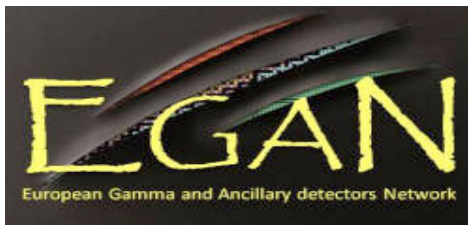




# PSA STUDIES FOR GASPARD

Marlène Assié, IPNO



EGAN meeting 25th - 28th june 2012

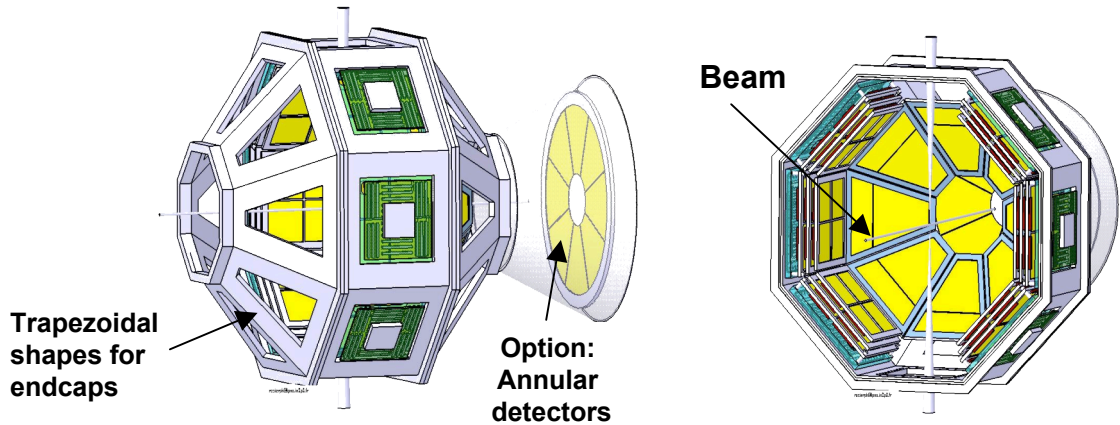


GAMMA SPectroscopy and PArticle D etection

Collaboration: IPNO, Huelva, INFN-Padova, Surrey, BARC-Mumbai, CEA-Saclay

**4π Si array fully integrable in PARIS/AGATA/EXOAM2**

“GASPHYDE” design adopted as the working solution

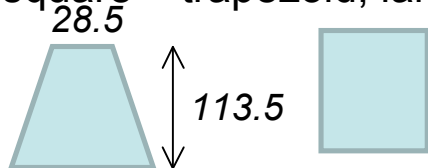


- Physics cases :**
- 13 Lol for Spiral2
  - . Shell evolution
  - . Pairing
  - . Clusters
  - . Near Barrier reactions
  - . Astrophysics

**Layers of Silicon :**

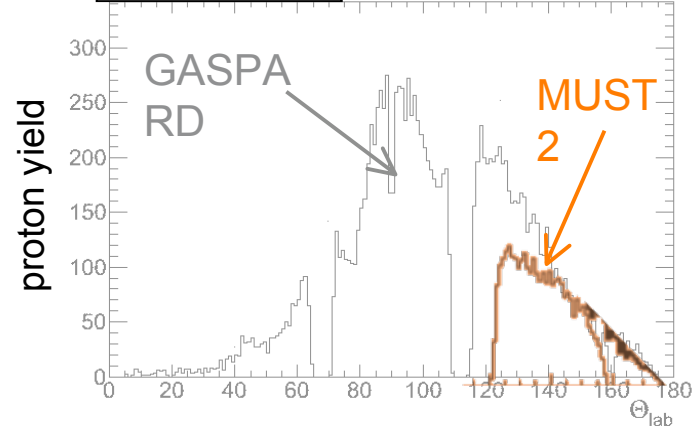
- 300(500) μm DSSD pitch < 1mm
- 1x [1.5 mm DSSD pitch~3mm] (FWD)
- 2x [1.5 mm DSSD pitch~3mm] (BWD)

