BGO cosmics acquisition

29/08/25

Reminder : data sets

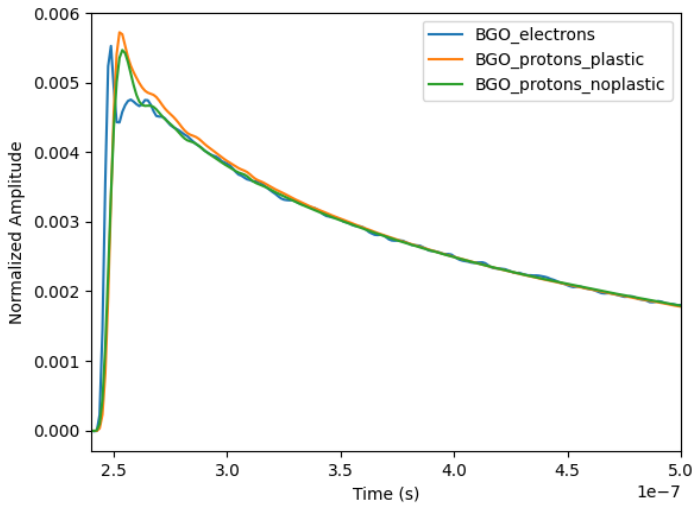
After ALTO test beam several data sets for BGO are available :

Type	Wavecatcher conf.	Location
Electron source	NOK	IJCLab lab
Proton	OK	ALTO
Proton with attenuator	OK	ALTO

- ALTO data has to be de-convoluted from the cable/amplifier effects
- Simultaneous fit :
  $\tau_1 = 341$ ns $\tau_2 = 69$ ns
  ($\chi^2 = 1.05$)

Dataset	τ_1 %	τ_2 %
Electron	5.6	94.4
Proton without attenuator	5.3	94.6
Proton with attenuator	6.4	93.4

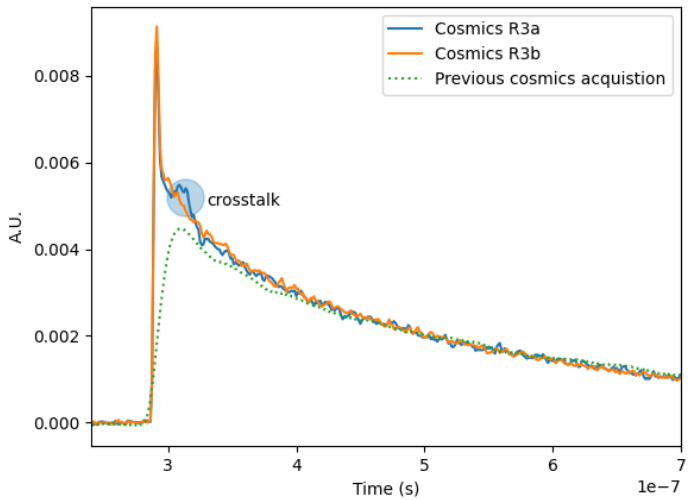
- Decision was taken to re-do cosmics muons with the new detector geometry



Comparison between the various data set mean decays (After applying the deconvolution)

New acquisition

- Wavecatcher directly connected to the PM
- Coincidence with 2 external scintillators
- Annoying crosstalk solved with the BGO PM signal

