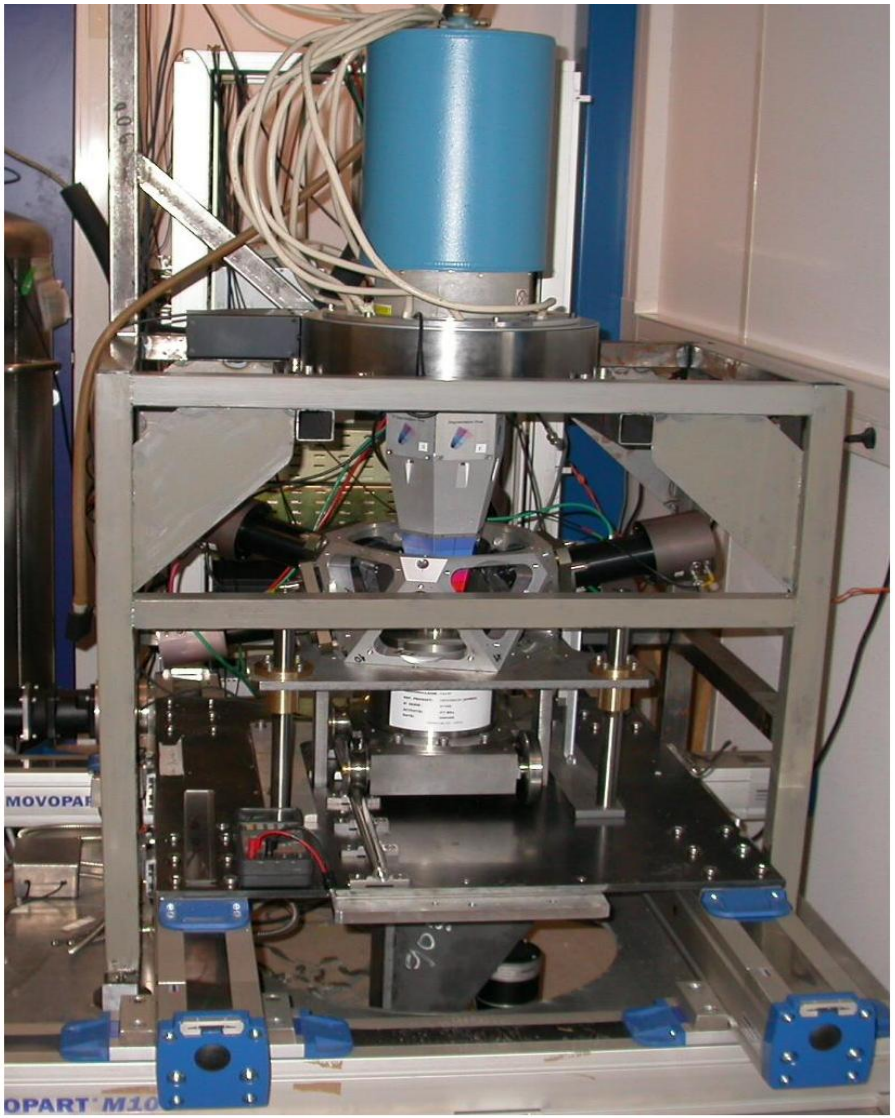
- 40 triangular-shaped 200 μm thick W-plates
- Plate separation : 200 μm
- 200 μm diameter holes on a hexagonal lattice

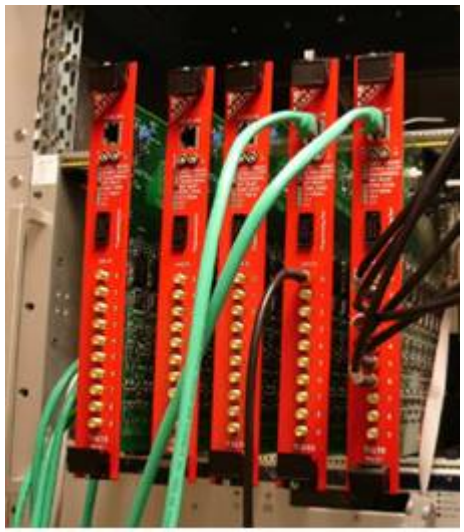
Volume /scan point : 2 x 2 x 2-3 mm3 : 3D Scan of the whole detector

Intense Source : 477 MBq

From simulations, the number of single interaction Compton scatter events at a given position :
400/h @front face, 100/h @front third and 10/h @the back of the detector







TIGRESS

- *50 channels availale*
  (5 TIG10) + 1 collector card (TIG C)
- *Flash ADC 14bits 100MHz*

October 2008: Scanning started ended : December 2008

Single data has been collected using a 1.6 mm collimator
moving in a 2 and 1 mm steps with a 30 seconds time collection

Data format :