2 main shapes : square + trapezoid, large area



- . Integration of special targets(cryogenic,Chymène...)
- . Good efficiency curve

<sup>132</sup>Sn (d,p)



# Test 2012 with new detectors from MICRON SC

Delivered Oct 2011

- **Detectors**

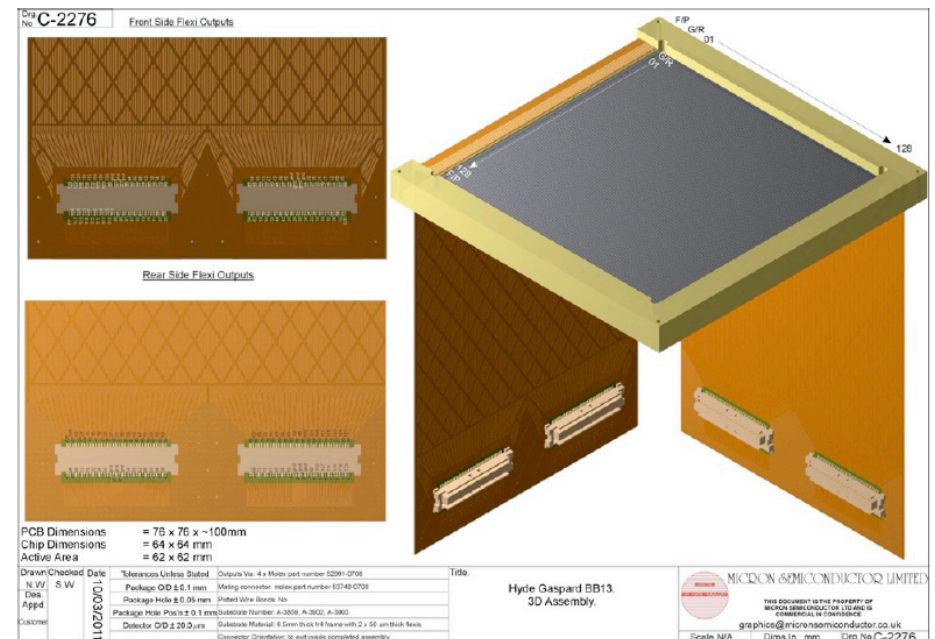
- Made of nTD wafers from TOPSIL
- Small pitch (500  $\mu\text{m}$ )
- High density connectors
- Special packaging with narrow frames

- **Electronics & Acquisition**

- PACI preamplifiers (IPNO)
- GANIL DAQ 20 digital channels
- MATACQ boards 1GHz sampling

