

PreSPEC-AGATA: Electronic and DAQ*

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- **Introduction**

- SIS+FRS experiments
- Picture of the setup
- Complex electronic setup
- Trigger-problematic

- The PreSPEC trigger

- Triggers overview

- Global Trigger Synchronisation

- GTS system based on a tree
 - Tag of event
 - Example: isomer tagging

- DAQ coupling

- Data flow coupling

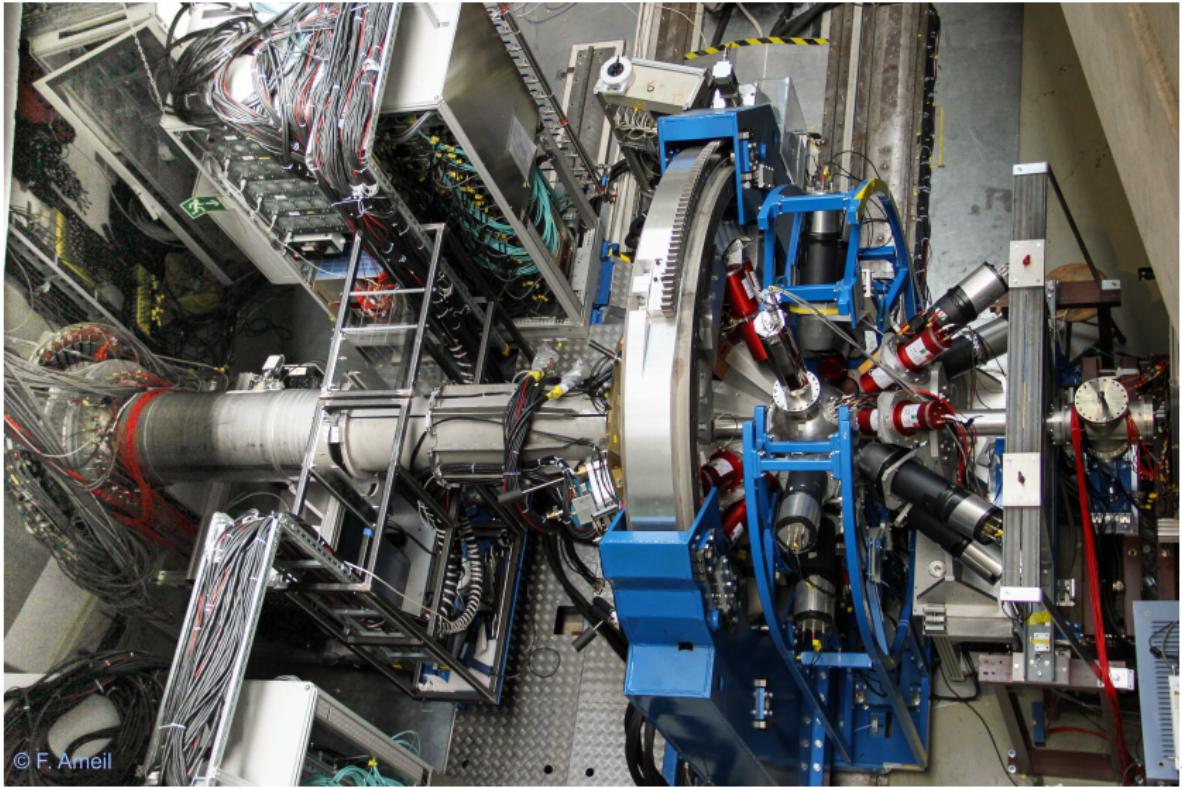
- Check of the coupling

- Energy consistency
 - Uranium X-rays

- Conclusion

- Outlines
 - Collaboration

Picture of the setup



© F. Amiel

Complex electronic setup

11 VME crates

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12 different triggers

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22 AGATA crystals (37 signals each) with their own
electronics, trigger system, and DAQ

