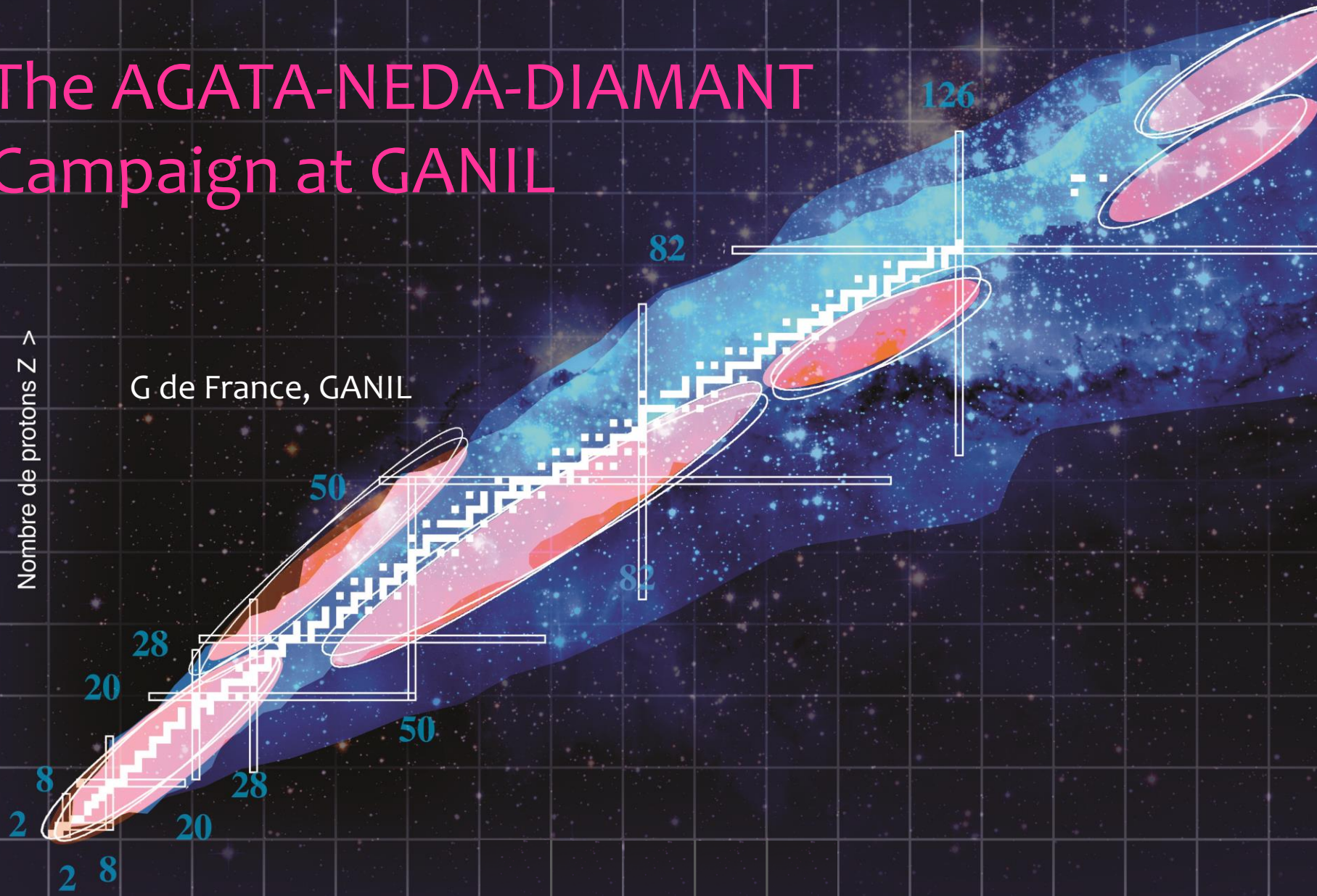
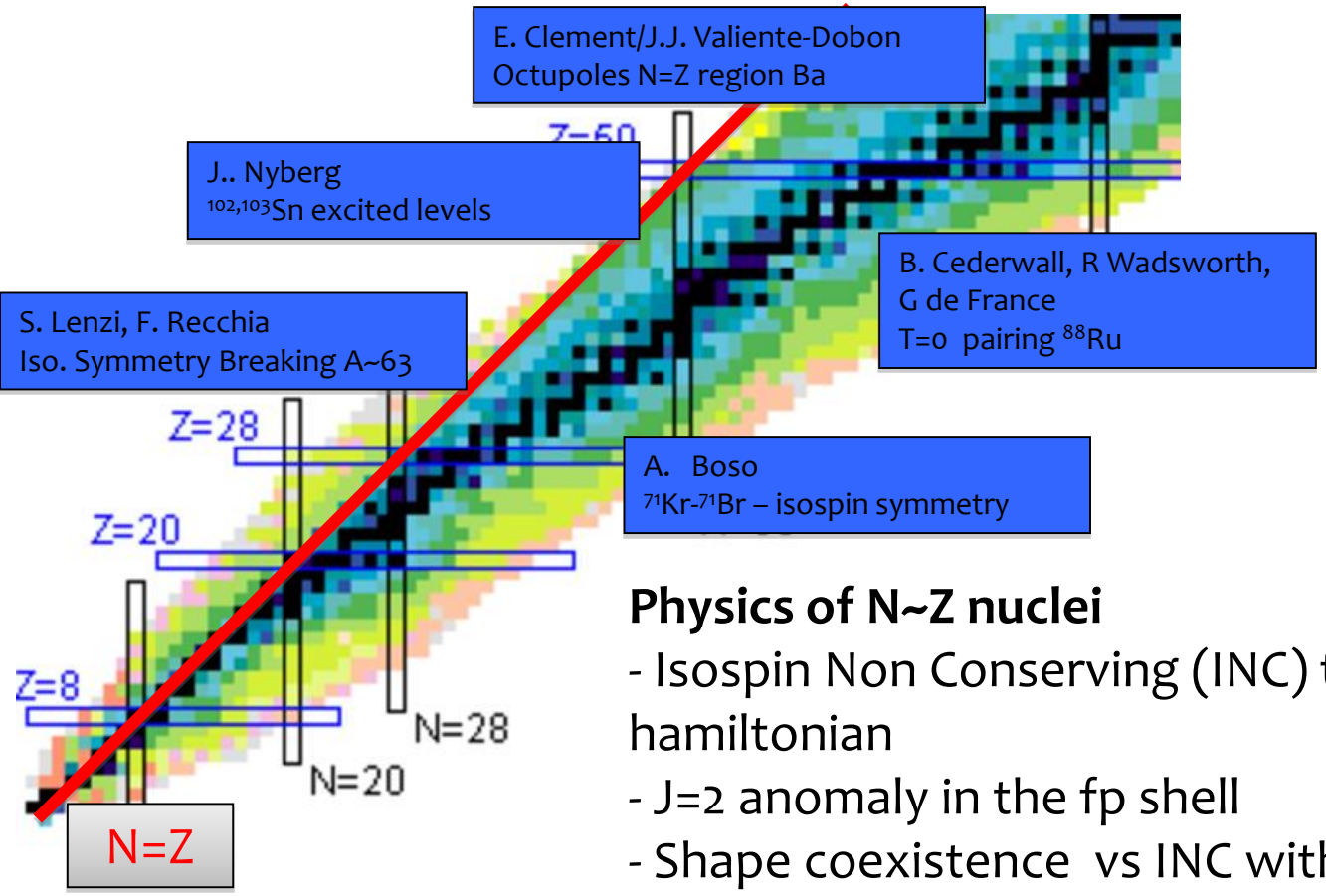
The AGATA-NEDA-DIAMANT Campaign at GANIL