- **Monoenergetic beams + reaction**

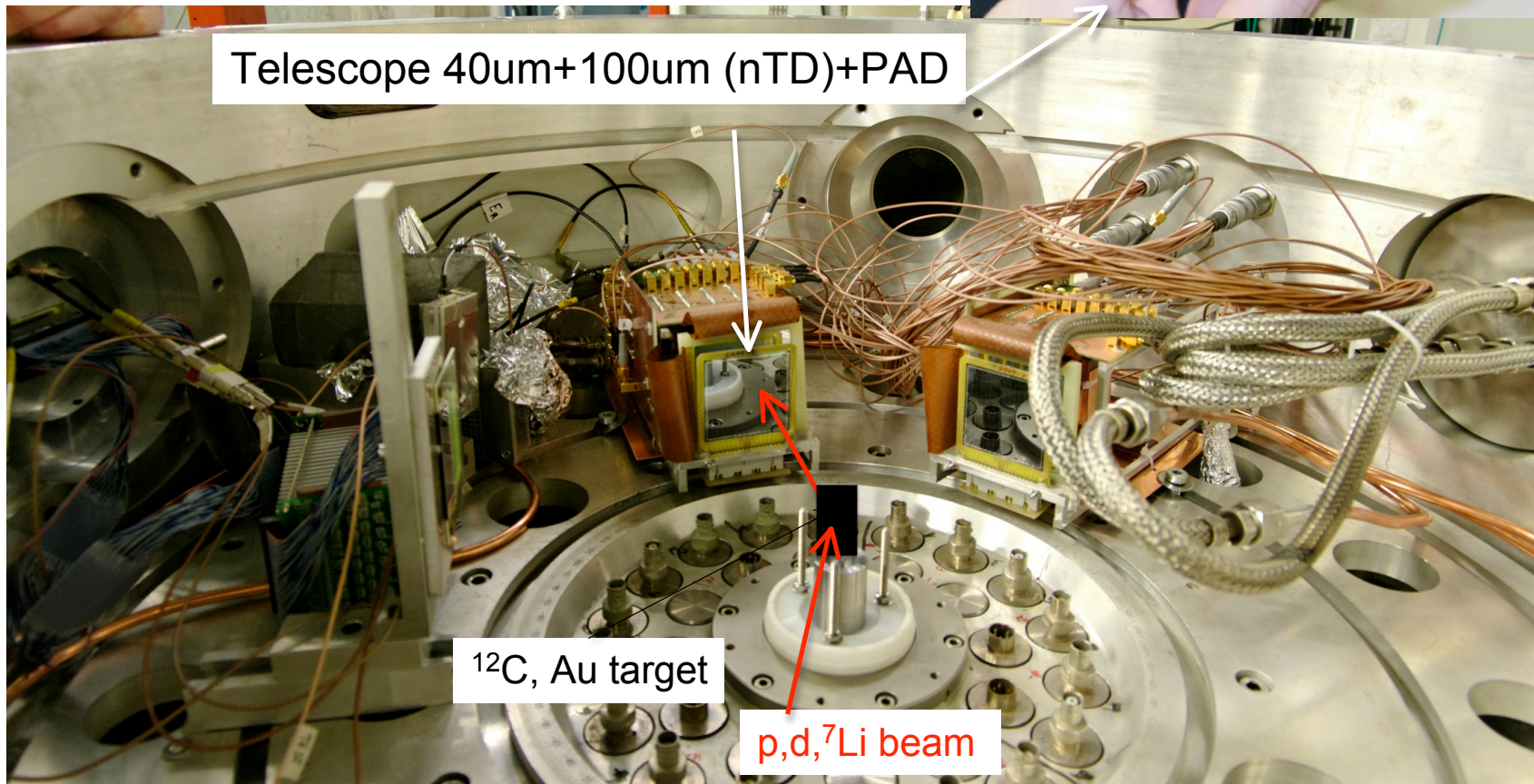
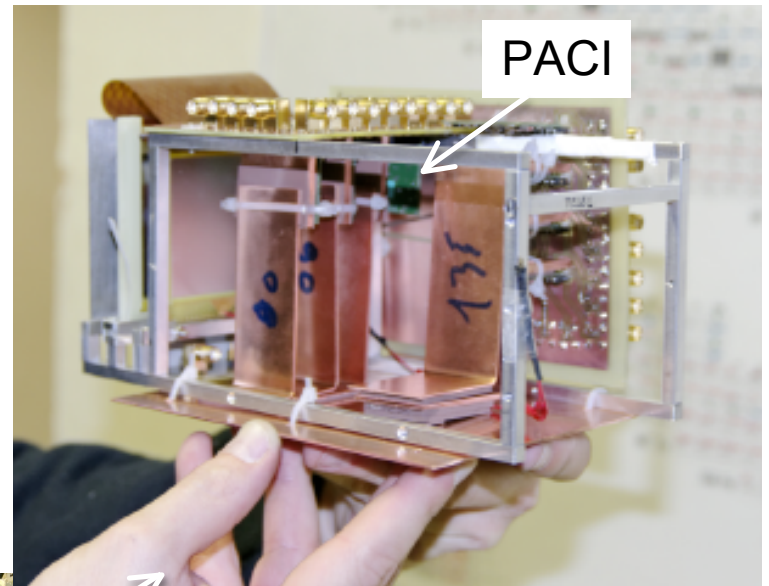
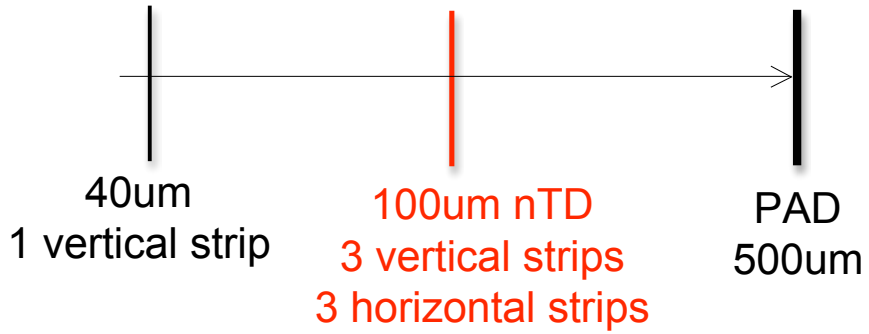
- protons 2.5, 3, 4, 6, 8 MeV
- deuterons 2.5, 3, 4, 6, 8 MeV
- ${}^7\text{Li} + {}^{12}\text{C}$  35 MeV



