

# Monte-Carlo Simulations for AGATA@Ganil using the AGATA geant4 code

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## What was I thinking submitting this abstract?

- A lot of work being done
- Can profit other collaborations
- Might not be published but should(?) be known

## What will I talk about?

- Simulations to prepare proposals
- Simulations to create “toy” data sets
- Efficiency simulations

# Can I perform experiment X with AGATA@GANIL?

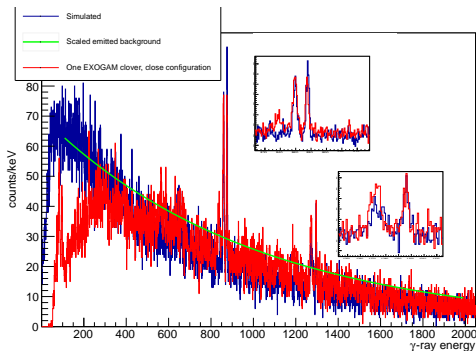
Proposals beyond “ $I * N * \sigma * \epsilon * t$ ”

- 1 Find a representative experiment already performed
- 2 Simulate it in a realistic fashion
- 3 Plug in AGATA

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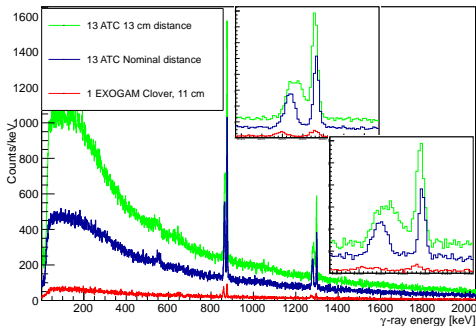
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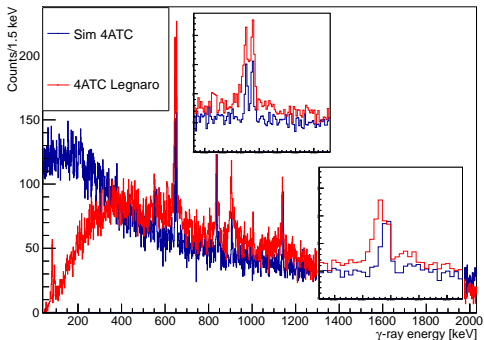
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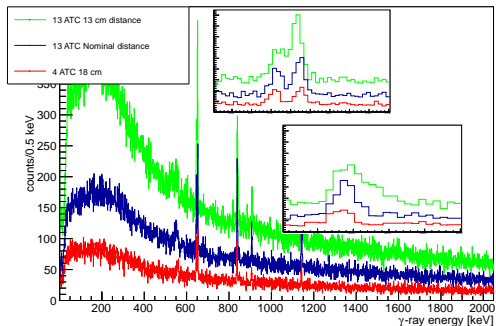
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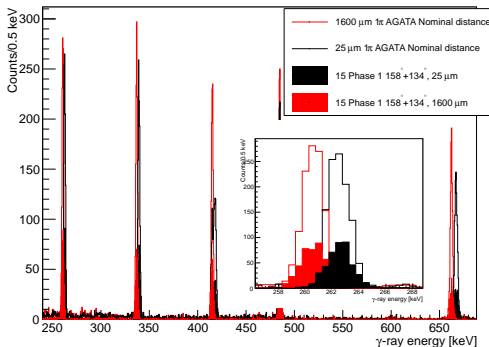




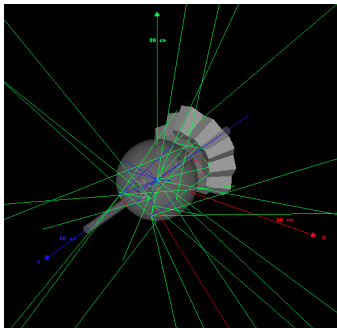
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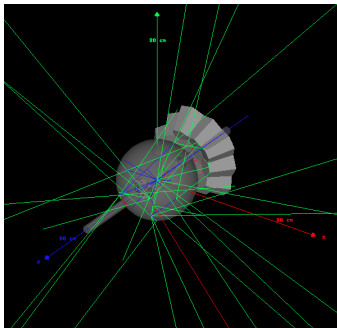