G de France, GANIL

AGATA France, Strasbourg, 12-14 Septembre 2018

Physics case



Physics of N~Z nuclei

- Isospin Non Conserving (INC) terms in the nuclear hamiltonian
- J=2 anomaly in the fp shell
- Shape coexistence vs INC with DSAM
- Rotational properties of N=Z nuclei and T=0 pairing strength
- Two-body matrix elements and core excitations close to ^{100}Sn
- Octupole vs Quadrupole excitations in light Xe



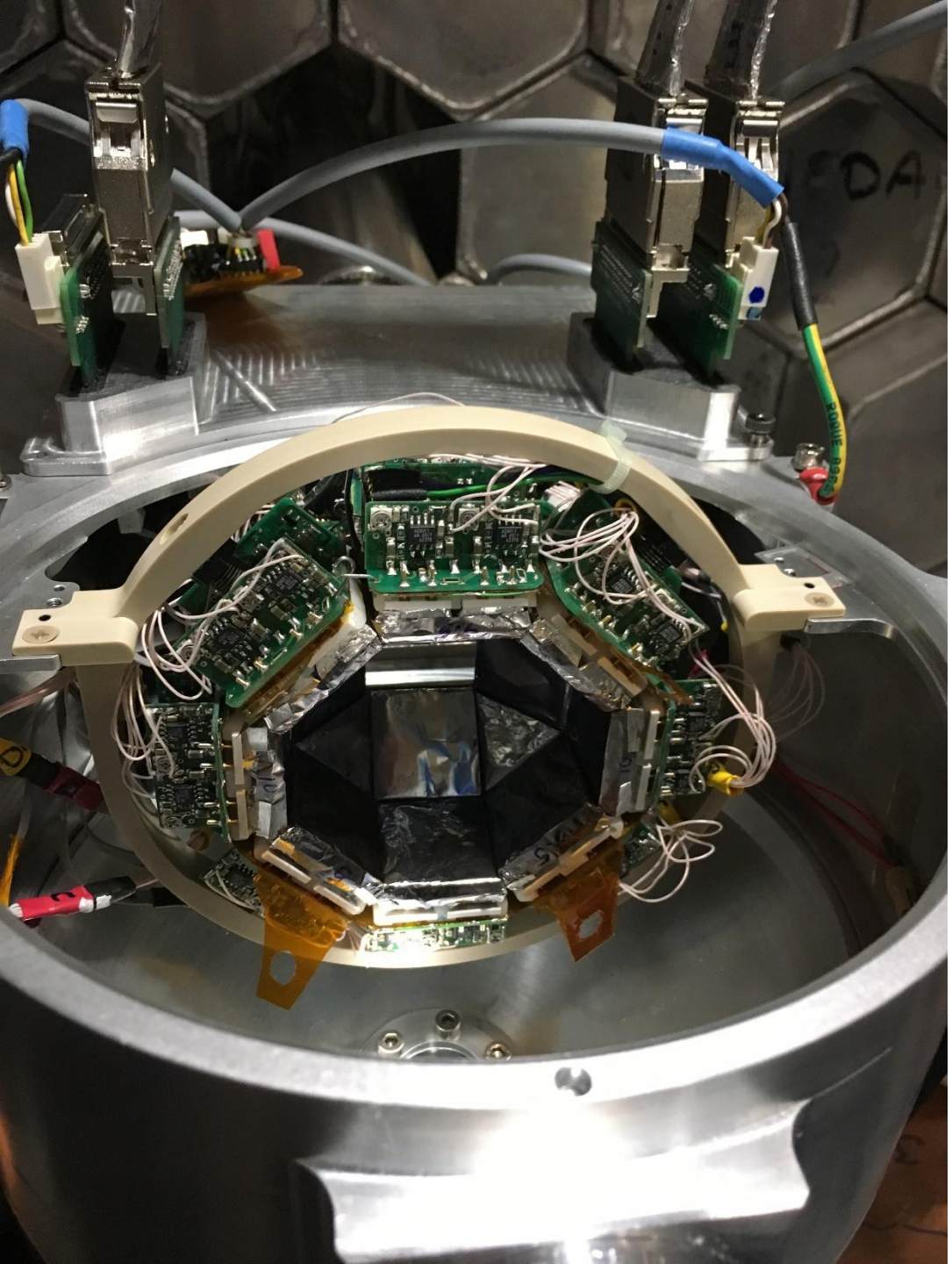
NEDA (+Nwall)

- 54 +42 BC501 scintillators
- NUMEXO2

Efficiencies (Ni+Fe):