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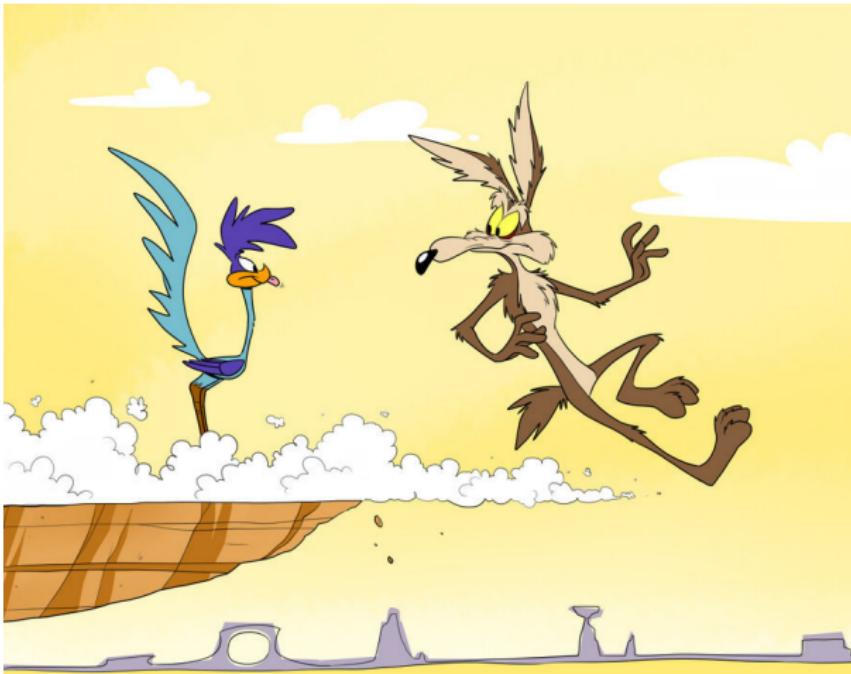
12 different triggers

22 AGATA crystals (37 signals each) with their own electronics, trigger system, and DAQ

How to couple everything?

Trigger-problematic

- Get all events



Trigger-problematic

- Get all events
- Trigger on time and...



Trigger-problematic

- Get all events
- Trigger on time and...
- on what we want



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- T6: Particle_{SC41}- γ _{HECTOR}
- T7: Particle_{SC41}- γ _{AGATA}
- T8: Particle_{SC41}- γ _{HECTOR}-LYCCA(Ta.-DSSD+Wall-DSSD)
- T9: Particle_{SC41}- γ _{AGATA}-LYCCA(Ta.-DSSD+Wall-DSSD)

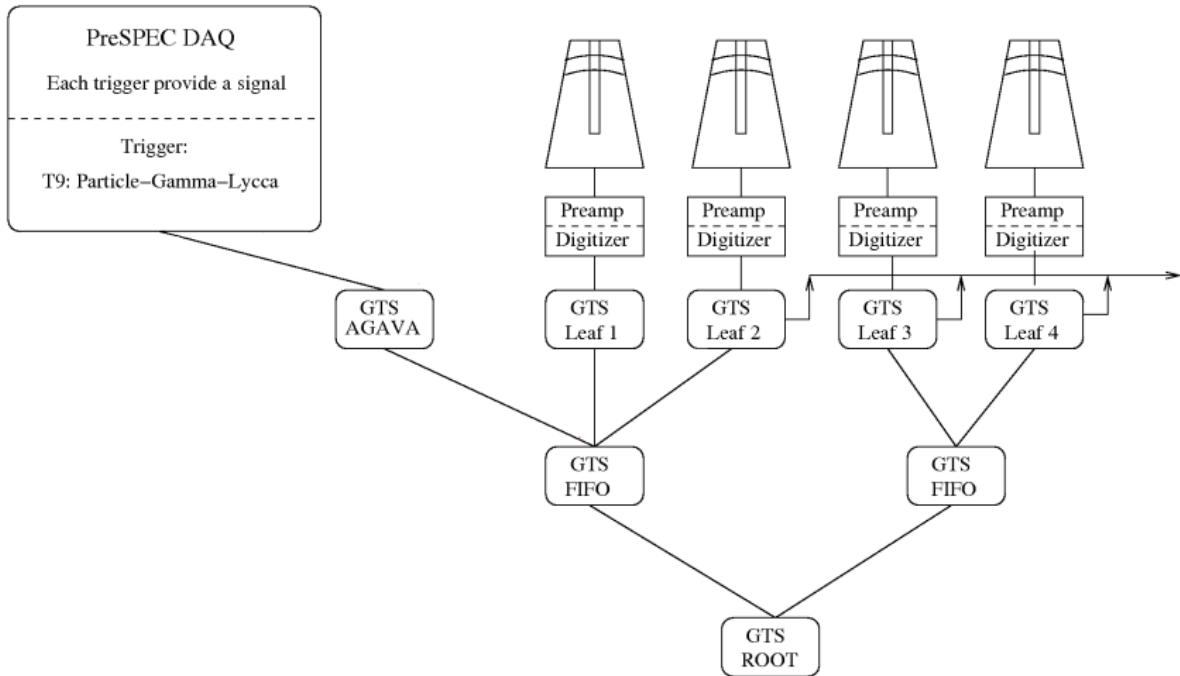
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- T10: Particle_{SC41} trigger, used for normalisation
- T12: On spill trigger
- T13: Off spill trigger