## “Toy” data sets to prepare oneself



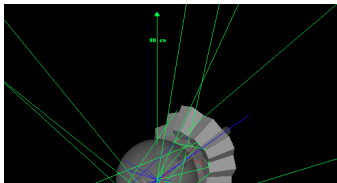
- Coulex  $^{74}\text{Kr}$ ,  $10^4$  pps, Pb target
- $2^+$  and  $4^+$  populated (1-5 b)
- Kr and Pb detected in DSSD

# “Toy” data sets to prepare oneself



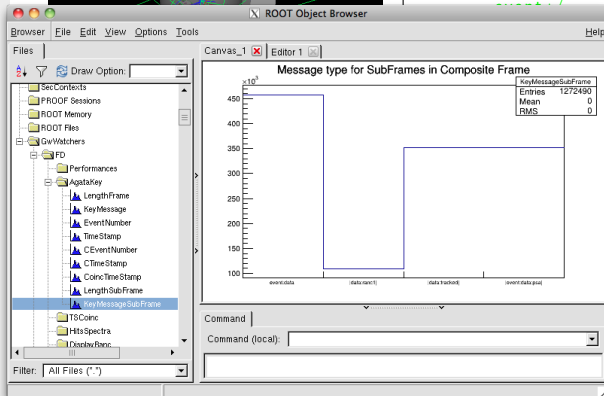
```
int MakeADFEvents(std::string baseoutput=
"PSA_" ,
    bool transformtocrystal=true, bool
    adres=true,
    Double_t timegate = 10,
    /*micros, summing in a det, if Dt
    larger, considered as new
    event*/
    std::string particleid = "-1"
    /* particle to look for when
    checking event*/)
{
```

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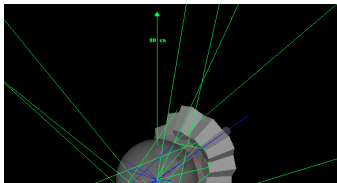


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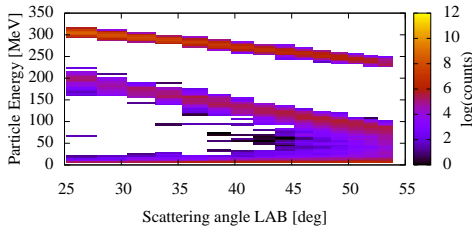


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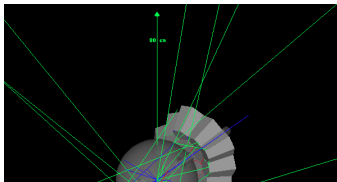


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int MakeADFEvents(std::string baseoutput=
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Energy vs. Angle DSSD