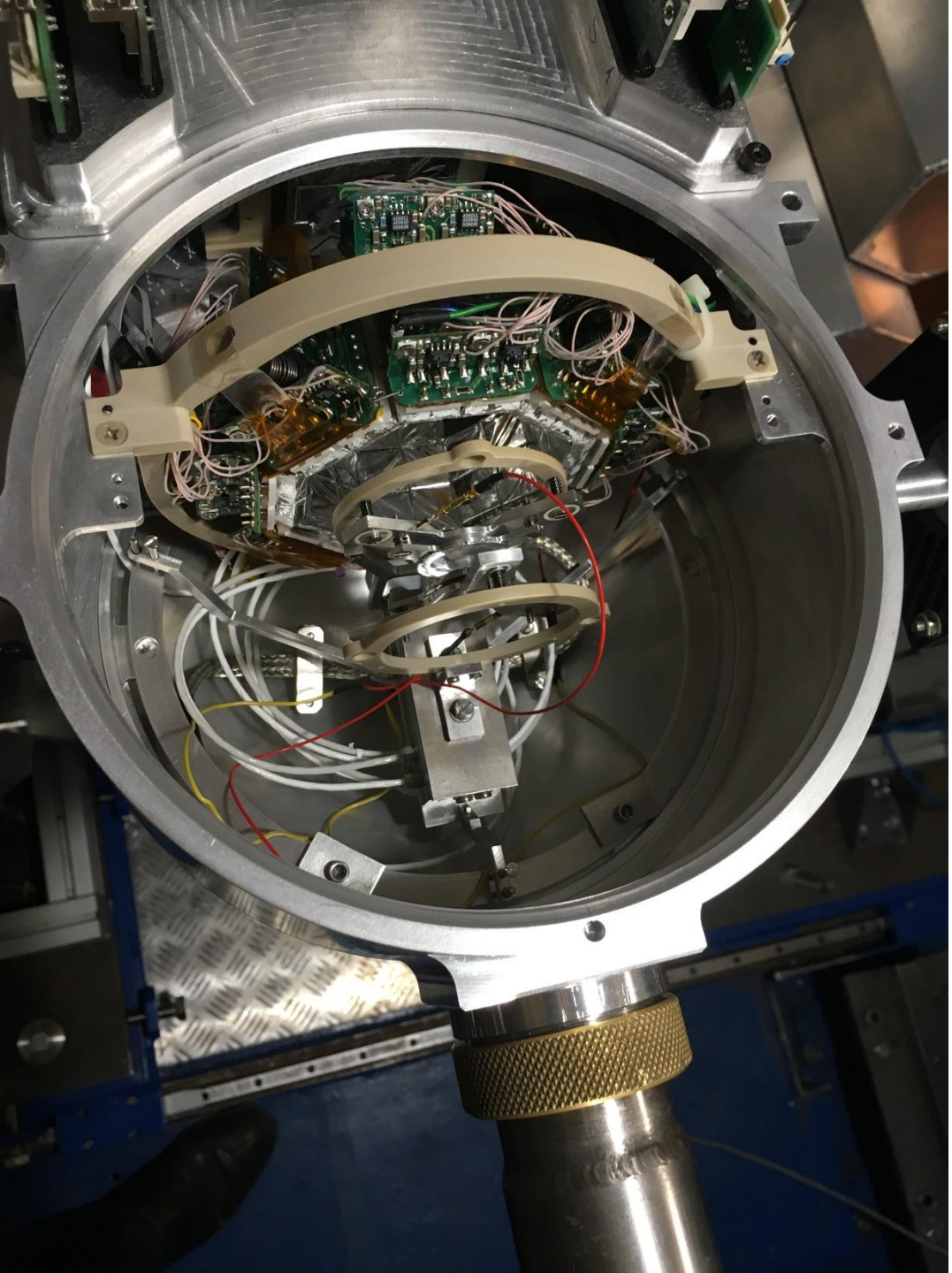
- ε_{1n}~0.30
- ε_{2n}~0.07

T. Huyuk et al., Eur. Phys. J. A (2016) 52



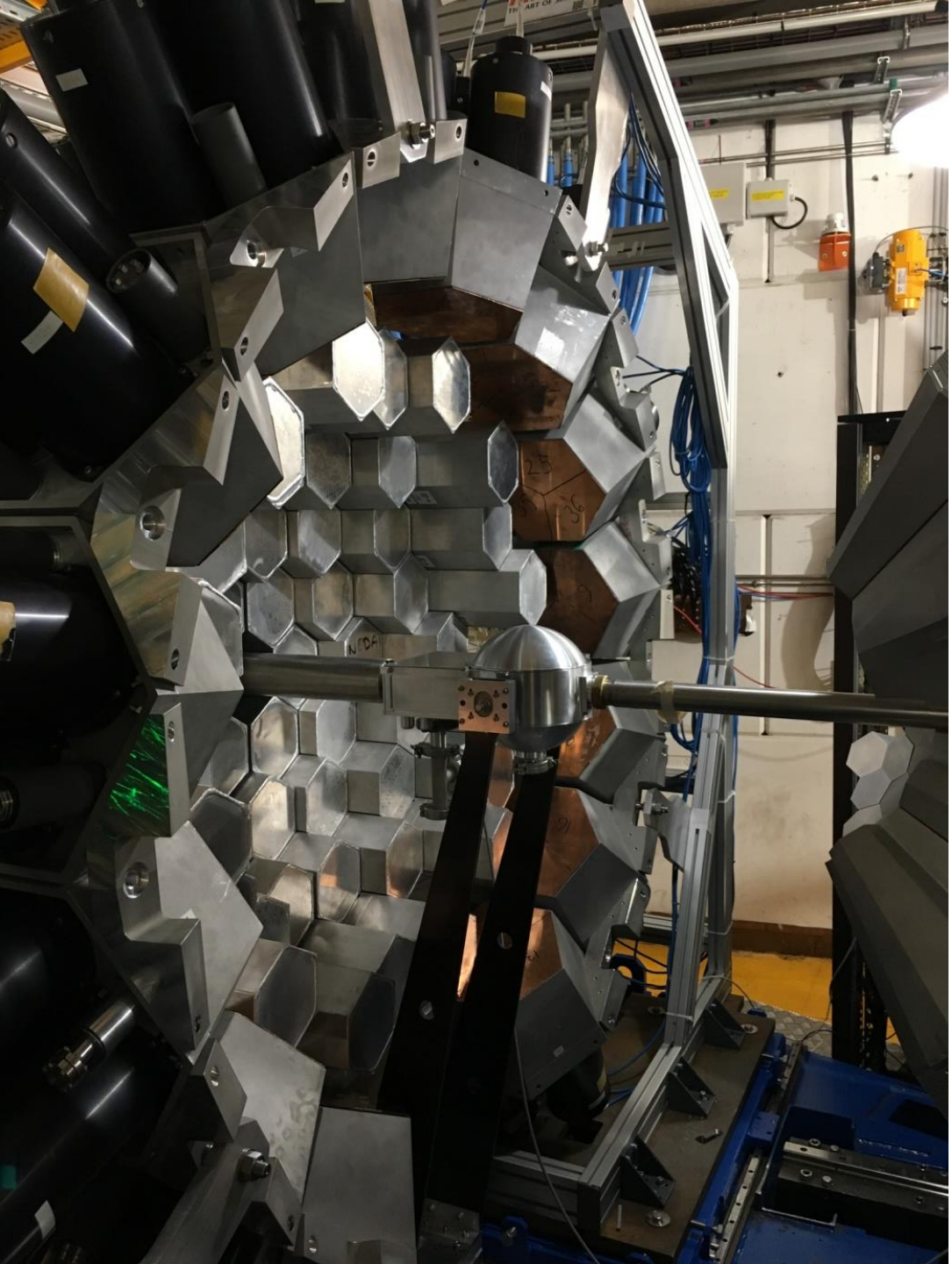
DIAMANT

- 64 (80) CsI
- NUMEXO2
- $\varepsilon_{\pi \text{ or } \alpha}$~0.4-0.5
- New target chamber
- Compatible target loader



DIAMANT

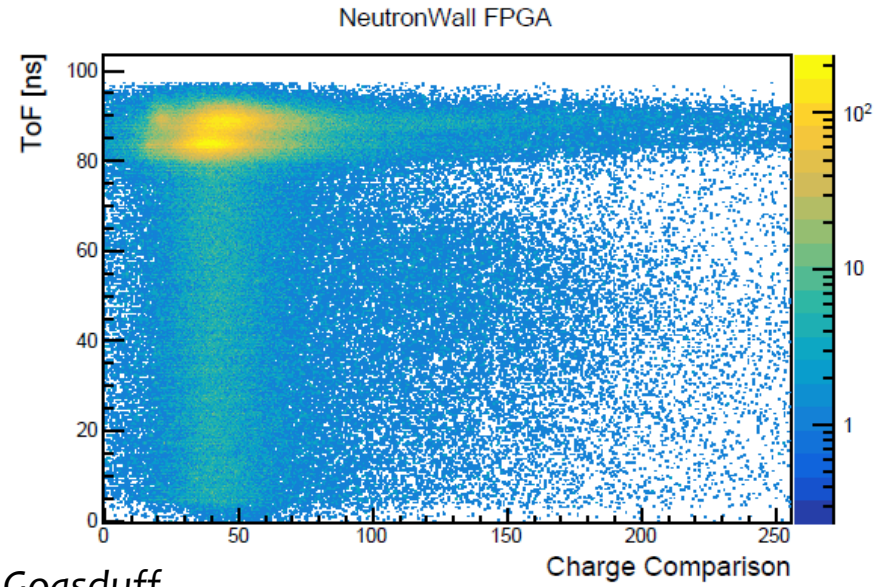
- 64 (80) CsI
- NUMEXO2
- $\varepsilon_{\pi \text{ or } \alpha}$~0.4-0.5
- New target chamber
- Compatible plunger