- **Goals**

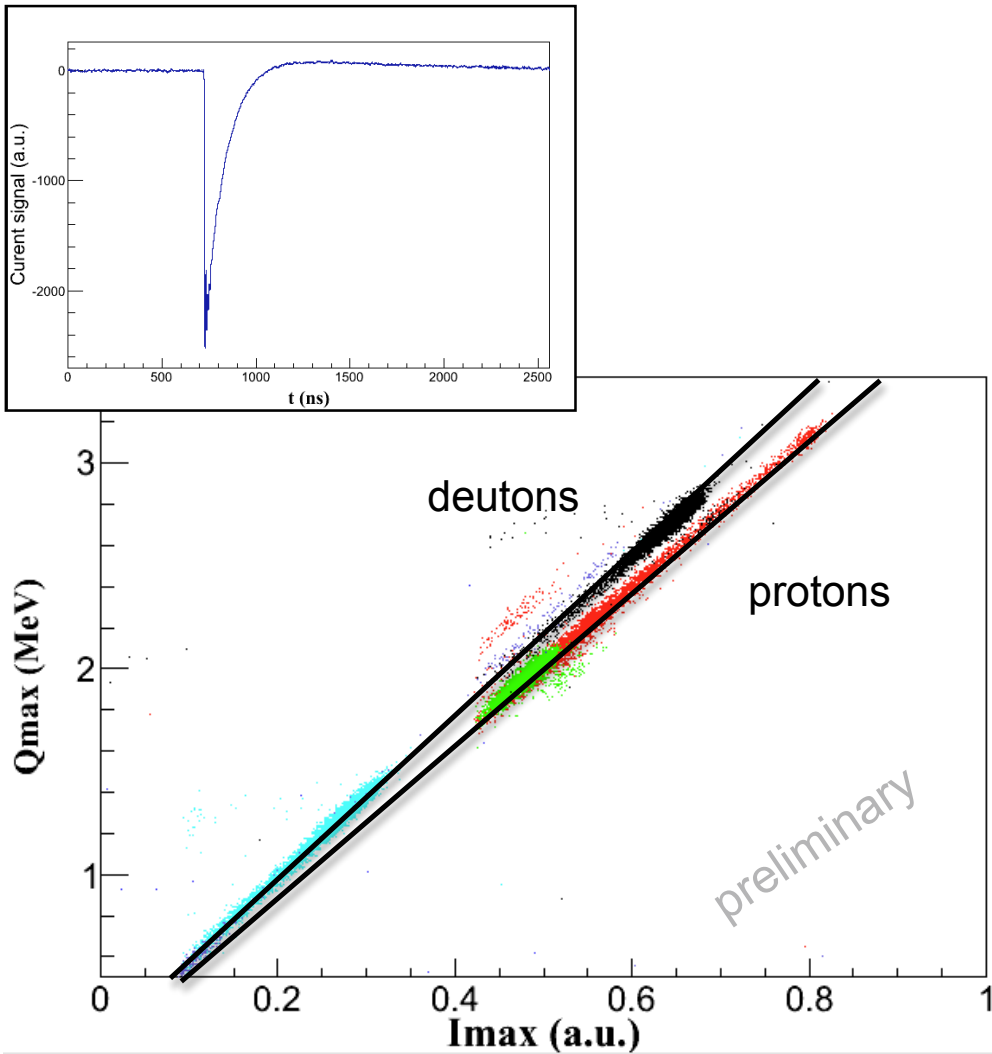
- > determine lower energy threshold for PSD of light nuclei
- > sampling needed for light particles
- > family of reference signals for simulations

