

# Hall A RC Report

## 9-15 April 2025

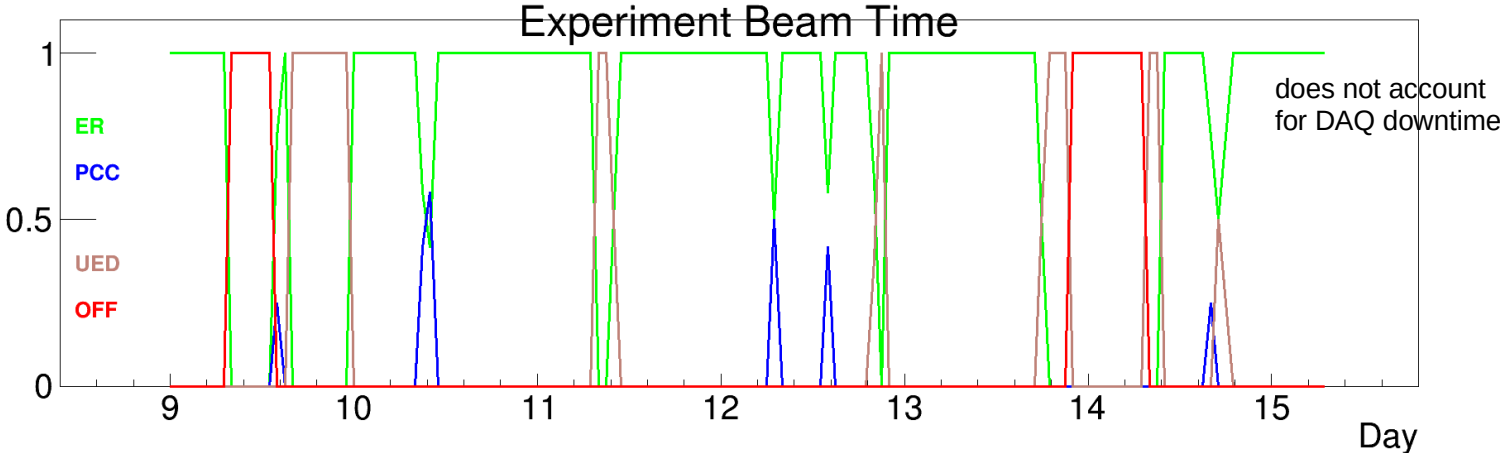
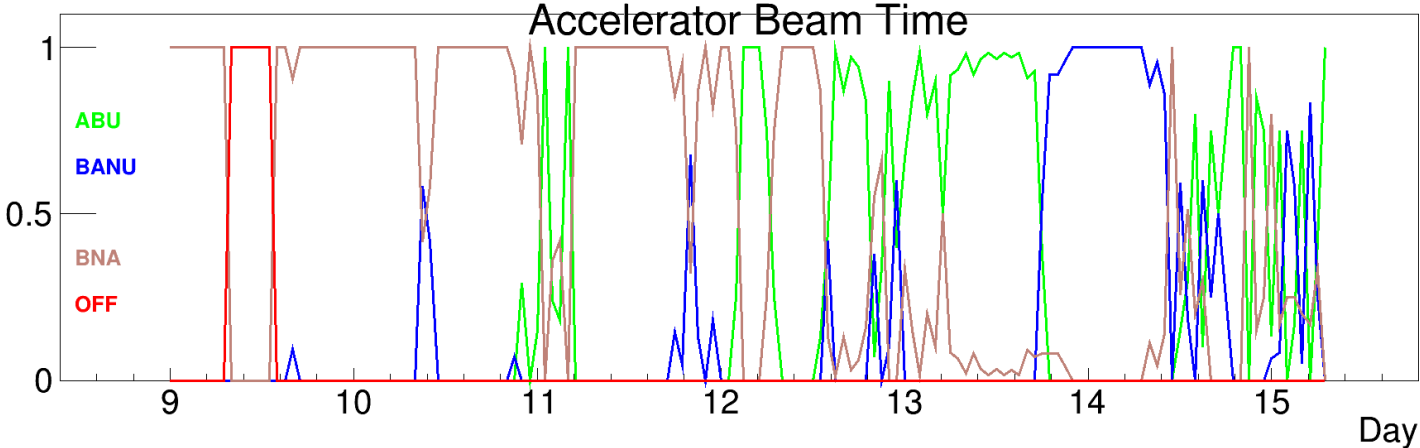
Evaristo Cisbani

# Beam Time Summary

*Approximate*

Beam available  
in Hall A since  
~OWL/Apr/12

Experiment  
unavailable  
~OWL/Apr/14  
due to target  
movement  
issue



# Efforts ongoing for

- ECal/HCal calibration: thresholding, gain/HV
- Coincidence Trigger timing
- GEM commissioning: efficiency scan, trips mitigation ...
- CDet connection fixing and calibration
- DAQ/CODA improvement ...
- Data analysis (including replay tuning and optimization)
- ...