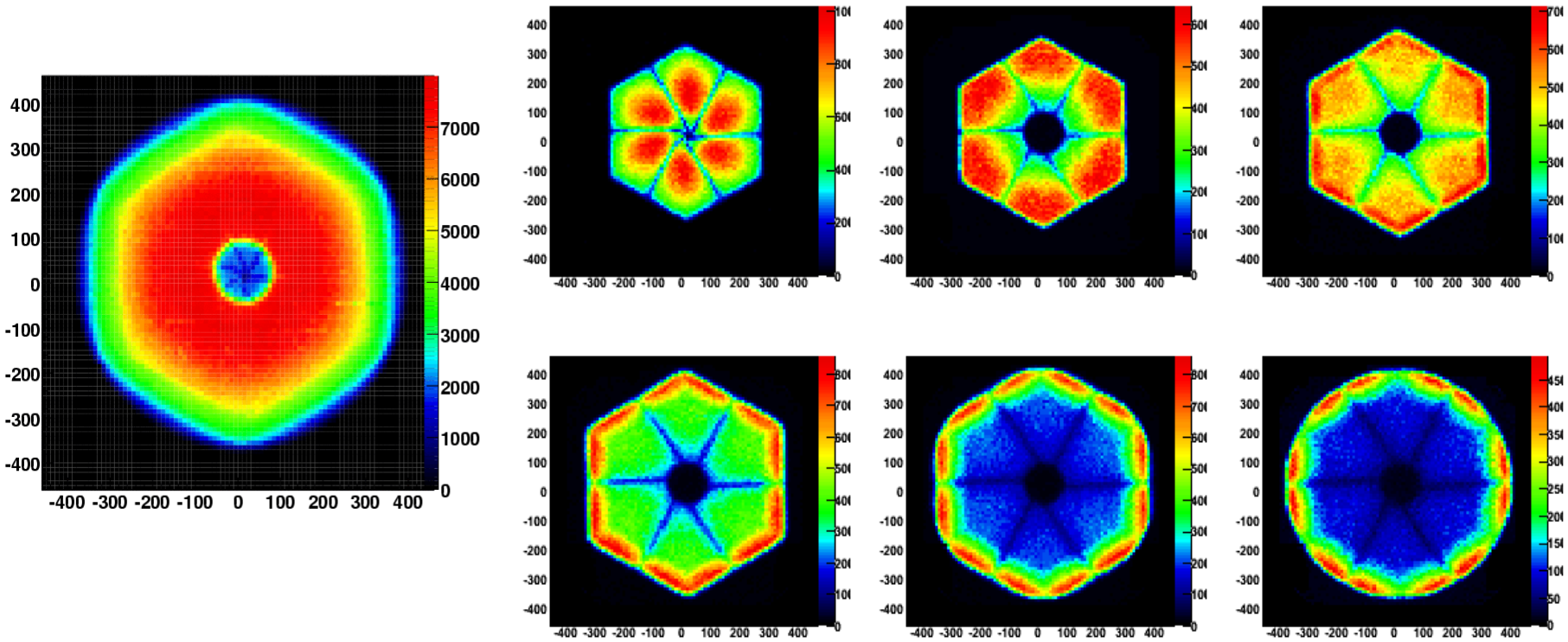
NARVAL :

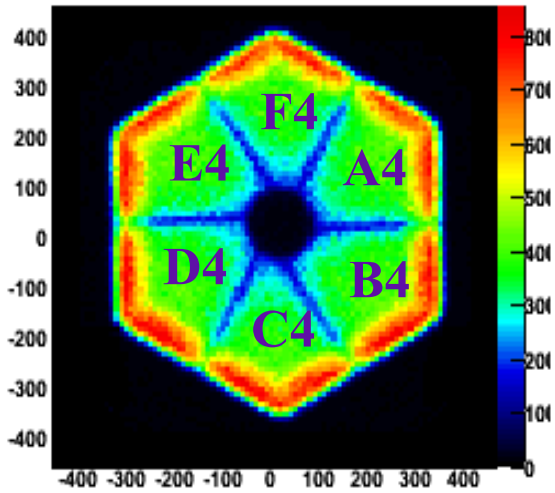
One file/position > scan_x_y_z_θ.event

coincidence scannning for the same positions as Liverpool (line1)