**Test experiment at IPNO tandem  
(Feb 2012)**



# Test experiment at IPNO tandem (Feb 2012)

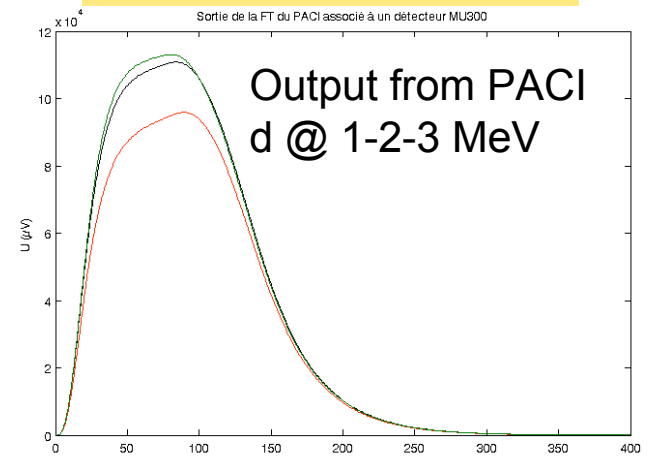
## Analysis under progress



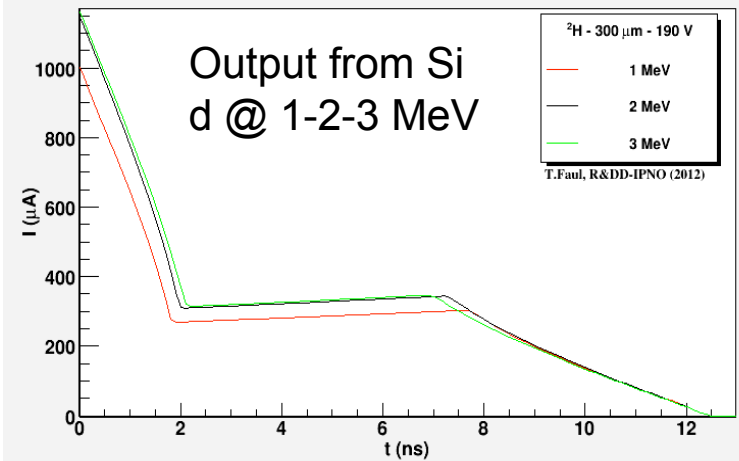
Moving average method for Q and I

Analysis with B. Genolini code