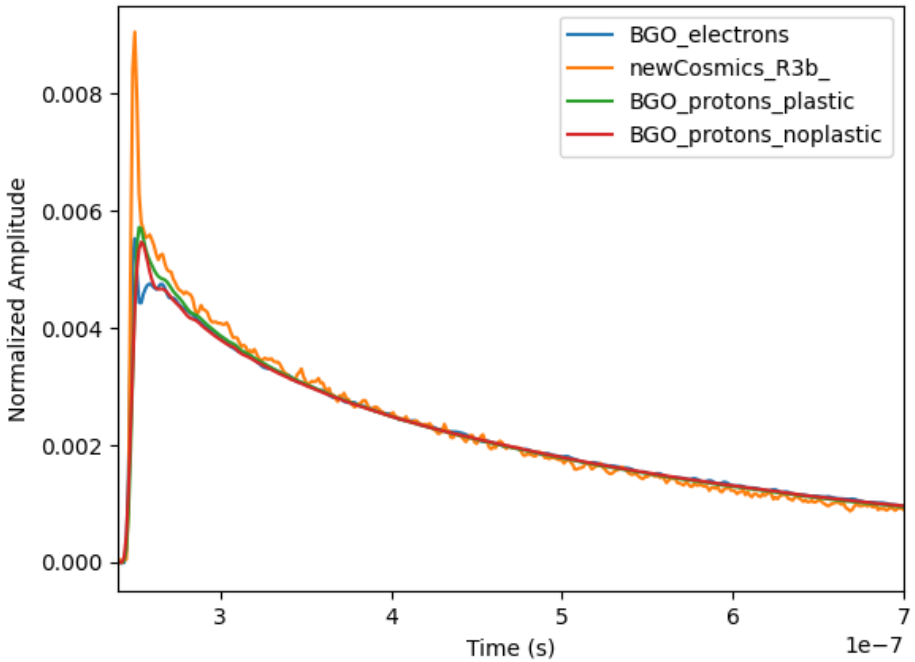


Comparison between the various cosmic acquisitions)

Difference with the previous acquisition :

- The trigger was not correctly applied (self-trigger) polluting the muons sample
- The amplifier has a too low bandwidth ($\approx$ 50 MHz)
- Issue with the wavecatcher config. (spotted at ALTO)

