# Detectors status in GANIL and core efficiency R.M. Pérez-Vidal IFIC-CSIC H. Li GANIL

AGATA Week | Orsay, 2016

# AGATA @ GANIL

High resolution γ-ray spectroscopy in beam

Performance characterized by:

- Resolution
- Efficiency
- P/T

Source measurements taken before AGATA-VAMOS campaign 2016



## **Measurements**

- Before AGATA-VAMOS campaign 2016
- 30 crystals (10ATC,1ADC), with chamber
- <sup>60</sup>Co and <sup>152</sup>Eu
- Nominal (23,5cm) and Compact (13,5m) positions from the target
- Different triggers: AGATA stand alone (including/excluding TP) and conditioned by VAMOS trigger
- Time coincidence window 300ns



## **Data processing**

#### Local level:

- Energy calibrations
- Segment Time alignment
- Crosstalk correction
- Adaptive-Grid-Search used for PSA
- Neutron damage correction used for 20 detectors (00A, 00B, 00C, 02C, 03B, 03C, 09B, 10A, 10B, 10C, 11B,11C, 12A, 12B, 12C, 13A, 13B, 13C, 14B,14C)

#### **Global level:**

- Energy recalibration
- Time alignment
- (Tracking)



### **Detectors Status**

**Resolutions.** Neutron damage correction



### **Detectors Status**

**Resolutions.** Comparison with Canberra



## Method



Comparison of the two methods for evaluation of dead-time  $t_{DT}$ 

### Results

Core efficiency per crystal @ 1,3 MeV





#### Core efficiency @ 1,3 MeV

Experiment 2,78% 19,17% Experiment		
	5,04%	18,95%
Simulation 3,25% ongoing Simulation	5,77%	ongoing

PRELIMINARY

## Results

#### **Core efficiency**

- Nominal position
- 30 crystals
- ~200 Hz per crystal

Dead-time estimated from normalization to coincidence



## Results

#### **Core efficiency**

- Compact position
- 30 crystals
- ~300-500 Hz per crystal

Dead-time estimated from normalization to coincidence



## Summary

Analysis of AGATA data taken in March with different sources and different triggers Neutron damage correction applied for 20 crystals Average FWHM resolution (before/after correction):

- Core: ~2,93keV → ~2,57keV
- Sum Seg.: ~5,22keV → ~3,08keV

Preliminary results of efficiency:

- Average Core efficiency per crystal ~0,09% @ 1,3MeV
- Core efficiency for 30 crystals ~2,78% @ 1,3MeV

## Outlook

More refined analysis: Dead-time estimation, PSA-quality and Tracking in progress More detailed simulation for the setup at GANIL in progress Measurements with more detectors

## Thank you for your attention

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