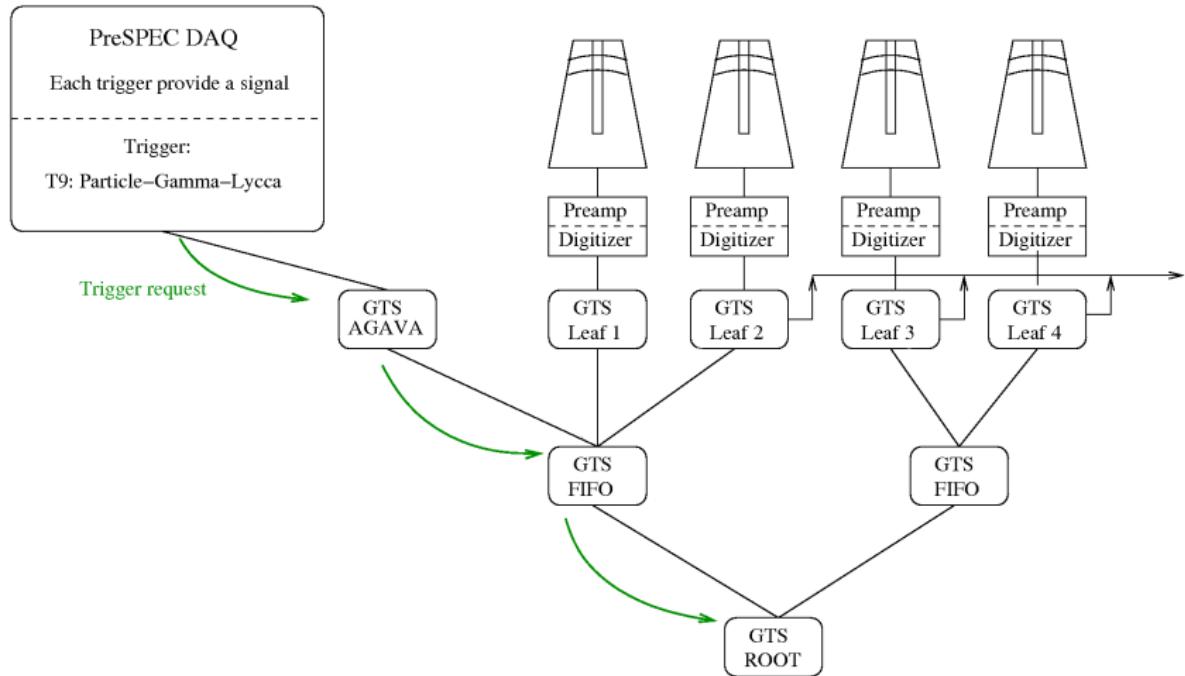
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GTS system based on a tree

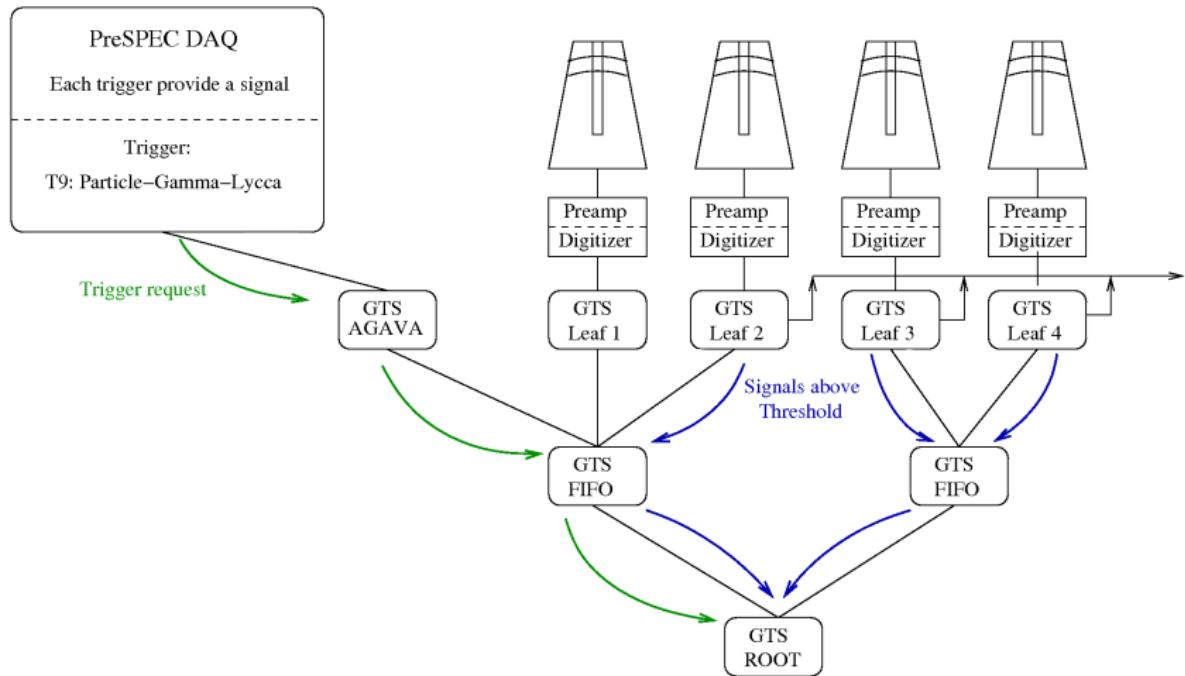
Provide time stamping and triggering system