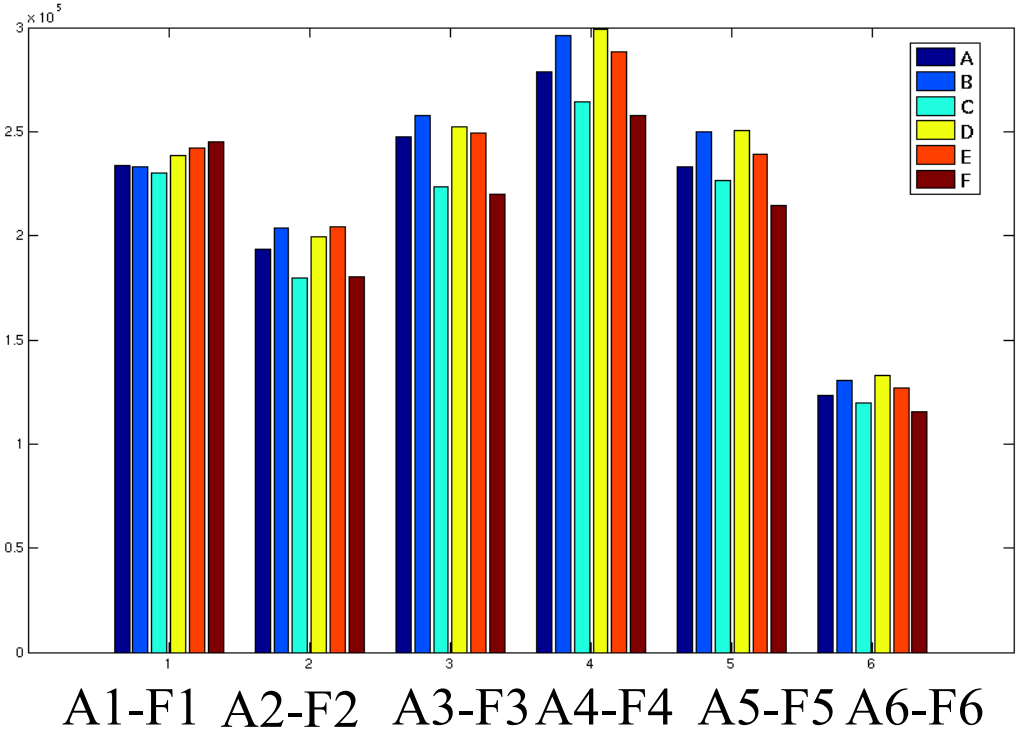
Single scan of S003

- **Source Cs137 477MBq → 2kHz rate**
- **1mm step, 30s/position, 150 points/signal → 1.5 μs/signal**
- **Photopic intensity distrubution (662 keV)**





