

# XIII FOOT Collaboration Meeting

*First look at the Heidelberg data*

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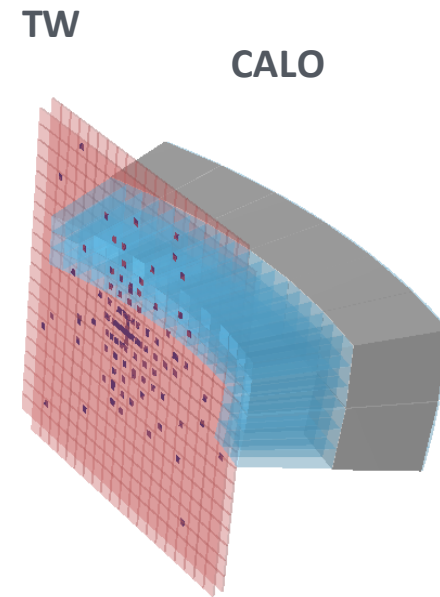
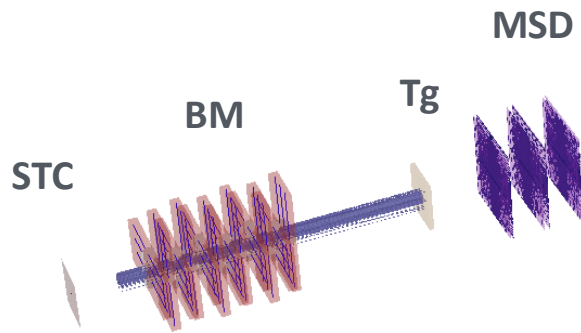
# Experimental setup

Heidelberg, from July 17 to July 25 (2022)

$^4\text{He}(100-140-200-220 \text{ MeV/u})$  on  $^{12}\text{C}$

{ 11 Mevts (min bias)  
4 Mevents (frag. trig) }

Tot. data collected: 64 Mevents



$^4\text{He}$  on  $^{12}\text{C}$  @ 200 MeV/u

TW G2.5

Runs: 4746-4747-4748

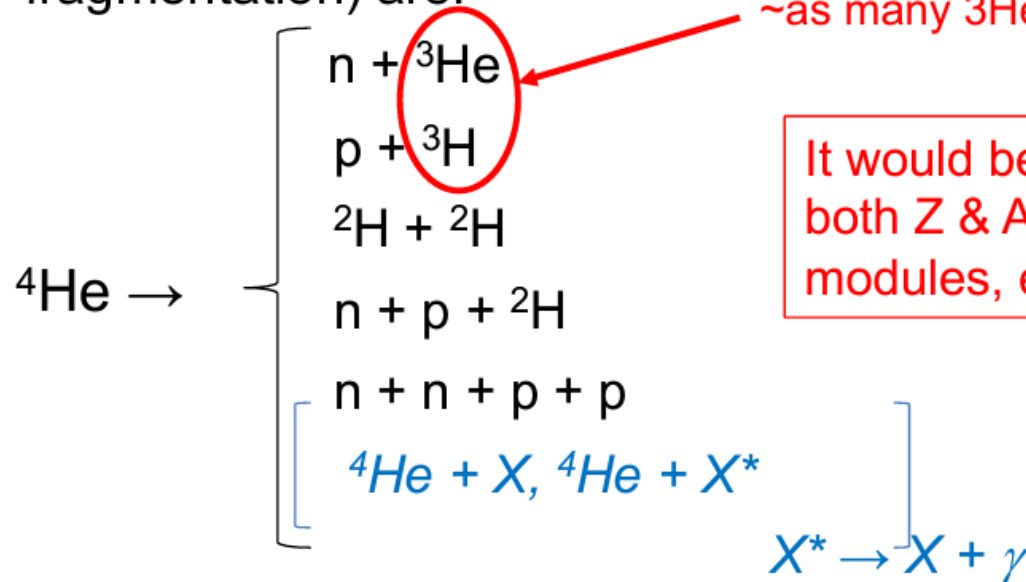
Tot evnts ~ 3M

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ID	Date	Author	Type	Category	Subject	
46	Wed Jul 20 22:36:50 2022	Sofia	Info	Run Info	Run 4753-4755-4756-4757	Come back to trigger Marg Majority 1M events/run
45	Wed Jul 20 22:34:40 2022	Sofia	Info	Run Info	Run 4751	Trigger: fragmentation + marg prescaled at 20 + pedestals prescaled at 560 100k events
44	Wed Jul 20 22:33:00 2022	Sofia	Info	Run Info	Run 4750	Threshold for fragmentation trigger set, same configuration as before. Trigger still Marg Maj . Zero suppression removed
43	Wed Jul 20 22:28:56 2022	Sofia	Info	Run Info	Run 4746-4747-4748-4749	From now on: TARGET 5 mm CARBON average rate 650 Hz 1M events /run