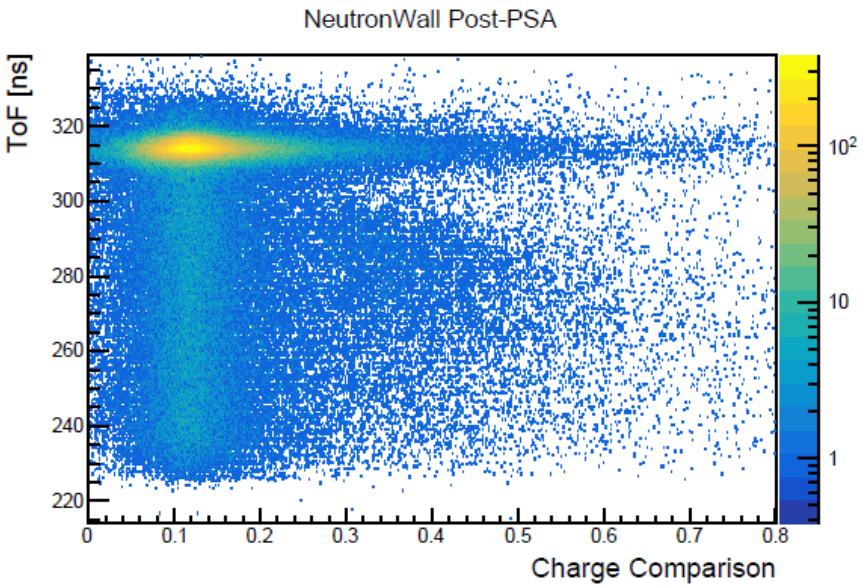


AGATA
NEDA
DIAMANT

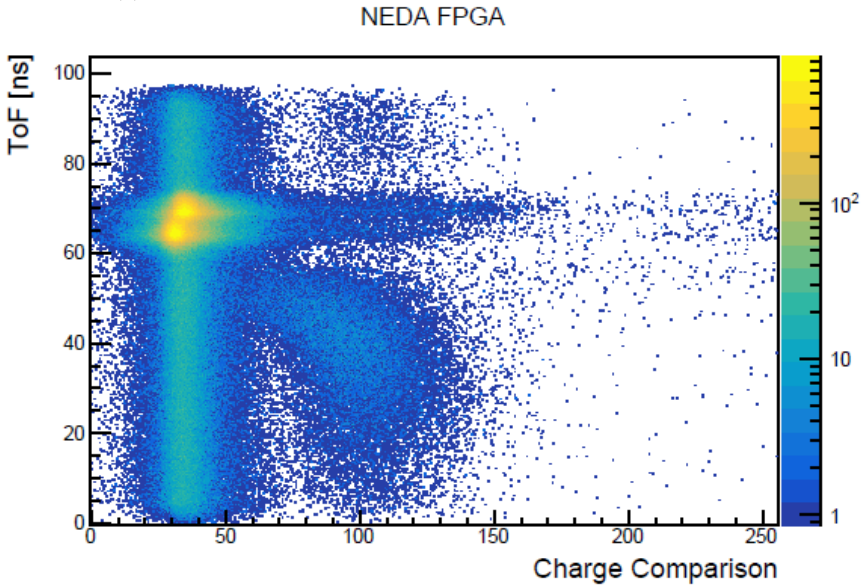
35 AGATA Capsules
54 NEDA detectors
42 Nwall detectors
60 DIAMANT CsI in a newly designed target chamber