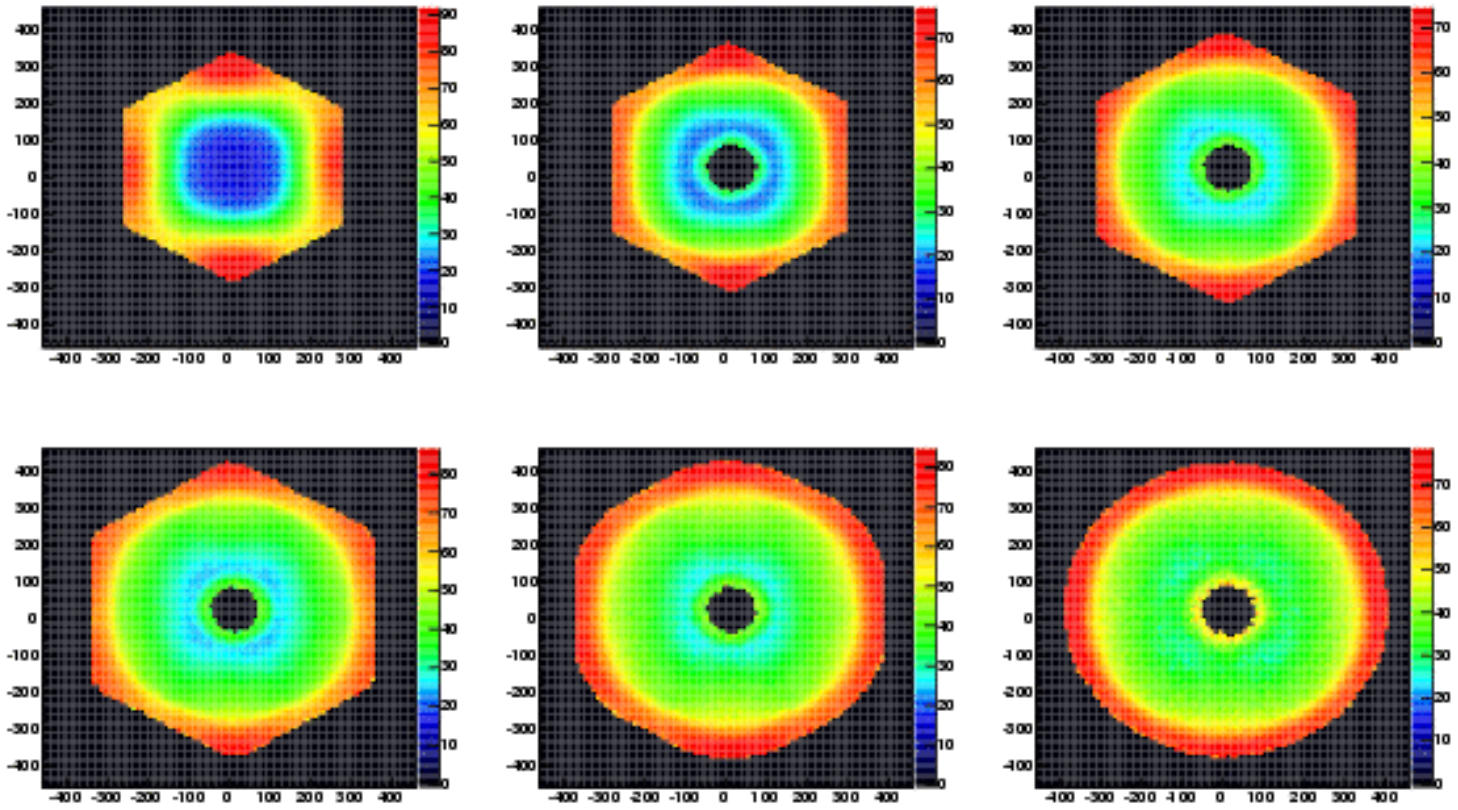
Photopic intensity / segment



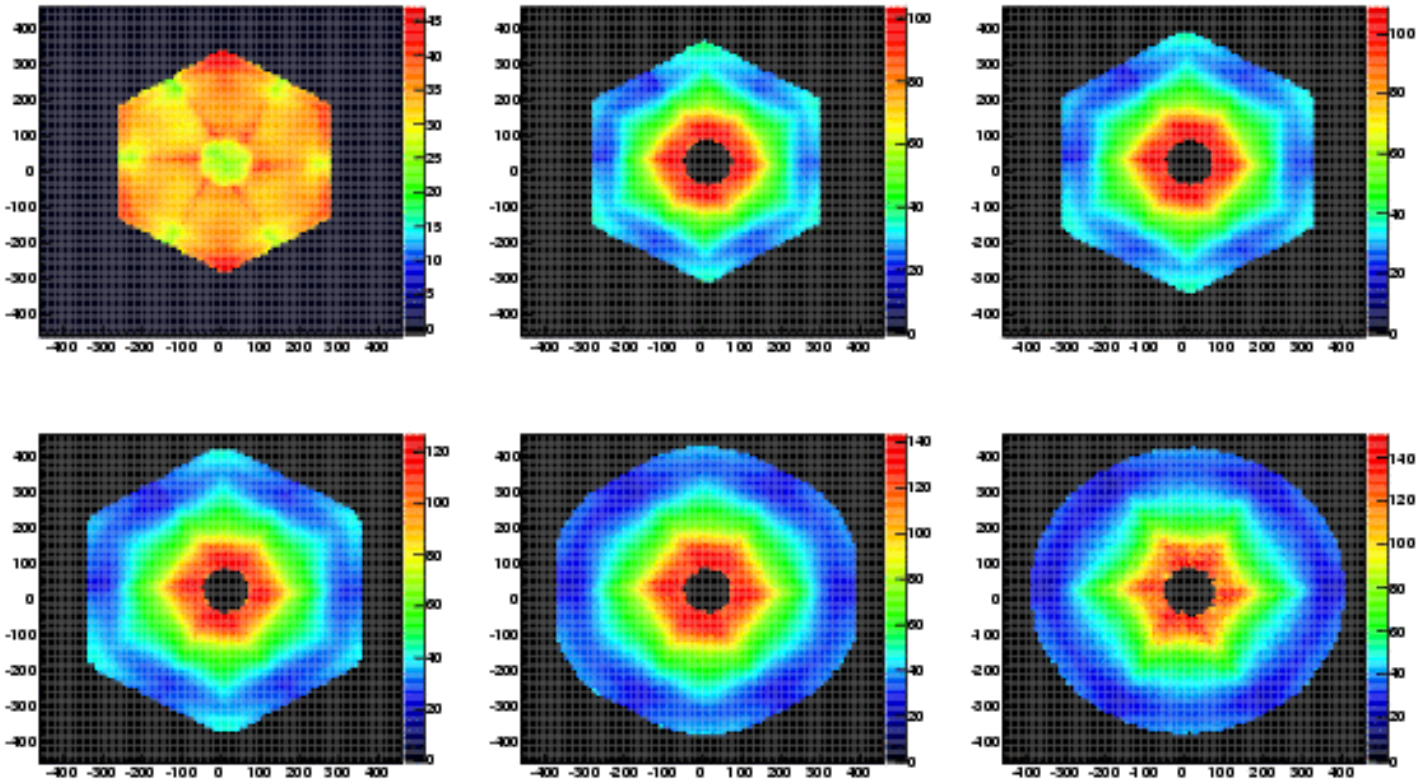
F4/D4 = 0.86