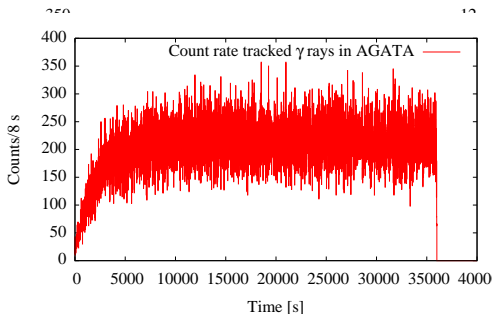


# “Toy” data sets to prepare oneself



```
int MakeADFEvents(std::string baseoutput=
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Energy vs. Angle DSSD



ROOT Object Browser

Files

- SecContexts
- PROOF Sessions
- ROOT Memory
- ROOT Files
- GWWatchers
  - FD
    - Performances
    - AgataKey
      - LengthFrame
      - KeyMessage
      - EventNumber
      - Time Stamp
      - CEventNumber
      - CTime Stamp
      - Coinc Time Stamp
      - LengthSubFrame
      - KeyMessageSubFrame
    - TSCoinc
    - HitsSpectra
    - DiablwBanc

Canvas\_1 Editor 1

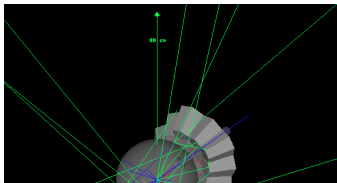
Message type for SubF

Counts/8 s

Command

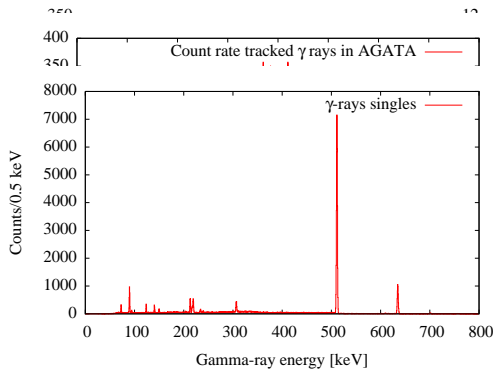
Command (local):

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Energy vs. Angle DSSD



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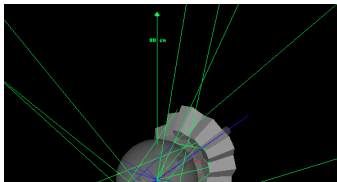
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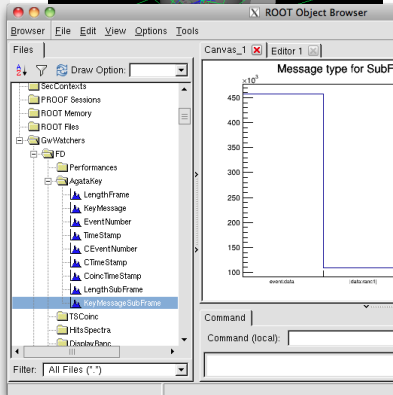
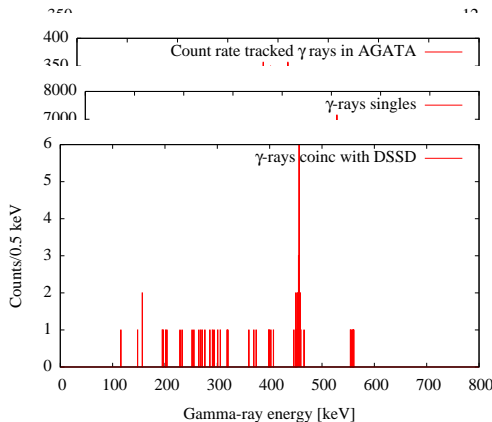
Filter: All Files (\*.\*)

# “Toy” data sets to prepare oneself



```
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Energy vs. Angle DSSD





# Simulation of absolute efficiency measurements using $^{60}\text{Co}$ sources

- Test adding effects of pileup in simulations
- Controlled environment to test effects of PSA and tracking
- Help understand experimental data

# Simulation of absolute efficiency measurements using $^{60}\text{Co}$ sources

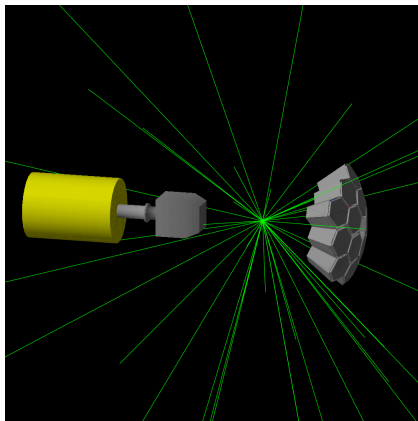


Figure: Simulation geometry

# Simulation of absolute efficiency measurements using $^{60}\text{Co}$ sources

- Run geant4 simulations with “1kBq, 100 kBq and 10MBq sources”
- Create Agata Data format (adf) files as if after psa
- Do tracking using the normal “AGATA” data analysis tools