### Si response modeling

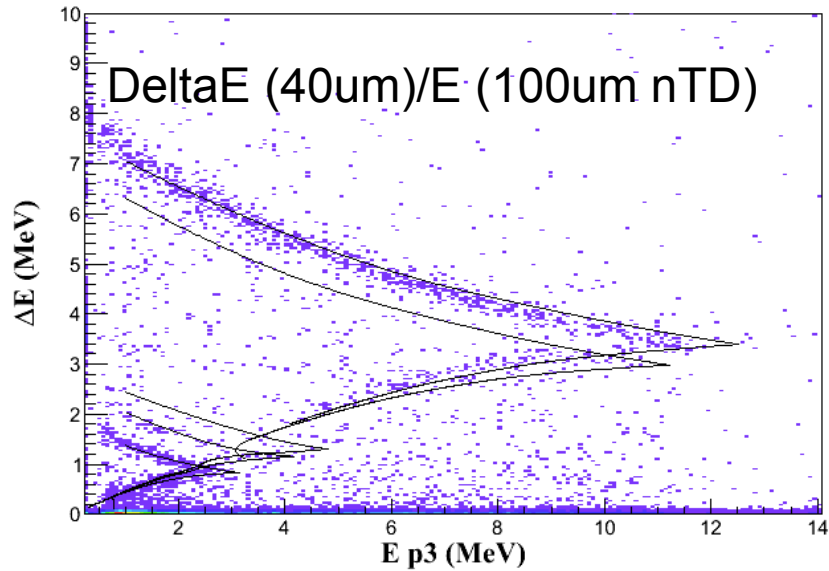


### Charge collection in Silicon detector



Calculations from T. Faul (IPN)

# Test experiment at IPNO tandem (Feb 2012) Analysis under progress



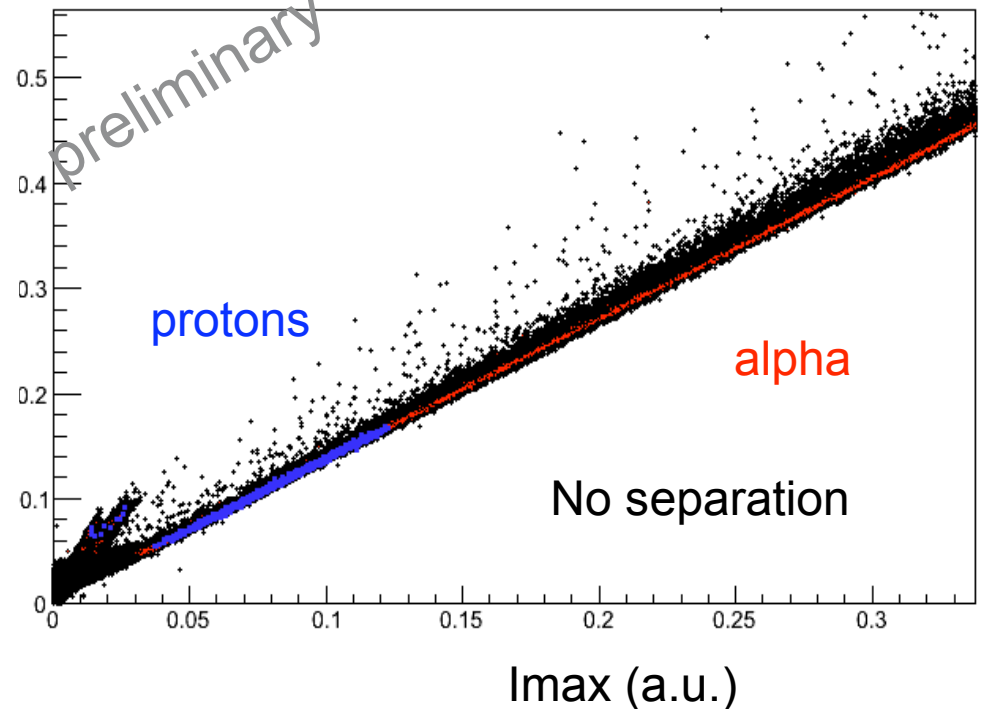
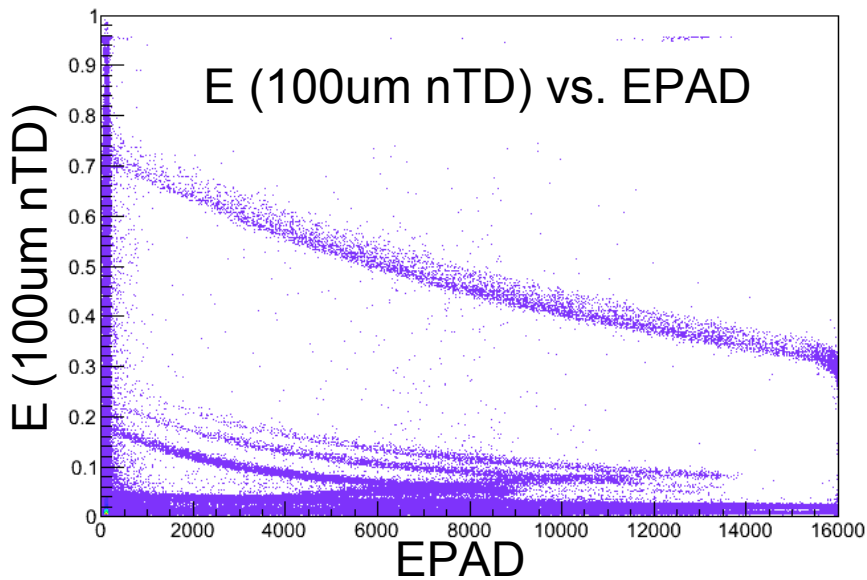
7Li+12C @ 35 A. MeV