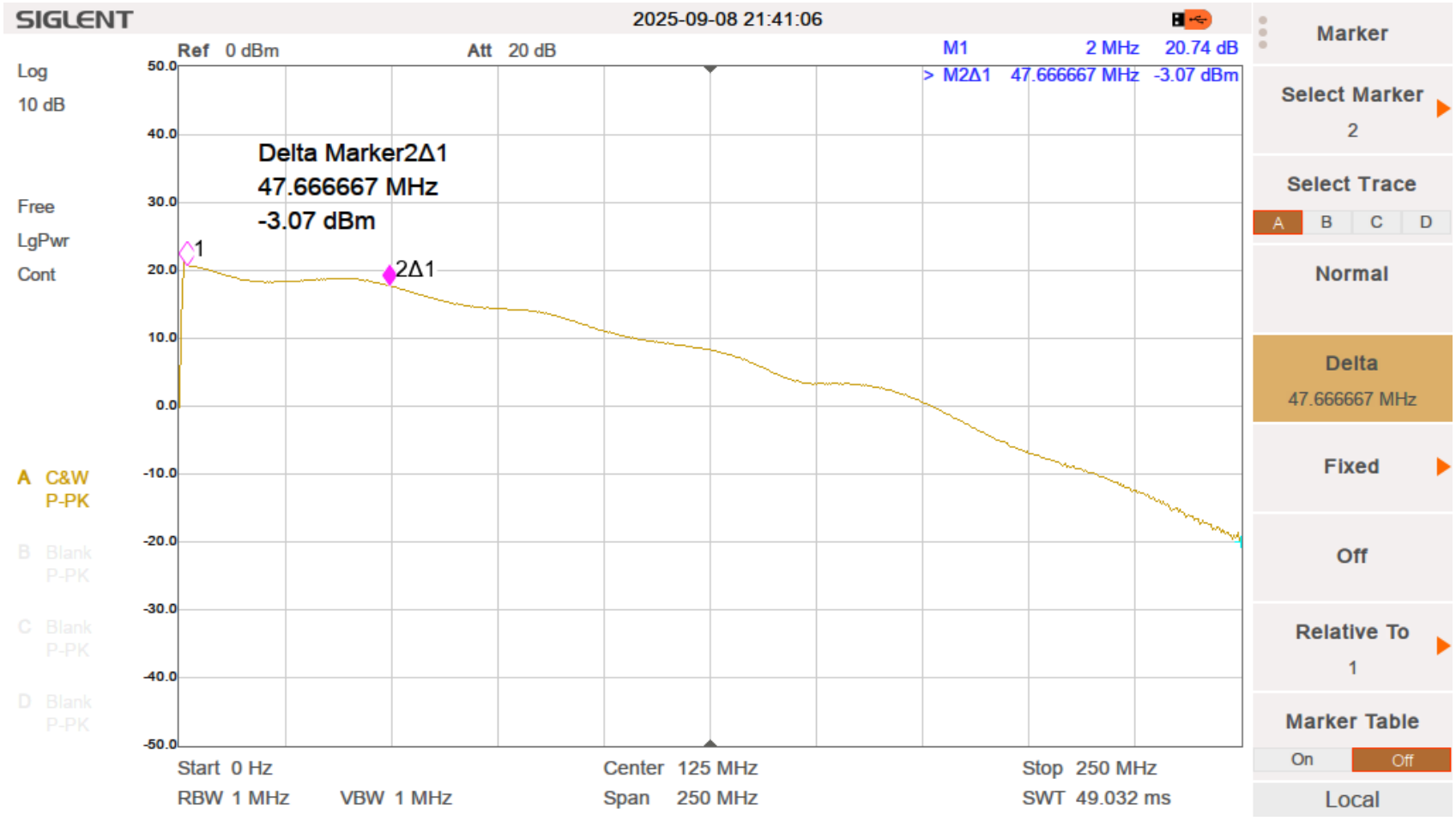
Comparison to the ALTO data



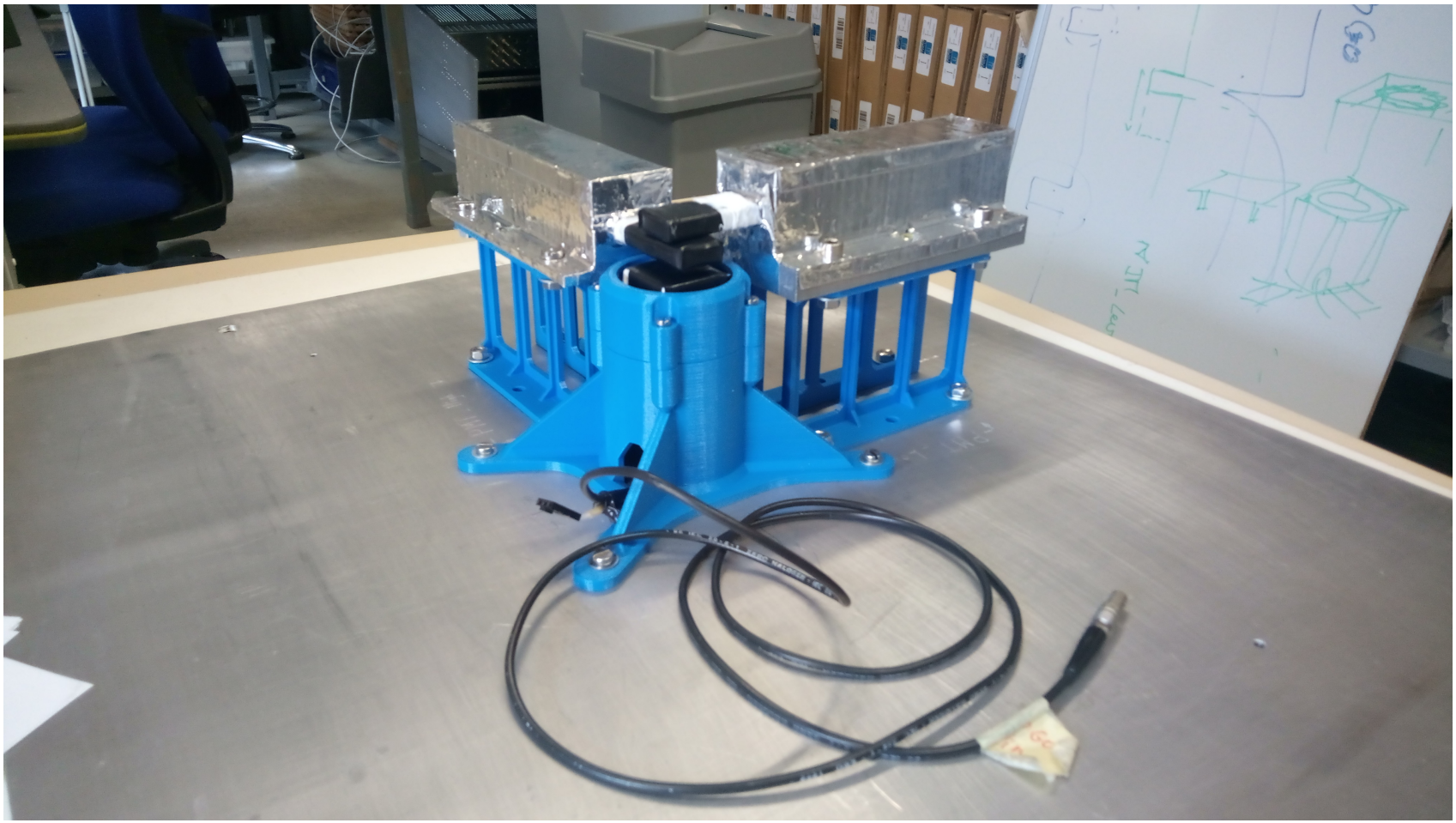
- Simultaneous fit : $\tau_1 = 342$ ns $\tau_2 = 71$ ns

Dataset	τ_1 %	τ_2 %
Electron	5.9	94.1
Proton without attenuator	5.5	94.5
Proton with attenuator	6.5	93.5
Muons	9.3	90.7

SPARE SLIDES



SPARE SLIDES



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