# Simulation of absolute efficiency measurements using $^{60}\text{Co}$ sources

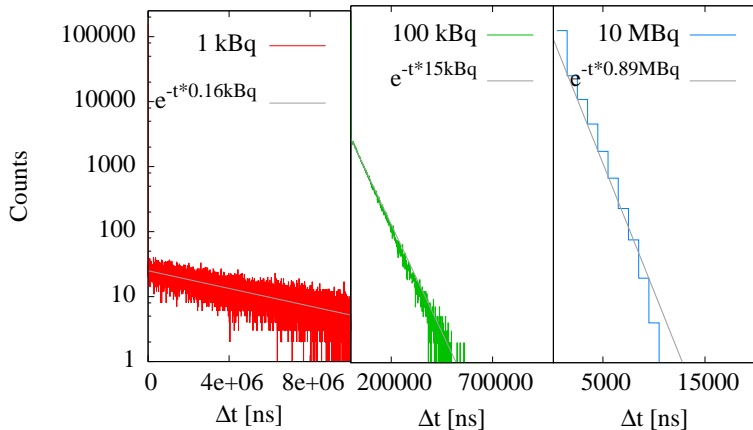


Figure: Results from simulations

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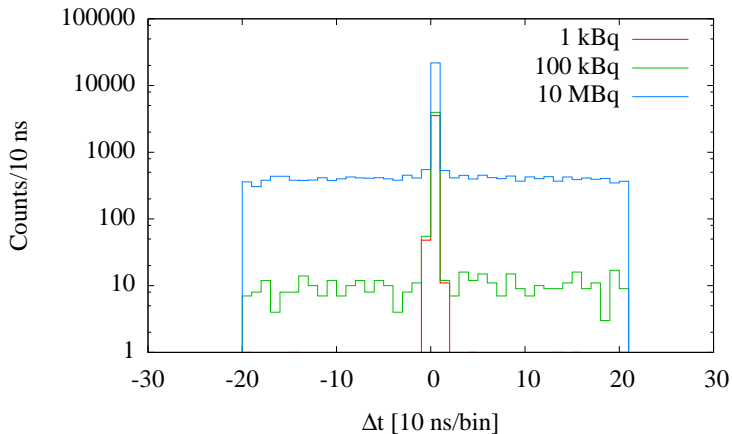


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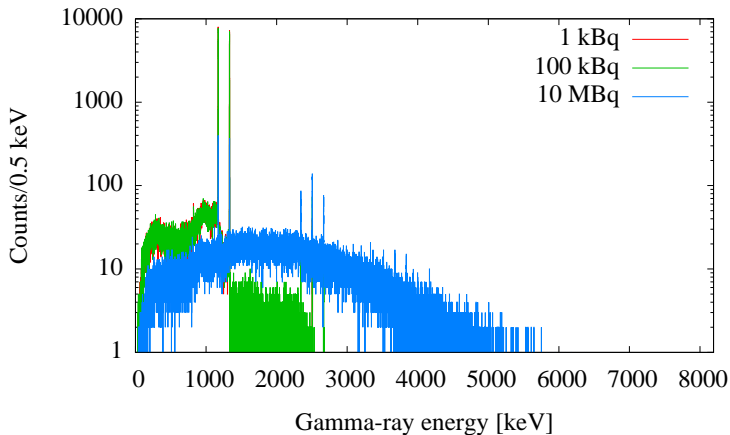


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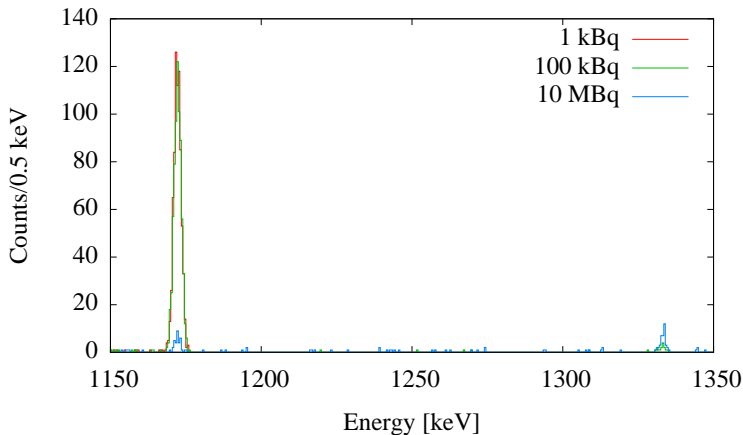


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