Filters :

I trapezoidal 30 10

Q trapezoidal 50 100

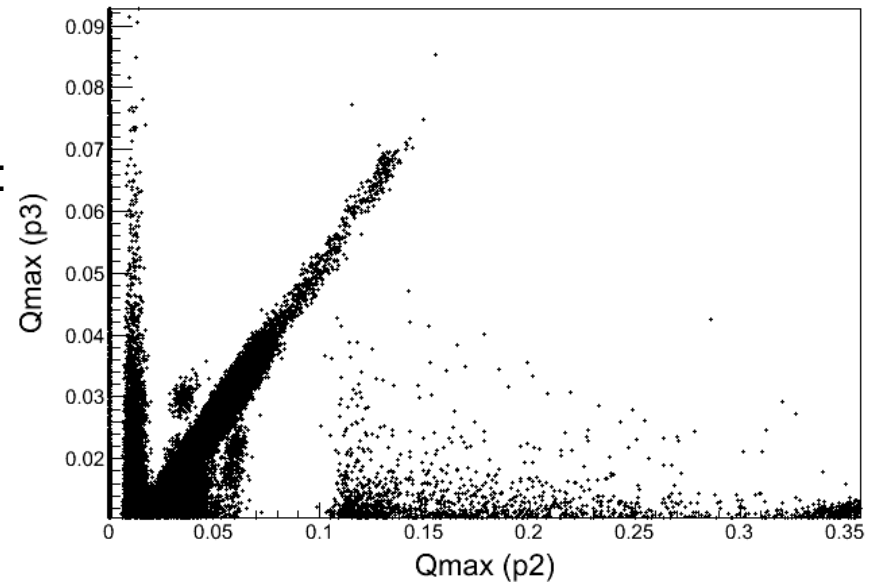
-> To be improved



## Conclusions

### PSA test objectives

- determine **electronics requirements** :  
sampling, nb of bits...
- effect of **inter-strip** (3 p-side strips)
- **low energy threshold** for light particles identification  
reaction  ${}^7\text{Li}+{}^{12}\text{C}$  @ 35 MeV



**New test coming in september in Legnaro**