## Available Fragmentation Channels

Using  $^4\text{He}$  projectiles, the only final state channels (excluding target fragmentation) are:



It would be fundamental to aim to both Z & A identification using the BGO modules, even in a limited solid angle

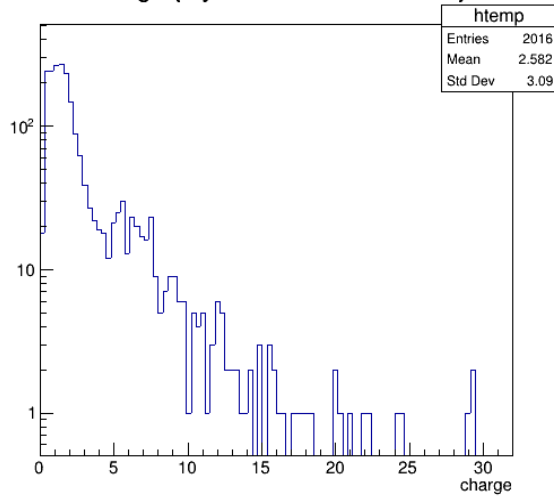
$$E_{\text{sep}}(^4\text{He} \rightarrow n + ^3\text{He}) = E_{\text{bind}}(^4\text{He}) - E_{\text{bind}}(^3\text{He}) = 28.3 - 7.7 = 20.6 \text{ MeV}$$

$$E_{\text{sep}}(^4\text{He} \rightarrow ^2\text{H} + ^2\text{H}) = E_{\text{bind}}(^4\text{He}) - E_{\text{bind}}(^2\text{H}) = 28.3 - 2.23 = 26.07 \text{ MeV}$$