GTS system based on a tree



GTS system based on a tree



Decision in the trigger processor

Coincidence windows

AGAVA

Leaf 1

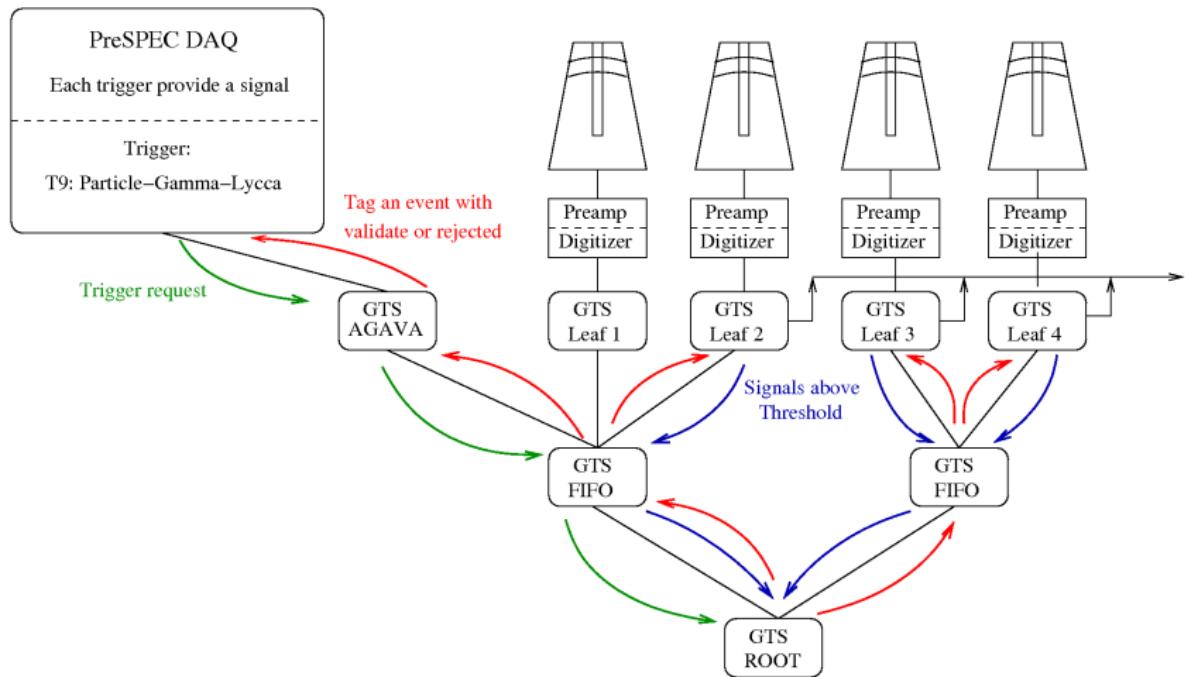
Leaf 2

Leaf 3

Leaf 4



GTS system based on a tree



AGATA Vme Adaptateur (AGAVA):

→ GTS for the complementary detectors

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Possibility to “tag” each event with the GTS status

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In case of a trigger 9 (Particle+Gamma+Lycca):

