

# The performance of AGATA

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October 5, 2016

# What one would like to know about AGATA (1)

- Energy resolution:
  - Detector status (also which segment missing/unstable recovered) → see Rosa's talk
  - N-damage correction (for which crystal, how much effective)
  - Doppler Correction capabilities (detector geometry, PSA parameters, tracking parameters) → see Antoine's talk
- Efficiency:
  - Core Common → see Waely, Rosa's talk
  - Tracking efficiency → see Waely's talk
  - (Relative) efficiency at high multiplicity → Amel ??
- Peak-To-Total:
  - source
  - in beam
  - at high multiplicity

# What one would like to know about AGATA (2)

- PSA performance (coincidence method) → see Lars's talk
- Timing properties
- Lifetime sensitivity → see Joa's previous talk
- Polarization and angular distribution capabilities → see Joa's next talk and mine
- *Imaging capabilities* → F. Recchia et al. NIMA
- *Count-rate capabilities* (F. Recchia et al. LNL Annual Report)

Many minds and many hands are needed:

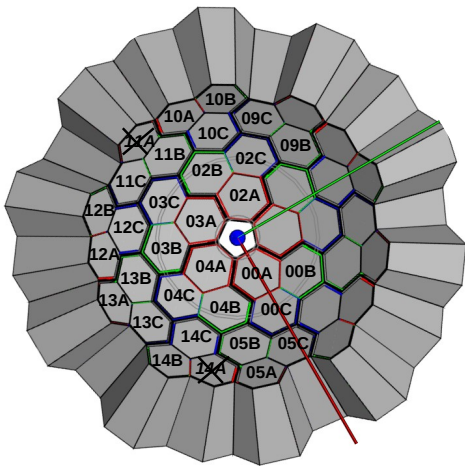
F. Recchia, C. Michelagnoli, A. Lopez-Martens, J. Ljungvall,  
D. Bazzacco, H. Li, R. Perez, P. Jhon, N. Lalovic, L. Lewandowski,  
J. Dudouet, O. Stewoski, P. Reiter, P. Spolaore, J. Nyberg, D. Ralet,  
A. Korichi, A. Lemasson, Y.-L. Kim, M. Labiche (simul),  
E. Clément (local PM), C. D-Pardo (commissioning), L. Harkness (psa)

kick-off visioconference on Jan 13th 2016

Source measurements/In-Beam Commissioning (February-July 2016 @ GANIL)

*first AGATA week of the team :)*

# Source Runs 2016 @ GANIL: AGATA configuration



- Reaction chamber used for AGATA+VAMOS exp.
- Sources at target position
- AGATA at 23.5cm (nominal) and 13.5cm (-10cm, compact)

# Source Runs 2016 @ GANIL: sources and data taking

Source	Activity( $T_0$ ) [kBq]	$T_0$
$^{60}\text{Co}$	155	10/03/2015
$^{60}\text{Co}$	8.7	05/01/2016
$^{152}\text{Eu}$	176	28/07/2015
$^{152}\text{Eu}$	19.1	05/01/2016
$^{133}\text{Ba}$	195	01/02/2015
$^{133}\text{Ba}$	21.4	30/10/2015
$^{137}\text{Cs}$	30.4	30/10/2015
$^{137}\text{Cs}$	29.0	07/10/2014
$^{166}\text{Ho}$	3.8	01/03/2014
$^{22}\text{Na}$	very low :)	

AmBe(Fe) (calibrations at high energy, E710 July 2016)

Some “routine”:

- $^{60}\text{Co}$  segment multiplicity 1 calibrations
- Cross-talk coefficients for adc3, atc9 and act10 (“new detectors”)
- Check them :)
- Check/redo n-damage correction coefficients<sup>1</sup>
- Summary on detector resolutions status (compare with old values/Cologne tests)
- $^{152}\text{Eu}$  for calibrations/linearity
- Check some basics PSA detector by detector
- Timing settings with BaF<sub>2</sub>, digitizers side
- Timing and thresholds FEE side

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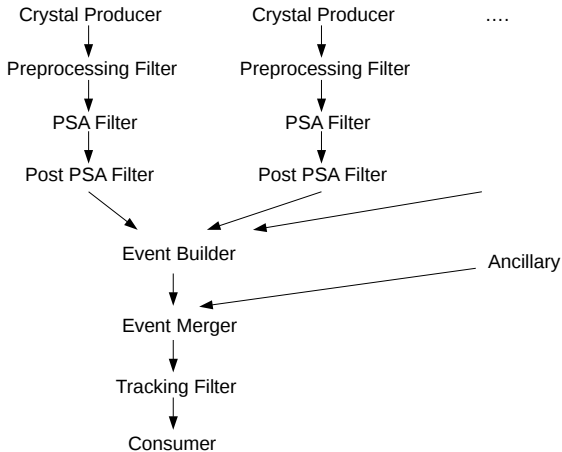
<sup>1</sup>Hopefully long  $^{60}\text{Co}$  run over weekend...

$T_{\gamma\gamma}$  FEE vs Old Electronics digi output  $\Rightarrow$  30ns

$T_{\gamma\gamma}$  FEE vs New Electronics digi output  $\Rightarrow$  50ns (low level LE)

After preprocessing stage of data processing: 20ns  
(Eu source)





# Contributions to this AGATA week = starting point for discussion

14:00	[60] Simulations working group overview	LABICHE, Marc
14:15	[61] Simulations for lifetime measurements	LJUNGVALL, Joa
14:30	[62] The performance working group overview : Source run s 2016@GANIL	MICHELAGNOLI, Caterina
14:45	[63] Linear polarization capabilities	MICHELAGNOLI, Caterina
15:00	[64] Angular correlations capabilities	LJUNGVALL, Joa
16:00	[74] Detector status in GANIL and core efficiency	PEREZ, Rosa
16:15	[75] Tracking source data with OFT	LOPEZ-MARTENS, Araceli
16:30	[76] 2016 Commissioning runs, AGATA+VAMOS	LEMASSON, Antoine
16:45	[70] PSA Optimization using Coincident Gamma Ray-Detection after Positron Annihilation	LEWANDOWSKI, Lars

Paper in preparation