C4/D4 = 0.88

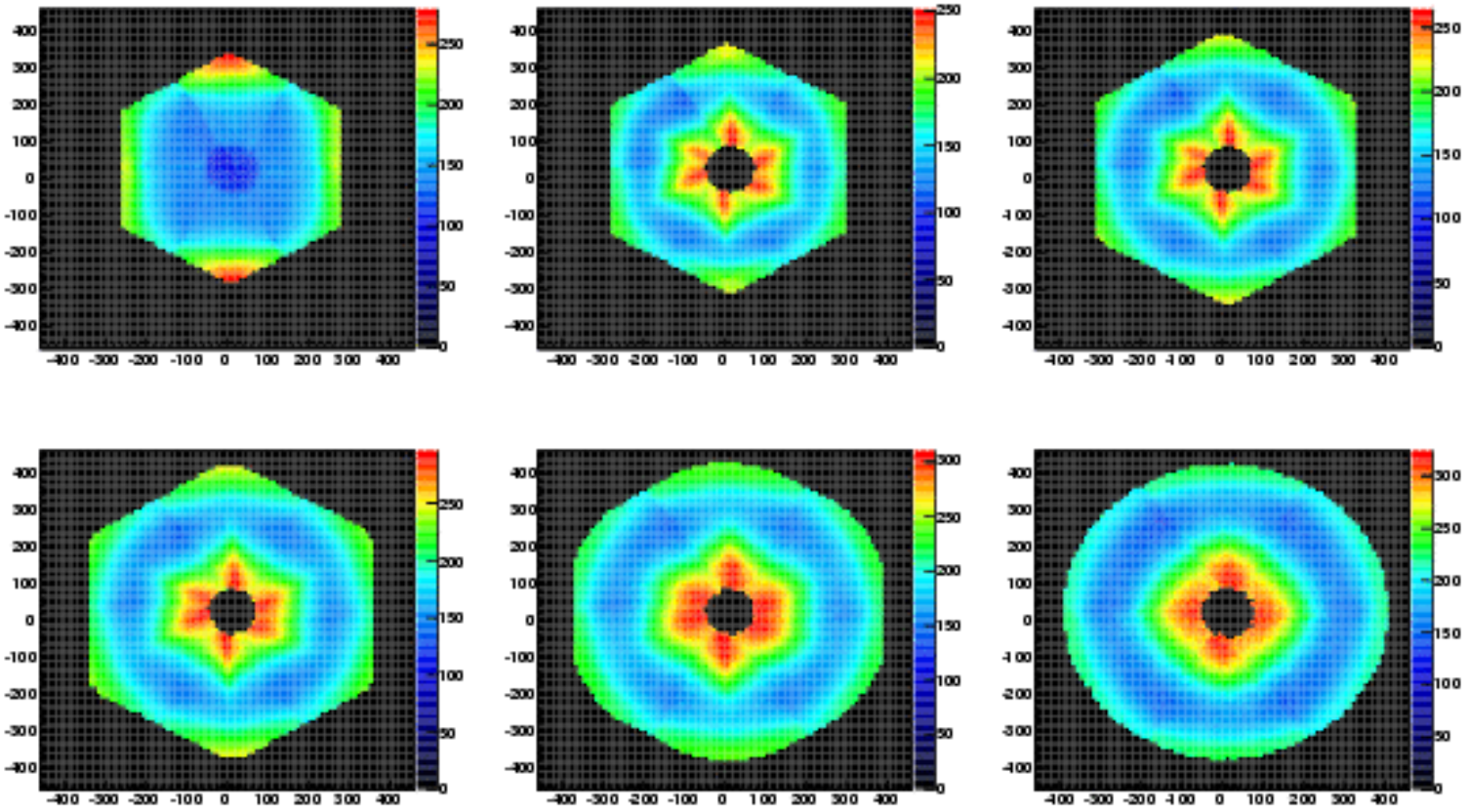
T30-center-contact-all rings



T30-outer-contact