→ more than 99.9% of
validated event

Example: isomer tagging

Confirmation of the FRS identification: isomer configuration

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“Trick” the GTS system

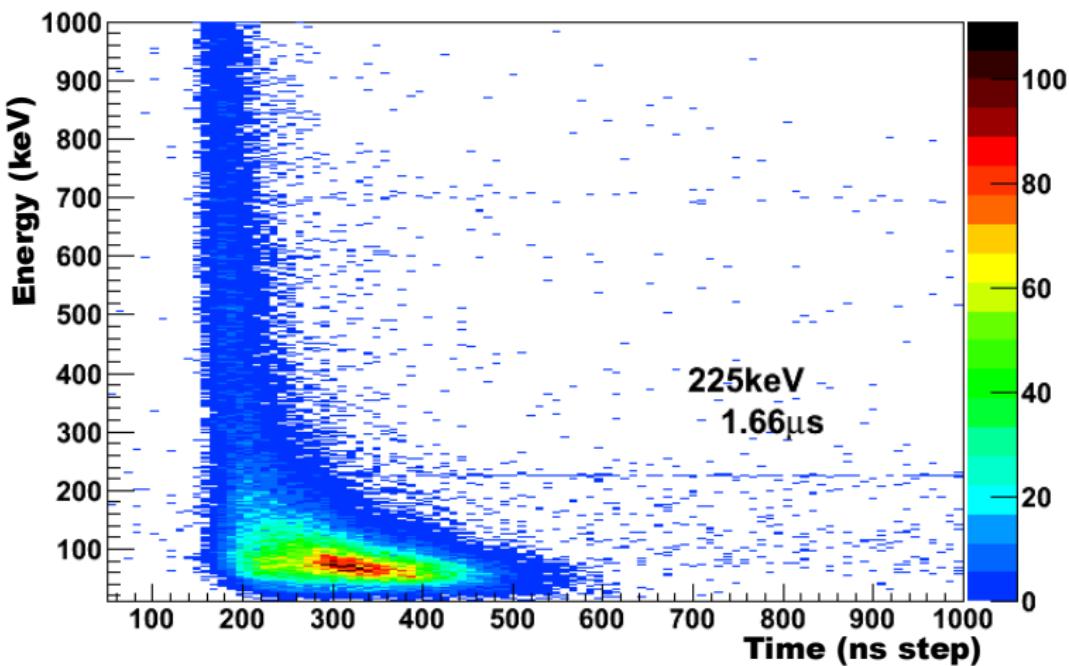
Example: isomer tagging

Confirmation of the FRS identification: isomer configuration

“Trick” the GTS system

Not a too high rate (1kHz to 3kHz)

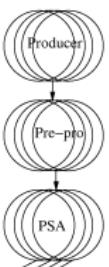
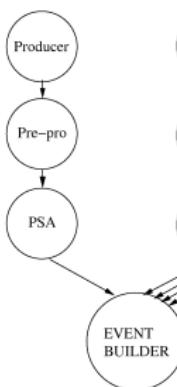
Example: isomer tagging

 ^{109}Rh 

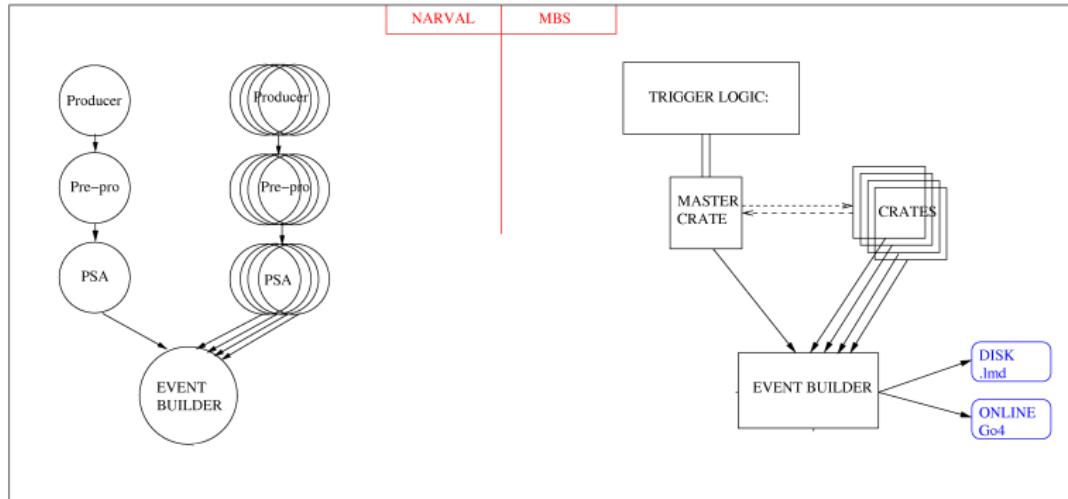
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Data flow coupling