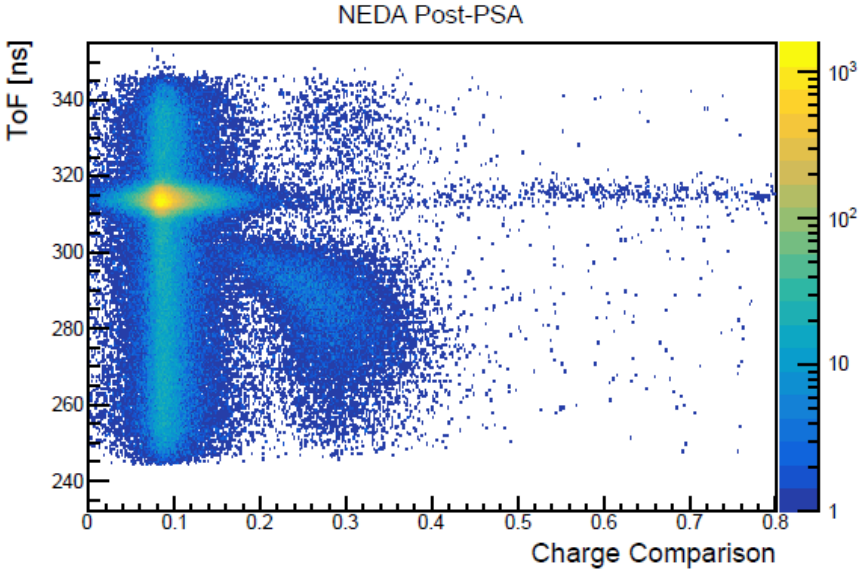
TDC vs PSA all neutron detectors



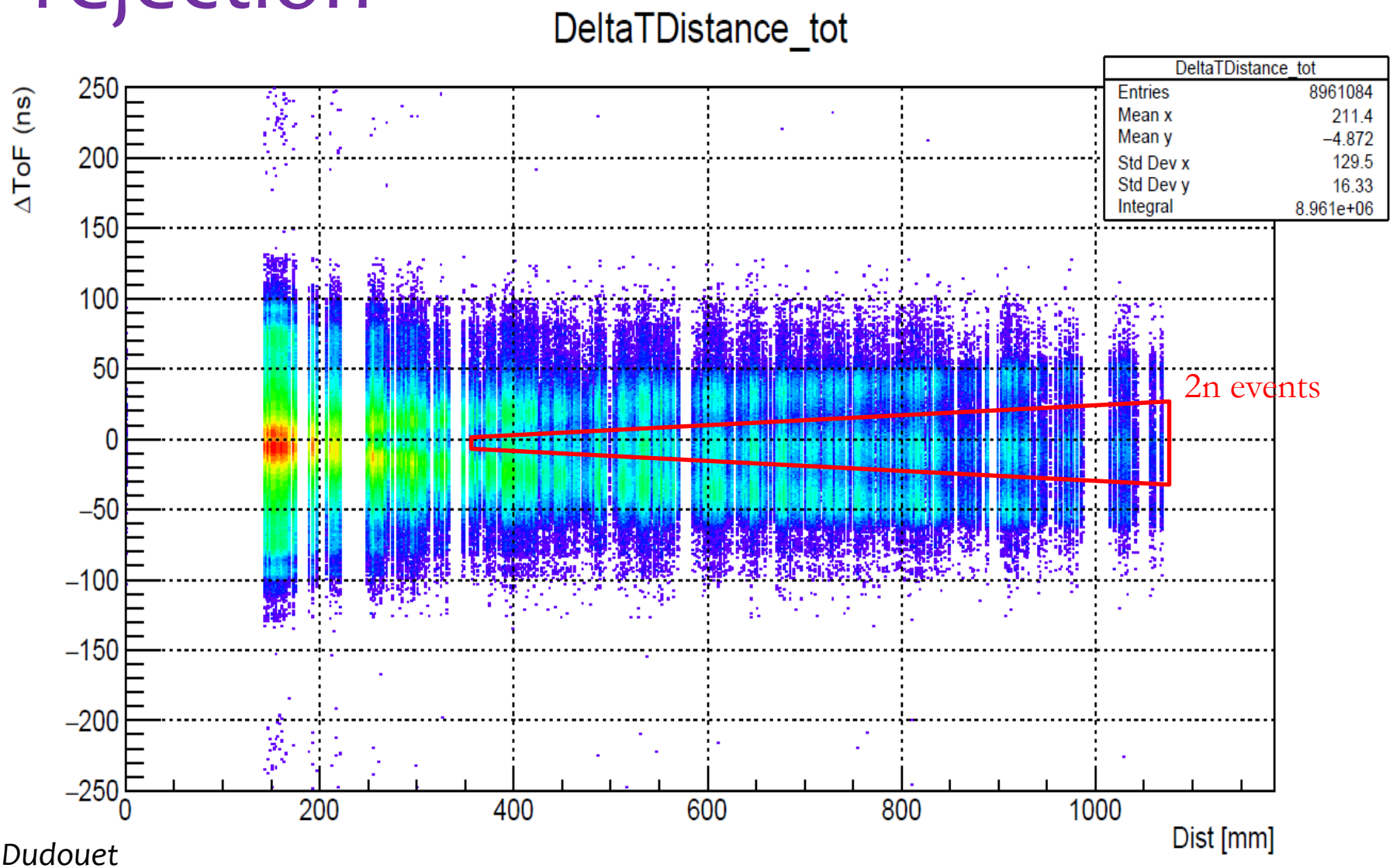


A. Goasduff



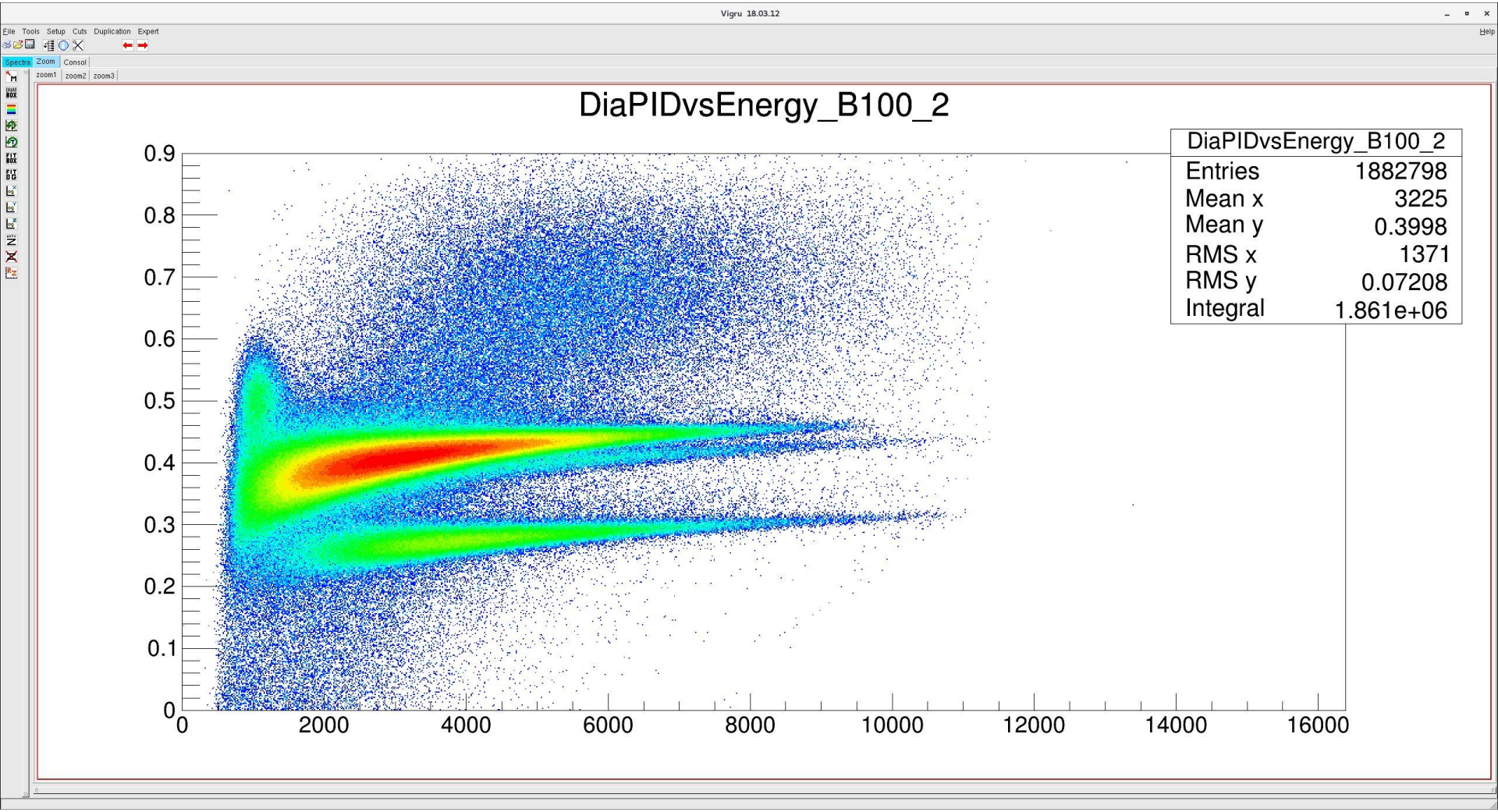