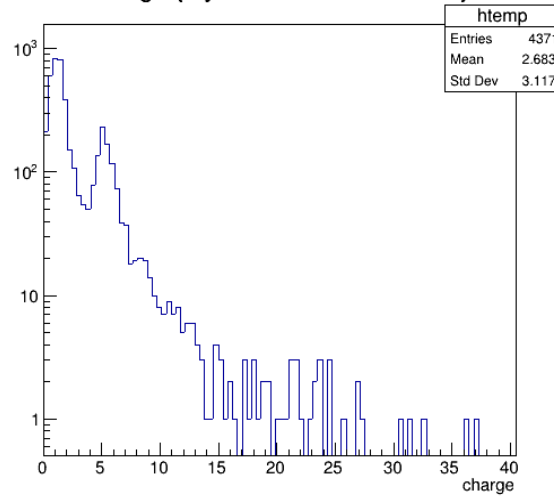
## TW front layer

$$Q = \sqrt{Q_A \cdot Q_B}$$

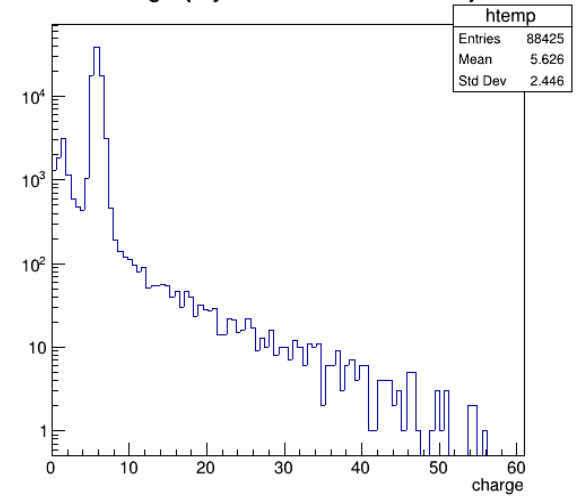
charge {layerId==0 && barId==0}



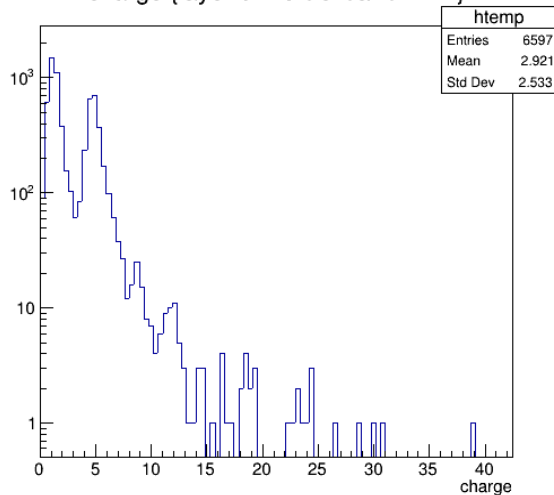
charge {layerId==0 && barId==4}



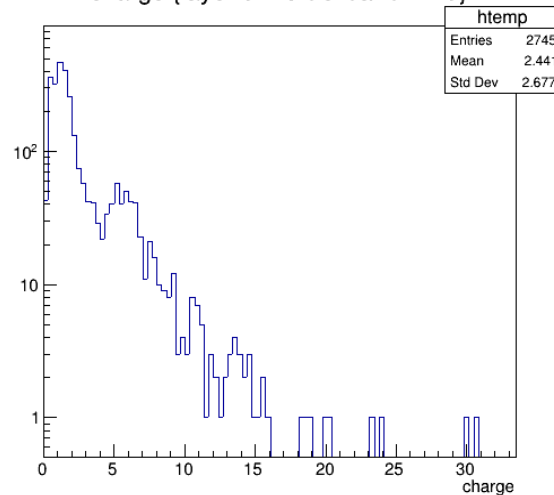
charge {layerId==0 && barId==8}



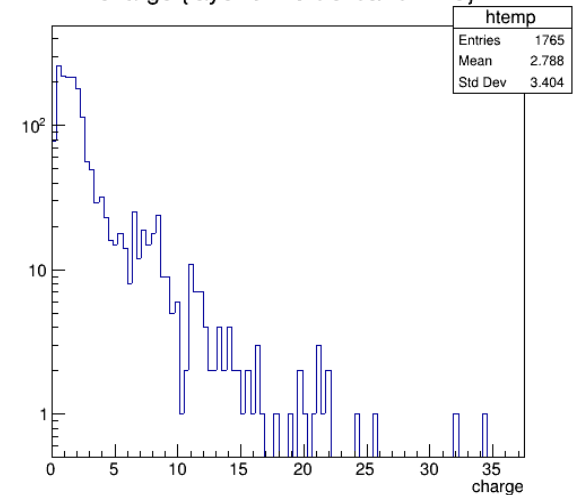
charge {layerId==0 && barId==12}



charge {layerId==0 && barId==16}



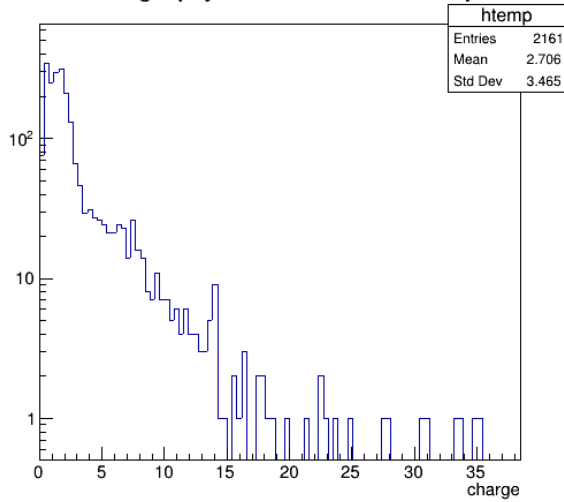
charge {layerId==0 && barId==19}



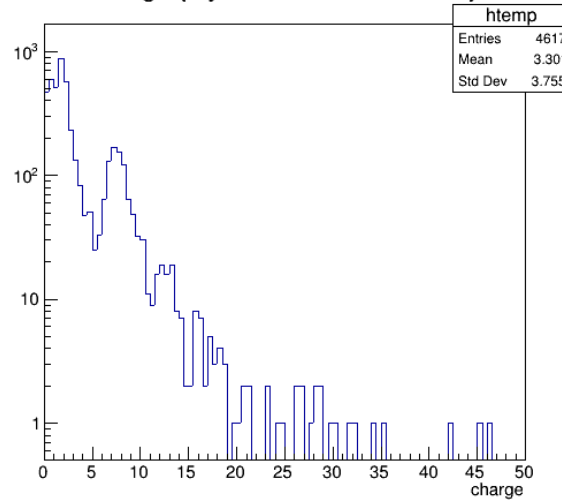
## TW rear layer

$$Q = \sqrt{Q_A \cdot Q_B}$$

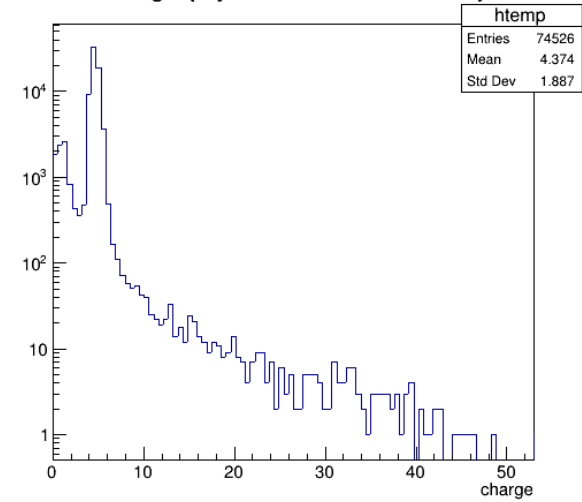
charge {layerId==1 && barId==0}