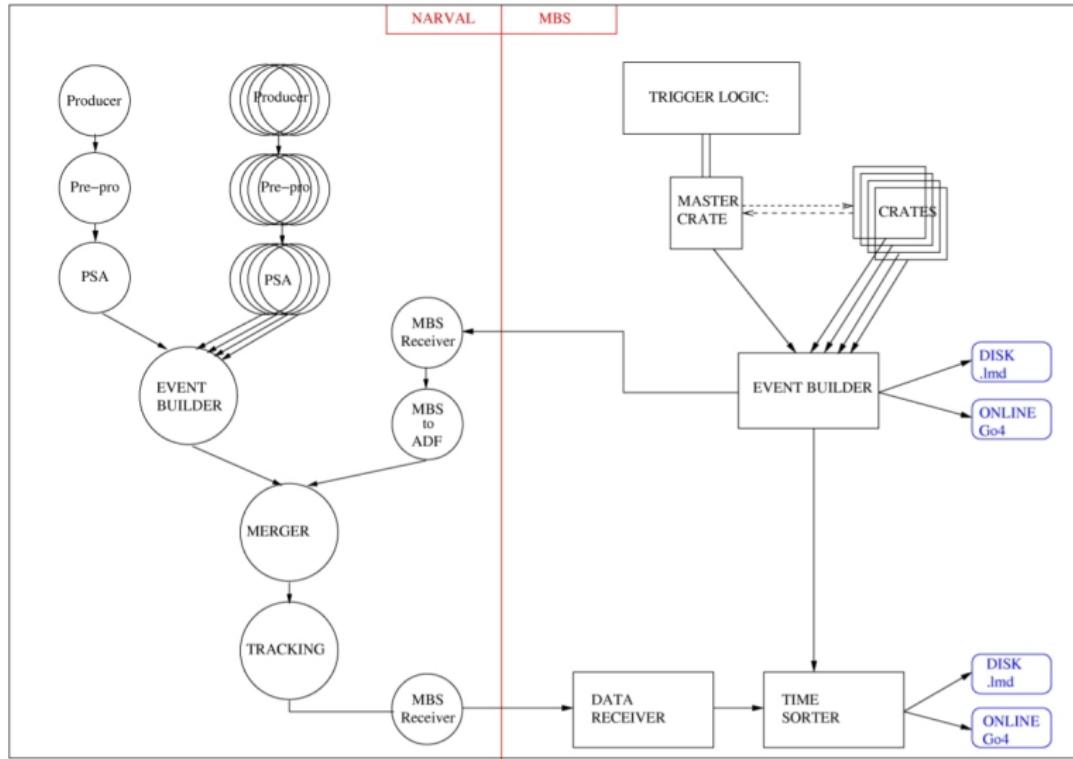
NARVAL



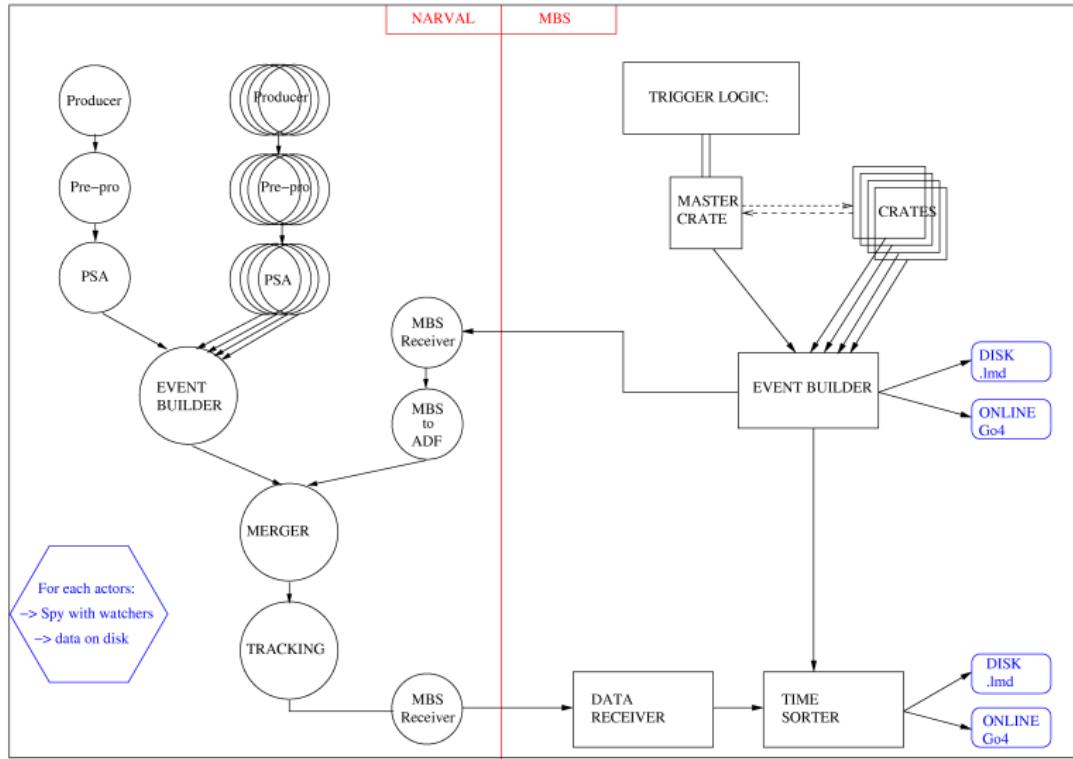
Data flow coupling



Data flow coupling

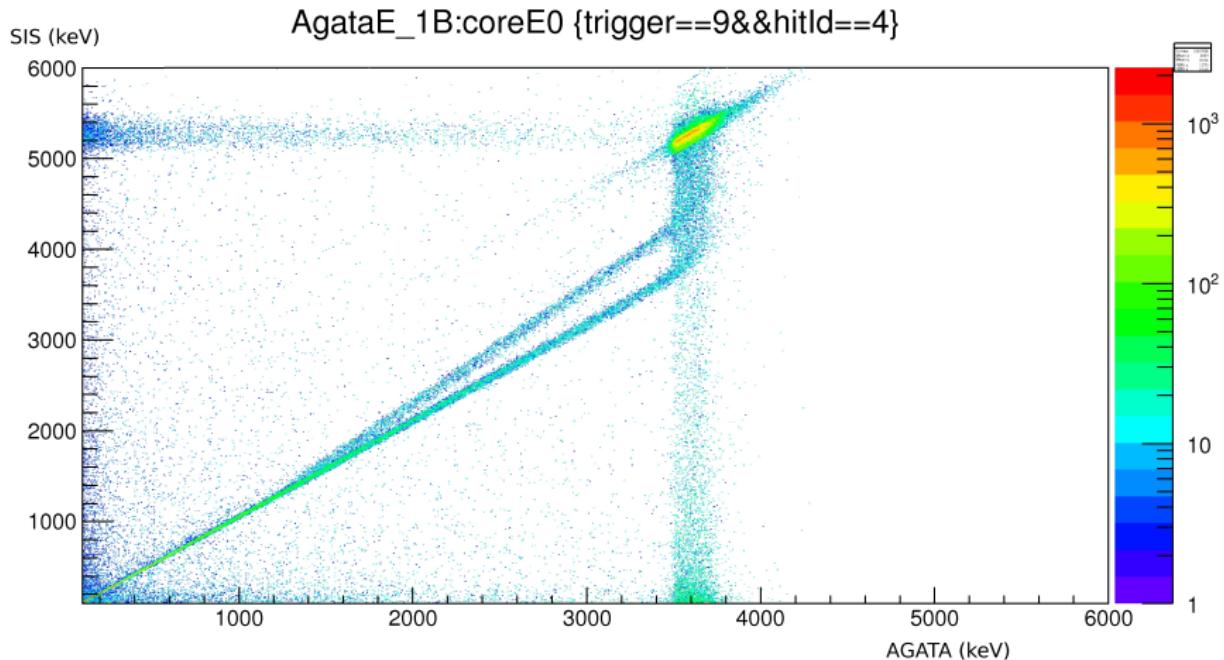


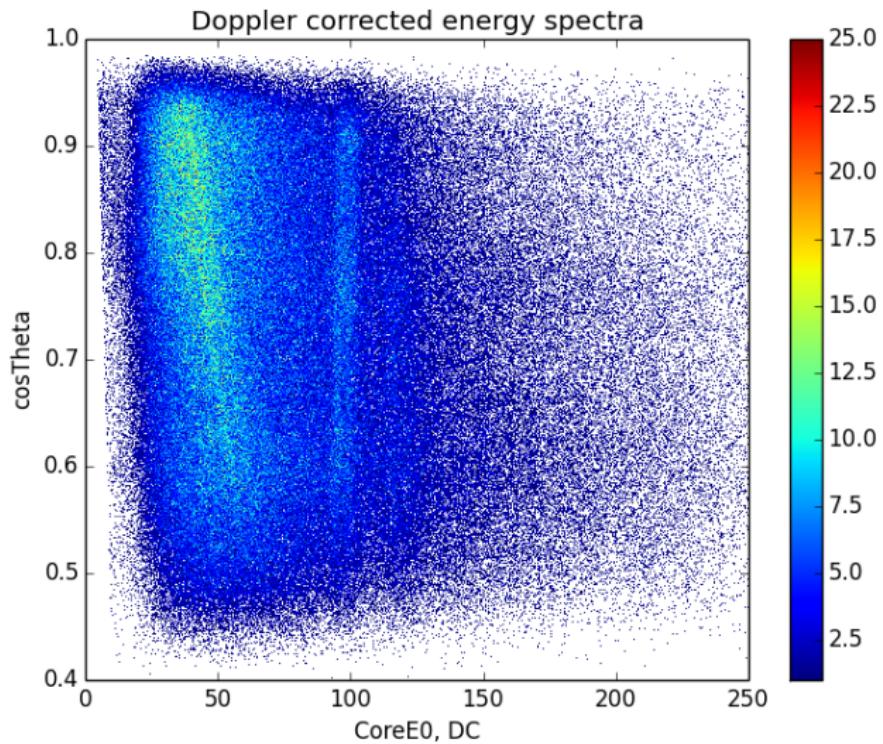
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Energy consistency





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LYCCA in the trigger shows good results

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Triggering system with the GTS system in agreement with the PresPEC trigger (more than 99% of good event)

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Coupling of the DAQ, and of the data flow fully operational

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Coupling of the DAQ, and of the data flow fully operational