T90-outer-all-rings



T90-center-all-rings

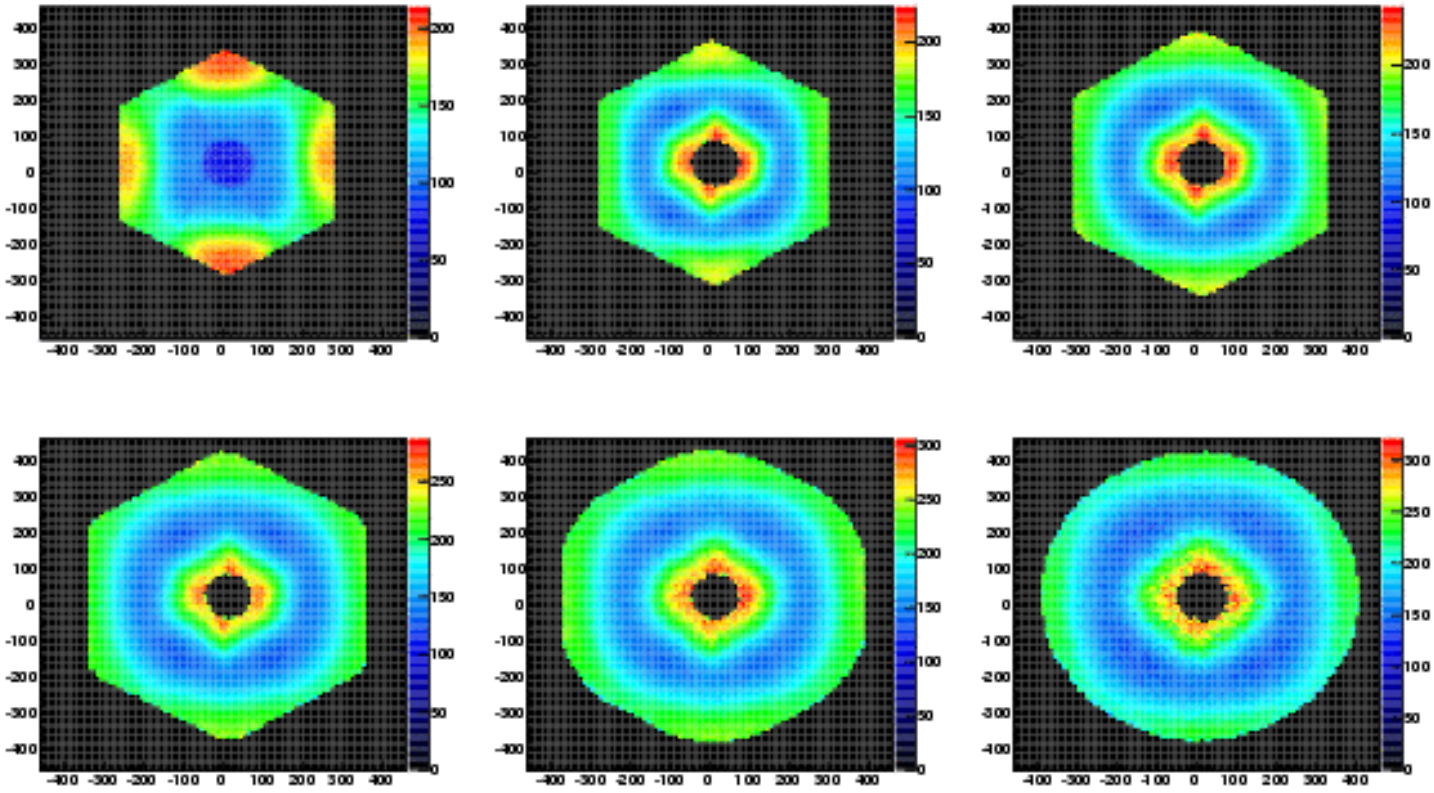
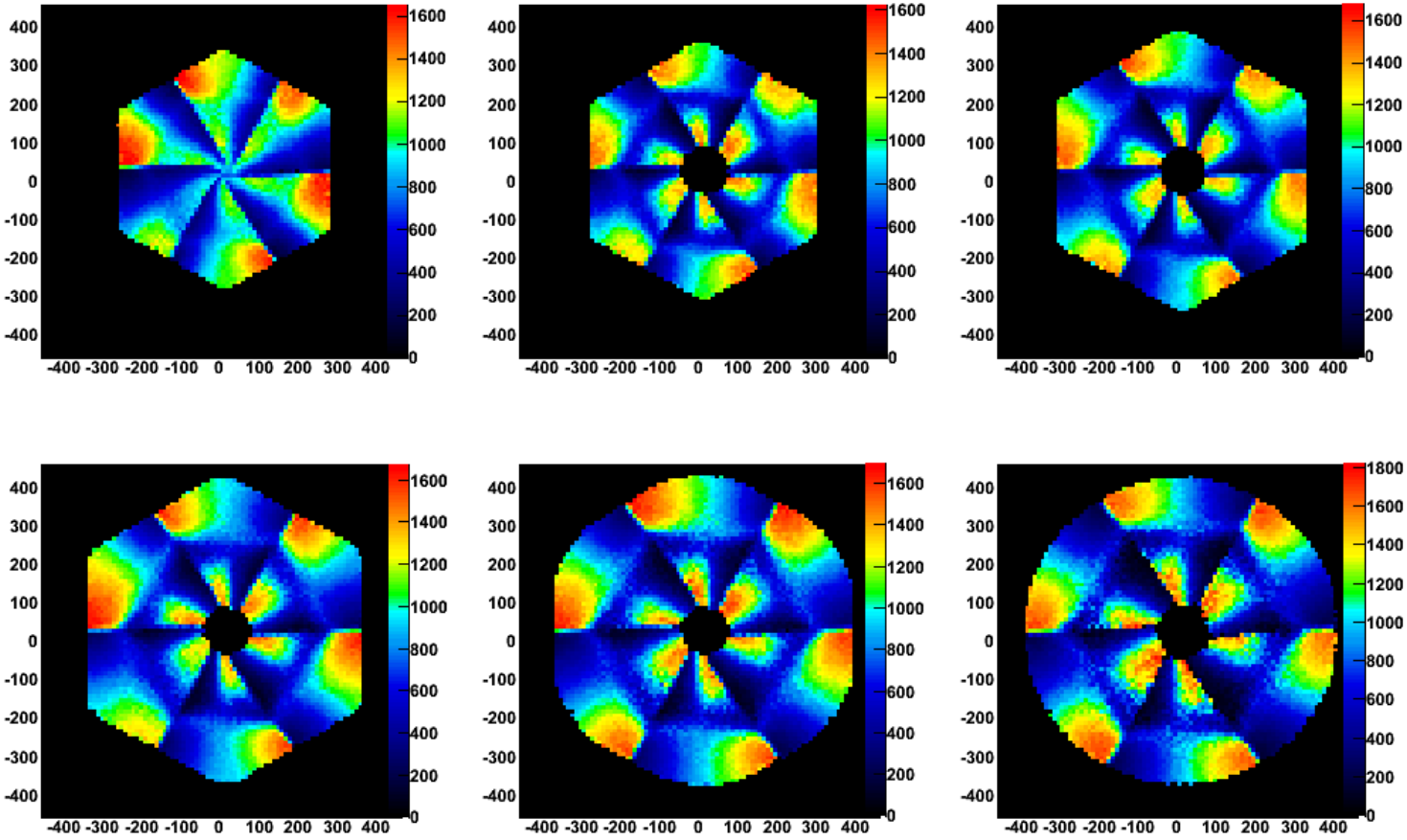


