GRAiNITA Muon Test Bench Status (GMTBS)

25/01/24

- Check the track reconstruction
- Include Grainita readout to the processing chain
- Check the detector timings

Track reconstruction

Difference between the expected entry/exit point of the two timepix Si layers (500 um and 1000 um) are checked

Event 30 with distMax = 0.003982363383031722 mm



Some examples





Event 30 with distMax = 0.003982363383031722 mm

Grainita in the processing chain



Timestamp difference Grainita/ASM

Timestamps difference (dt is in s) :



- ASM timestamp is reconstructed from its internal counter $(n \times T_{clk})$
- dt increase due to T_{clk} determination error
- When dt is too large some event are not correctly assigned

Timestamp difference Grainita/ASM



TODO :

- Improve the timestamping
- Use the trigger information

Takeaway :

- Alignment better than 1 s
- Room for improvements

Timestamp difference Timepix/ASM

Timestamps difference (dt is in s) :



Takeaway :

- Alignments between all the detector within 1 s
- Room for improvements

Muon type

Several muon types have been defined from the track reconstruction :

- 00 : Muon that only cross Timepix
- 01 : 00 with a coincidence
- 10 : Muon that only cross Timepix+bottom scintillator
- ▶ 11 : 10 with a coincidence
- 20 : Muon that only cross Timepix+bottom scintillator+grainita
- ► 21 : 20 with a coincidence

A scintillator has been added at the top (not used in the trigger)





Not fully understood, lot of coincidences in the 0X type.

Adding the top scintillator :



Type 21 seems to be what we expect.

First result



- Asking only muons which cross the full detector gives a mean value of 200 PE (fibres)
- Looks compatible with previous results (Reminder : only 4 fibres/16 connected)