2n selection and 1n scattering rejection

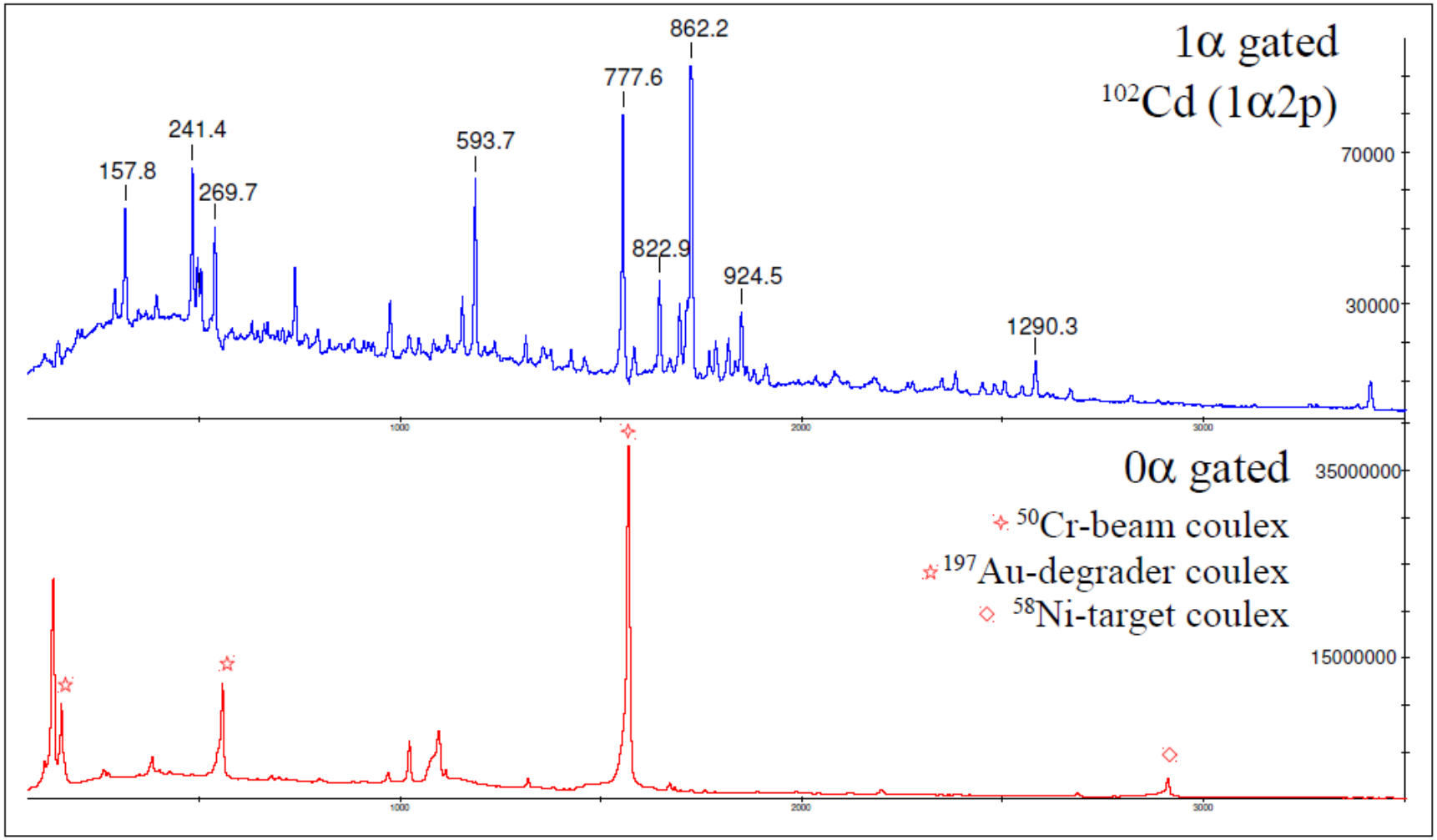


J. Dudouet

PID vs Energy DIAMANT spectrum

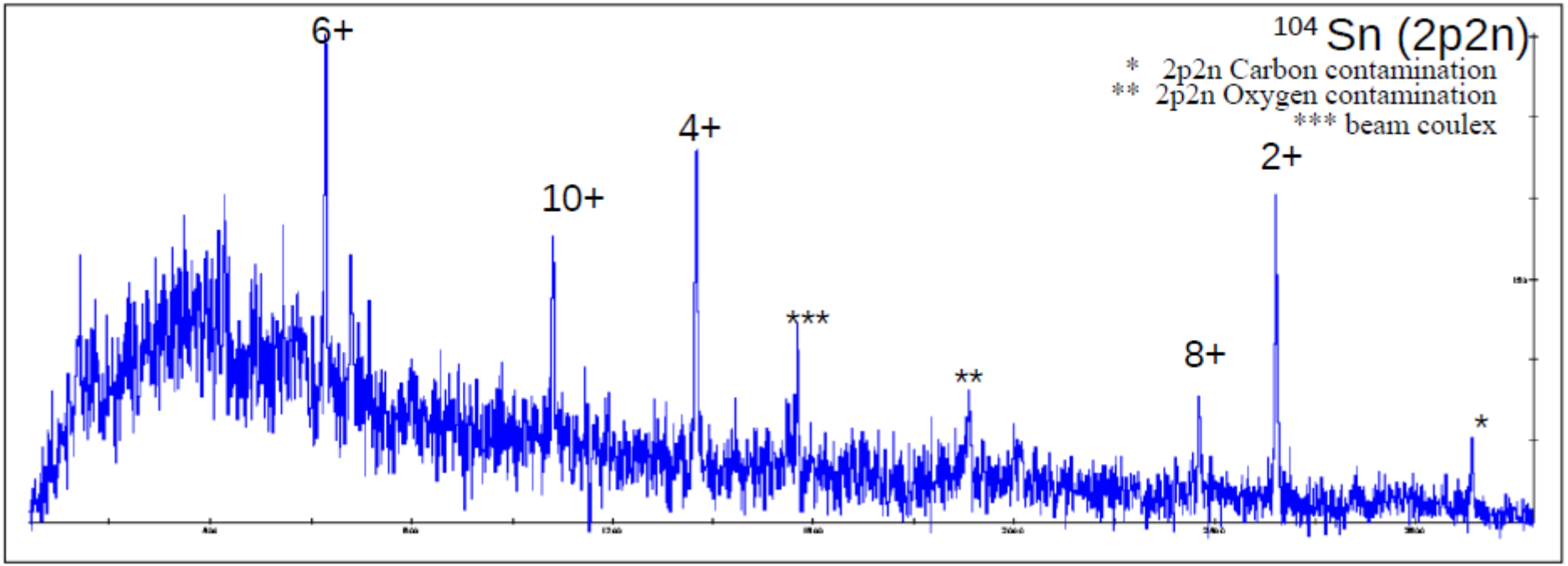


Charged particle gating (E703)