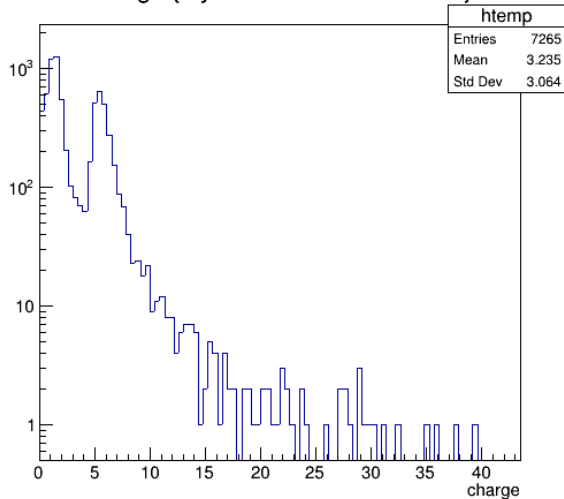
charge {layerId==1 && barId==4}



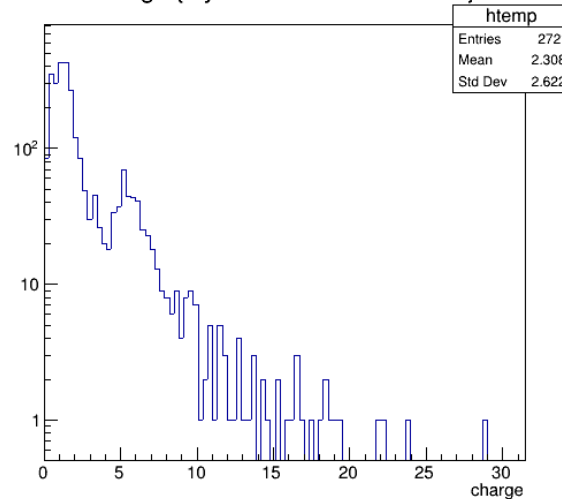
charge {layerId==1 && barId==8}



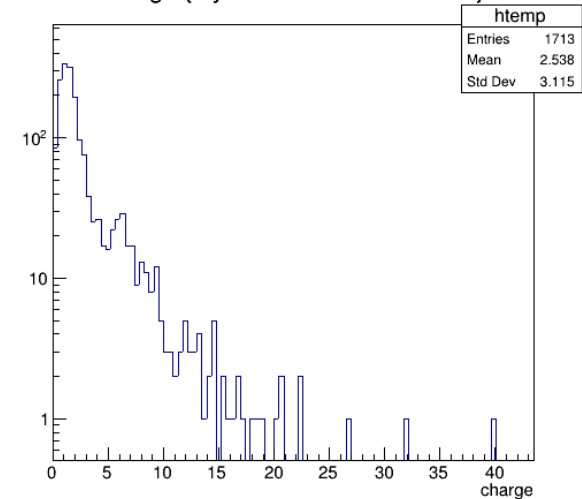
charge {layerId==1 && barId==12}



charge {layerId==1 && barId==16}



charge {layerId==1 && barId==19}



- 1) Calibration of TW with  $^3\text{He}$  at different energies (100, 140, 200, 220)
- 2) Try to understand how Z=1 fragments set with respect to the calibration curve
- 3) Study the TW sensitivity to Z=1 fragments
- 4) Calibrate the Z of reconstructed fragments with TW
- 5) Correlations between TW/MSD and TW/CALO to exploit the reconstructed Z event per event