Image Charge Asymmetry

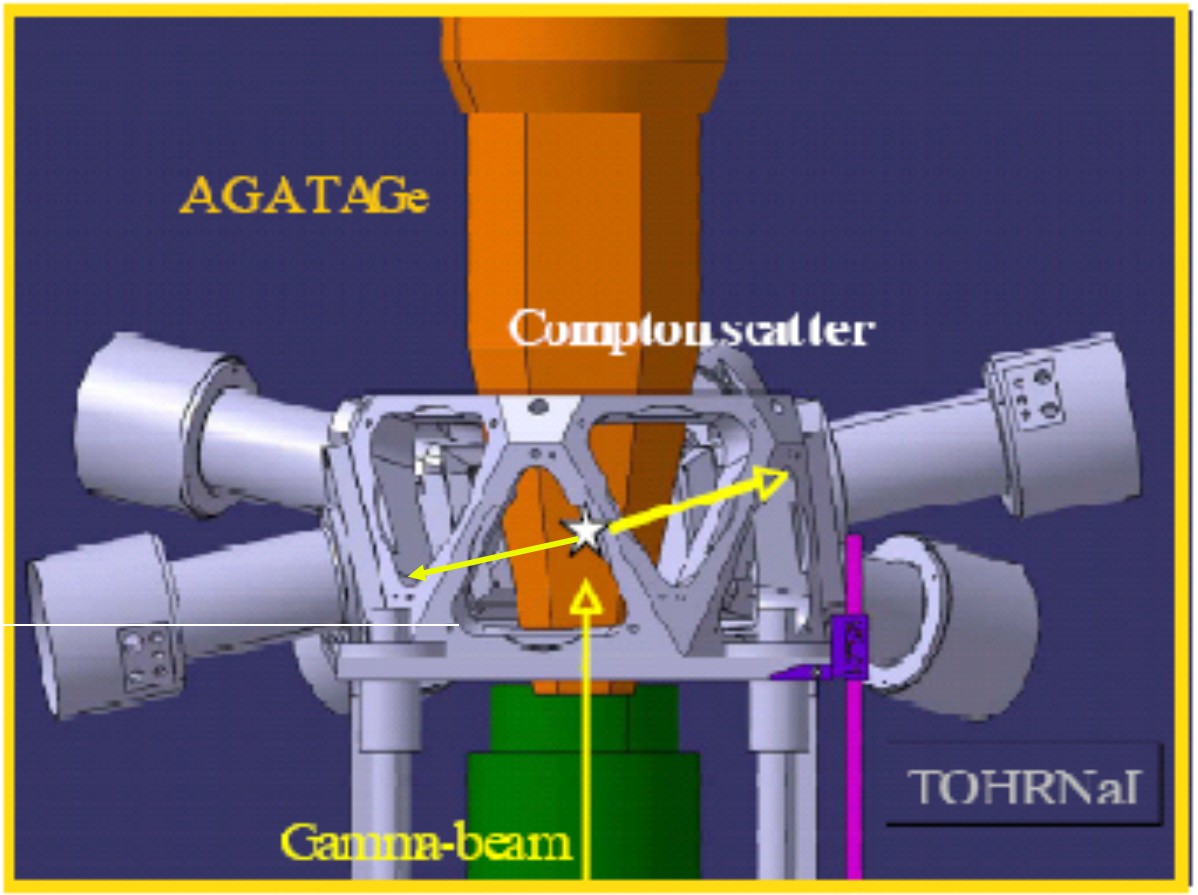


coïncidence scan results

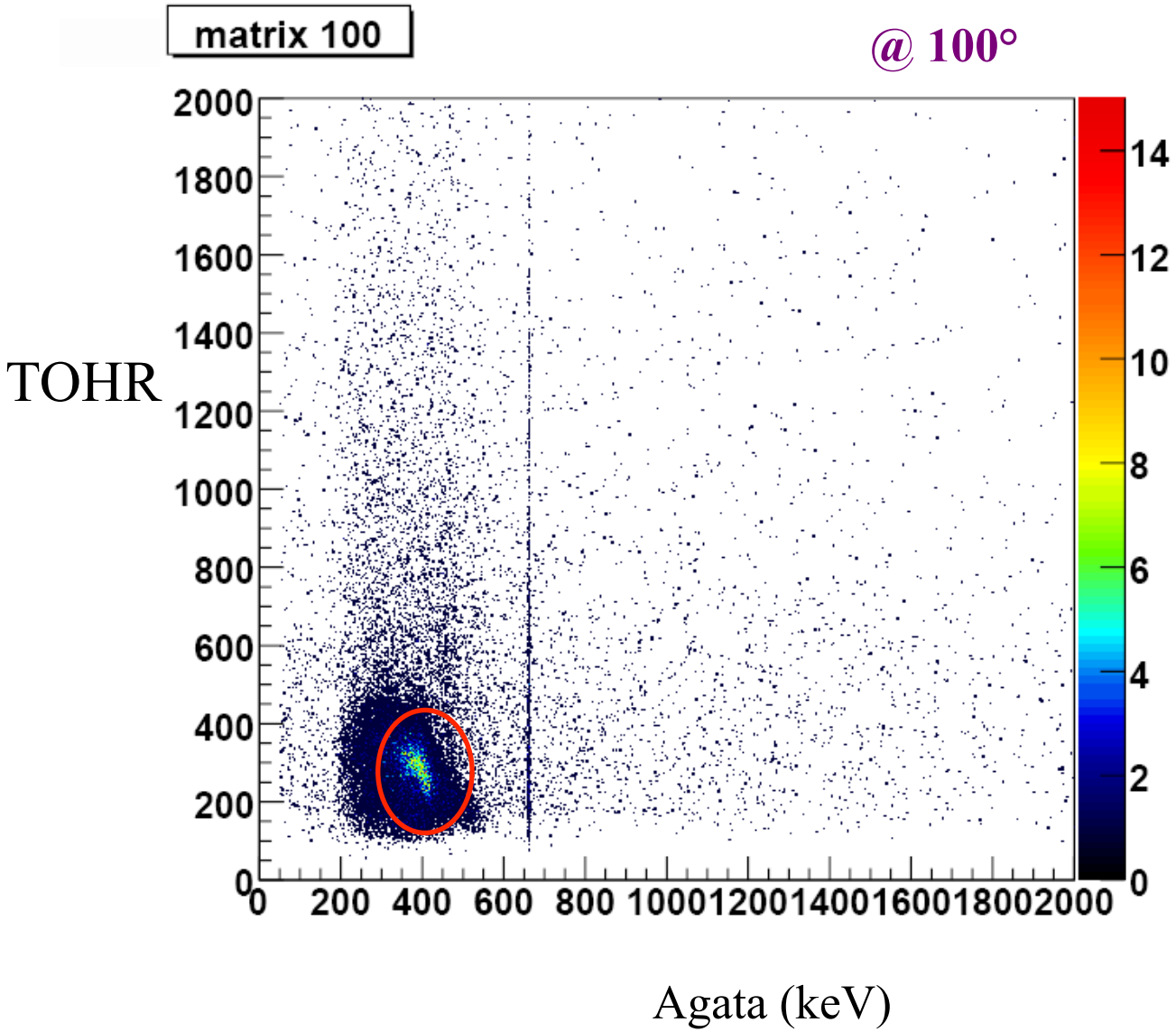
- 6 modules TOHR: 2 groups:

3NaI sont positionnés @ 79.8°

3NaI sont positionnés @ 100.2°



coïncidence matrices AGATA vs TOHR

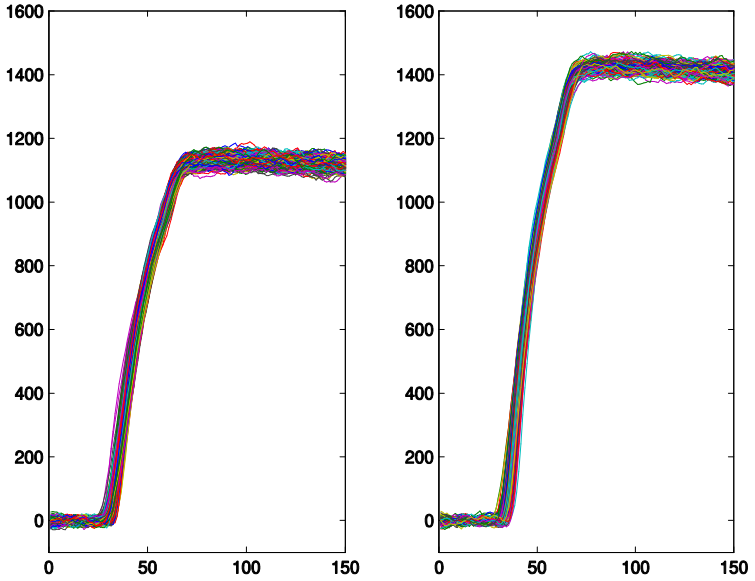


Coïncidence signals

Front face

(position: 1, 30, 7.3) mm

1.5 h



AGATA-TOHR@ 80°

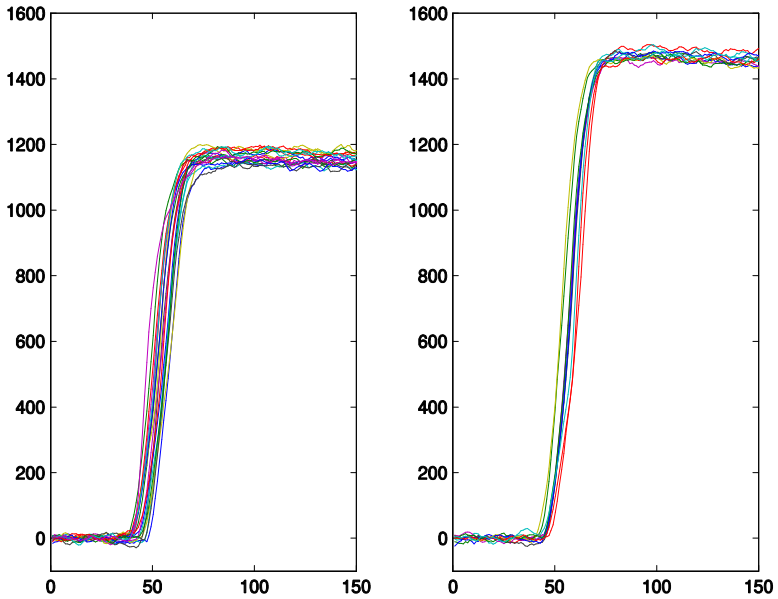
AGATA-TOHR@ 100°

230 traces/h

Back face

(position: 1, 30, 75.5) mm

6 h



AGATA-TOHR@ 80°

AGATA-TOHR@ 100°

7 traces/h

Commissioning ok

- S003 received Oct 2008 → DAQ: TIGRESS + Narval

- Results:
  - Single scan (2 times: 2mm & 1mm steps)

    1 week is required for a full single scan
  - Scan in coïncidence: Line 1 ok