O Atkas, M. Palacz

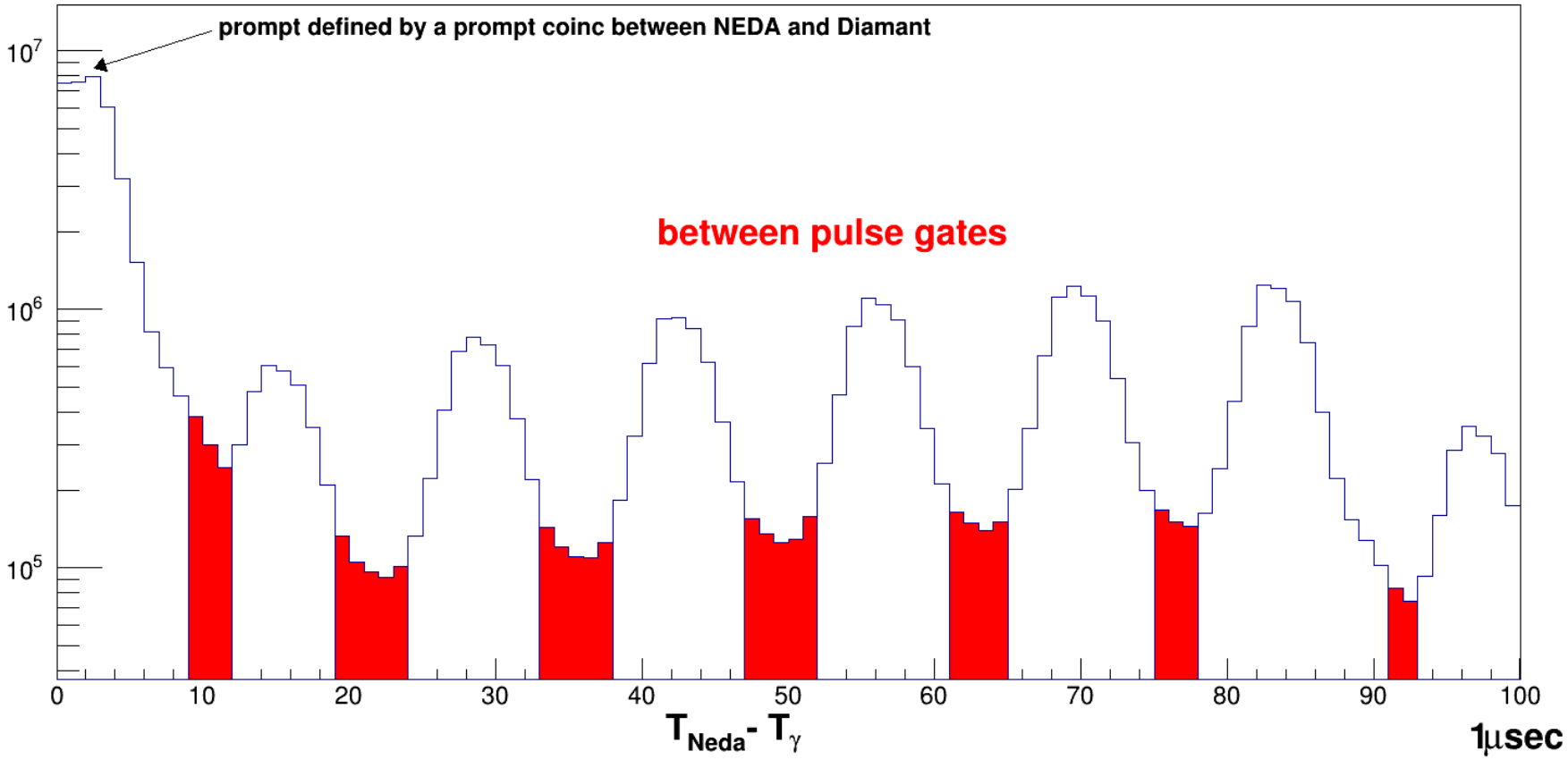
Neutron and charged particle gating (E703)



O Atkas, M. Palacz

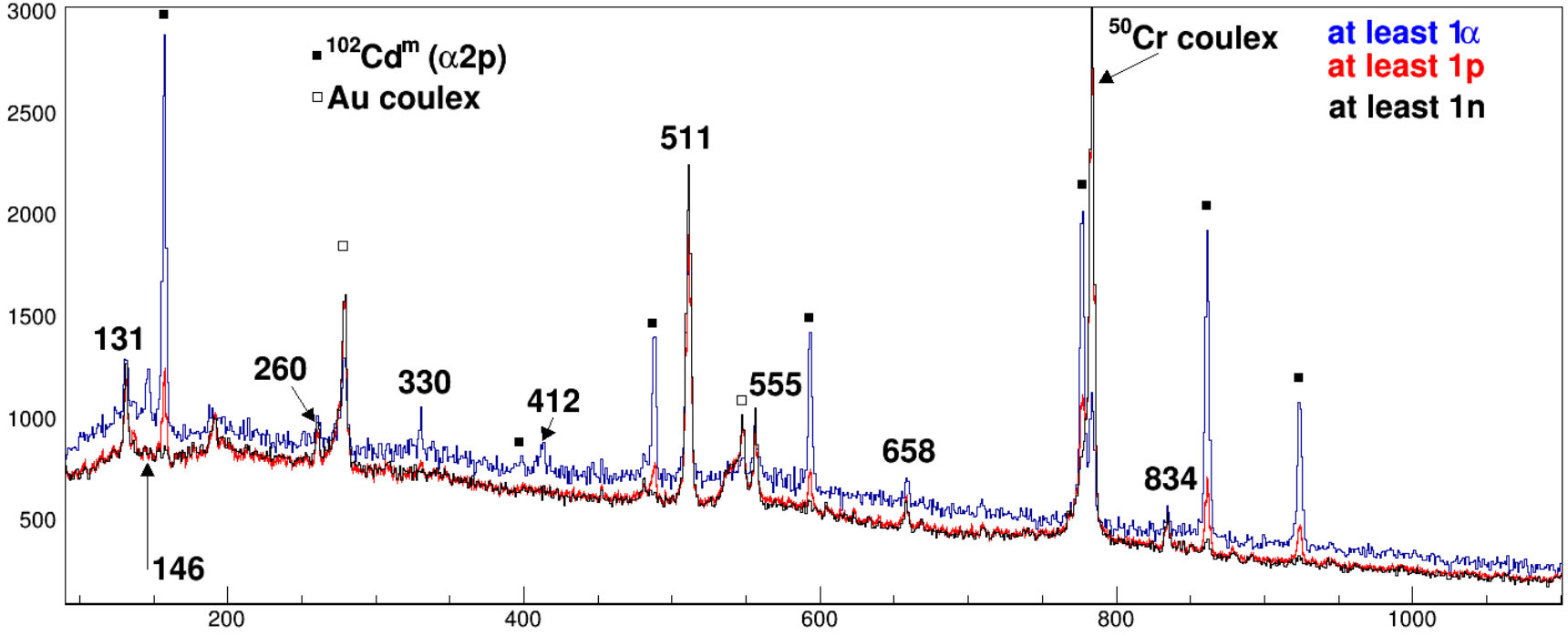
Isomer decay (E703)

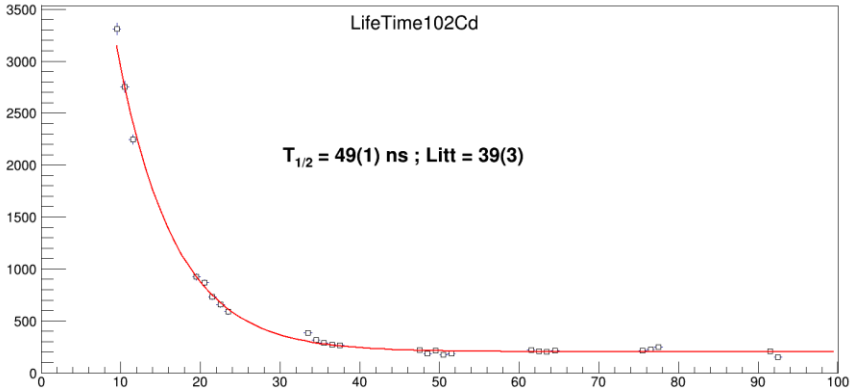
TP Gate: 1 μs



E Clément

Isomer decay (E703)