With this setup,
4 experiments in 2012 and 4 in 2014

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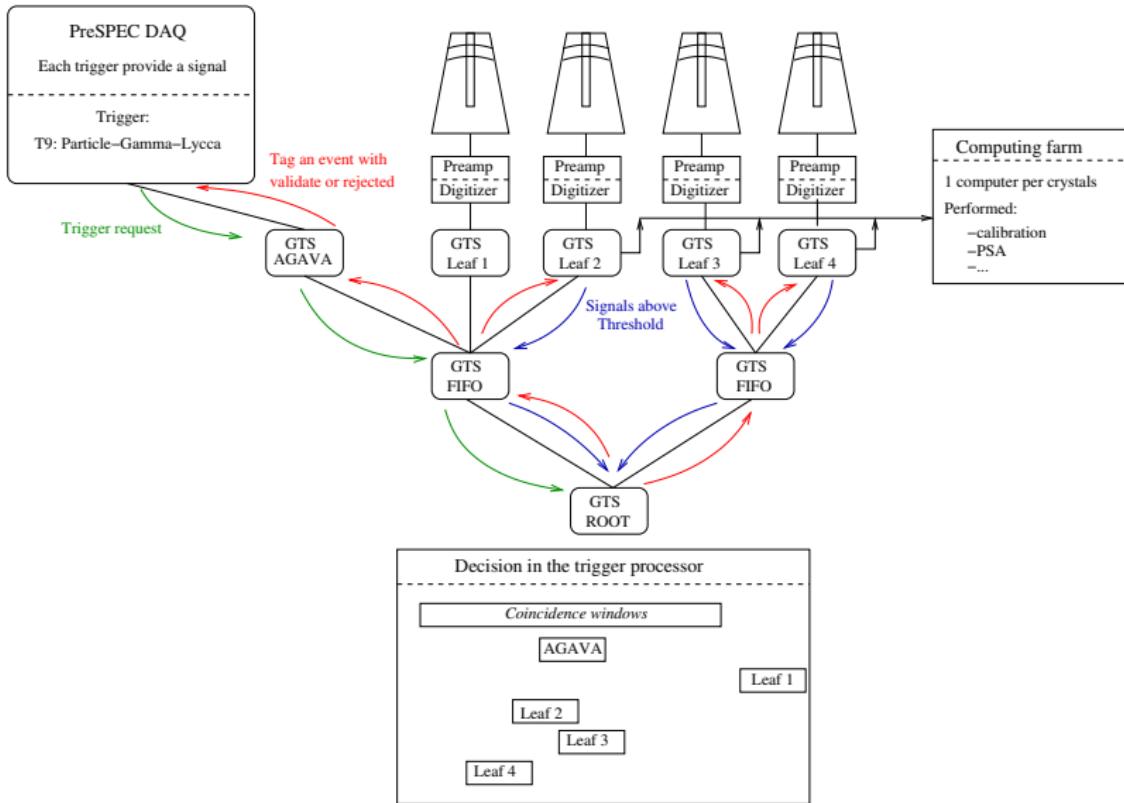
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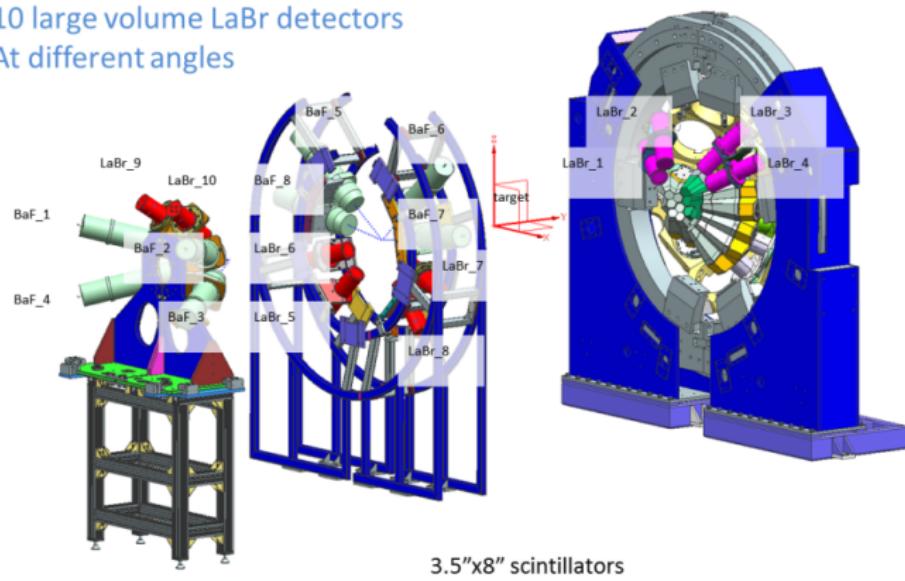
For each PreSPEC triggers:

- Request send to the AGATA trigger system (GTS)
- GTS system takes the decision for the readout of the AGATA electronics
- Each MBS event is tagged with: validation or rejection of the event by the GTS
- The MBS event is always readout



From INFN Milan

Hector⁺ in Prespec 2012 =
8 large volume BaF and
10 large volume LaBr detectors
At different angles



From INFN Milan