E Clément

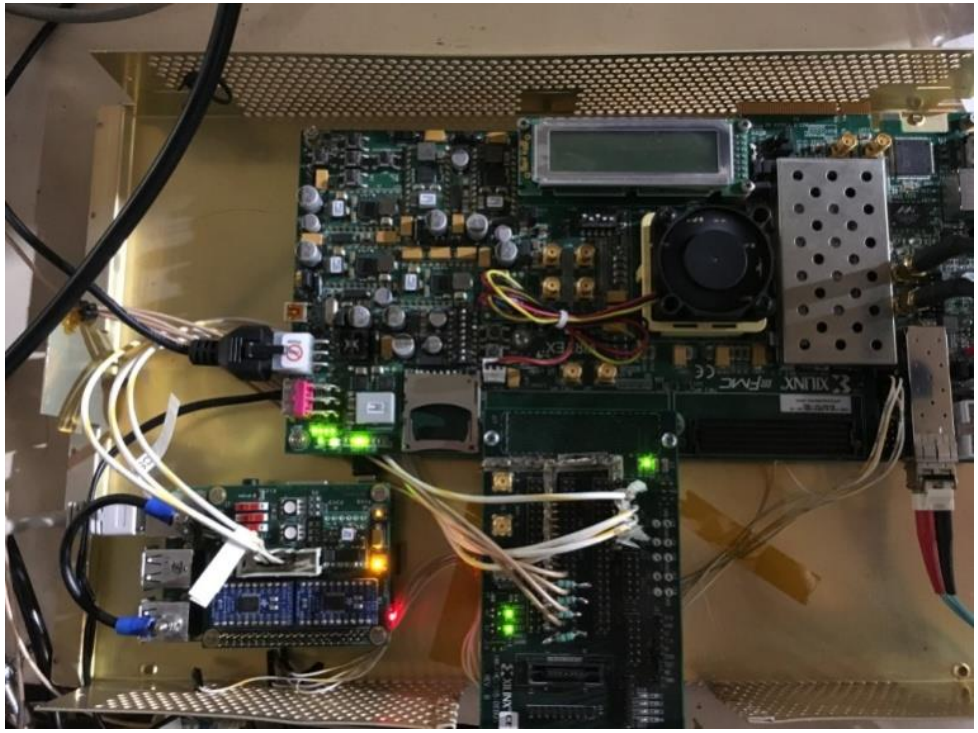
EXOGAM2 Trigger Processor

Specifications:

- Fully compatible with GTS
- Multiple simultaneous trigger conditions
- Define precise timing
- No deadtime; continuous coinc analysis
- Validate detectors not participating to decision
- Flexibility
- Generate an event pattern

M Tripon, M Bezard
A Boujrad, L Charles

EXOGAM2 Trigger Processor



Hardware: VC707 evaluation board

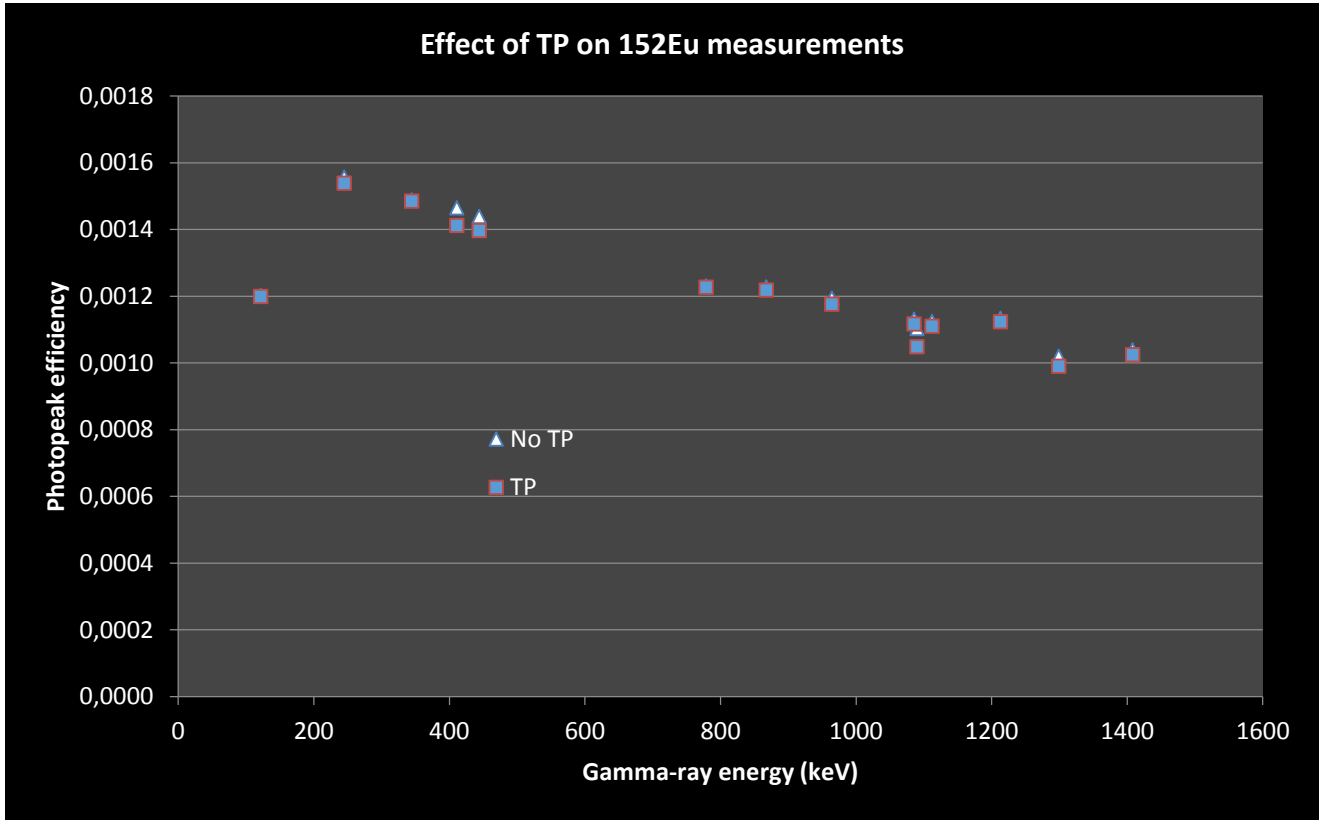
Software:

- *Linux*
- *IP bus protocol*

Features:

- *Cope up to 255 trigger request*
- *Partitions (128-64-32-16-8-7*1)*
- *Coincidence between them*
- *Generate Validation/Rejection*
- *Broadcast to all channels*

EXOGAM2 Trigger Processor



=> No effect of TP on efficiency

EXOGAM2 Trigger Processor

Issues and further checks:

- AGATA Idle cycle (fixed)
- Validation of GGP
- Efficiency in coincidences
- DIAMANT like validation

Summary

- Smooth runs (5 experiments completed)
- Coupling of 3 fully digital large arrays (AGATA, NEDA/Nwall-DIAMANT
- Using the GTS tree technique and the new EXOGAM2 Trigger Processor
- Online event building and quasi online pre analysis
- Huge efforts of many people
- Already a real great success

Collaborations

NEDA

G de Angelis
L Ducroux
F J Egea
N Erduran
S Erturk
X Fabian
G de France
A Gadea
E Giner
V Gonzalez Millan
A Goasduff
T Huyuk

+ AGATA…

D Ralet
E Clément

G Jaworski
V Modamio
M Mozsynski
J Nyberg
M Palacz
N Redon
O Stezowski
A Triossi
J J Valiente Dobon
R Wadsworth

IPNL

O. Stezowski
X. Fabian
L. Ducroux
G. Beaulieu
N. Redon
T. Dupasquier

DIAMANT

I Kuti
B M Nyako
J Molnar
M Varga
K Szitna

GANIL

A Boujrad
S Coudert
L Legeard
F Saillant

Thank you