# One week summary

	Wed/9	Thu/10	Fri/11	Sat/12	Sun/13	Mon/14	Tue/15
Beam	Harp stuck, tuning	Conditioning for delivery	beam in Hall since ~8PM	beam till ~7AM, cryo issue, back at 1PM	beam till ~6 PM	Harp scan, IC cal, beam since ~1PM,	beam available
SBS Mag.	Off	Off	On	On	On	Off / On	On
Target	Cross	Cross	LH2	LH2	LH2	Thin C, LH2	LH2
DAQ			stream 1	stream 1	stream 1	stream 3, no HCal scaler	stream 3, no HCal scaler
Kin.			1	1	1	straight-through, 1	1
Access for	CDet cabling, ECal cooling	CDet cabling, ECal cooling	Nitrogen purge dumping, SBS power supply max current	ECal cooling	Target ladder	Target ladder ECal cooling, 2xtrigger cabling,	

Beam current 1-5 uA, offline analysis ongoing, CDet mainly out of DAQ

# Beam

Quite stable in the last ~5 days

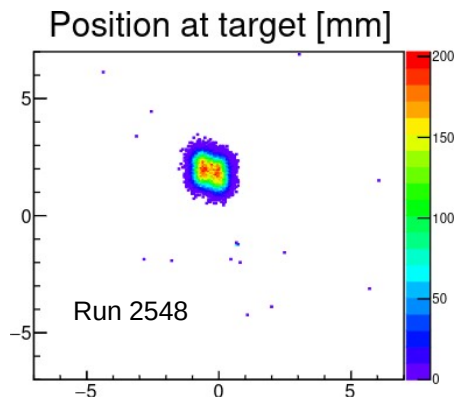
Current beam size at target:

$x \sim 250\text{-}350$

$y \sim 550\text{-}600 \text{ }\mu\text{m}$

(raster  $2 \times 2 \text{ mm}$ )

Current:  $0.5 - 5 \text{ }\mu\text{A}$



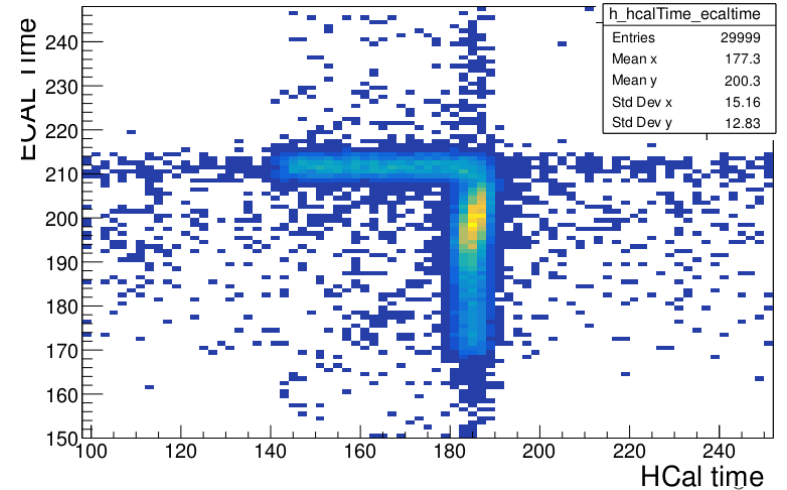
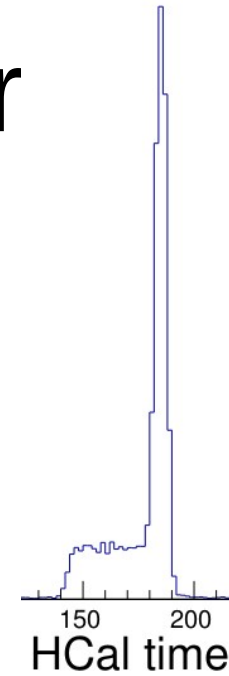
Sunday/Apr/13

# Coincidence Trigger

Coincidence Time Width = 40 ns

Coincidence set by HCAL

Attempt to center ECAL trigger inside HCAL to reduce time window did not succeed

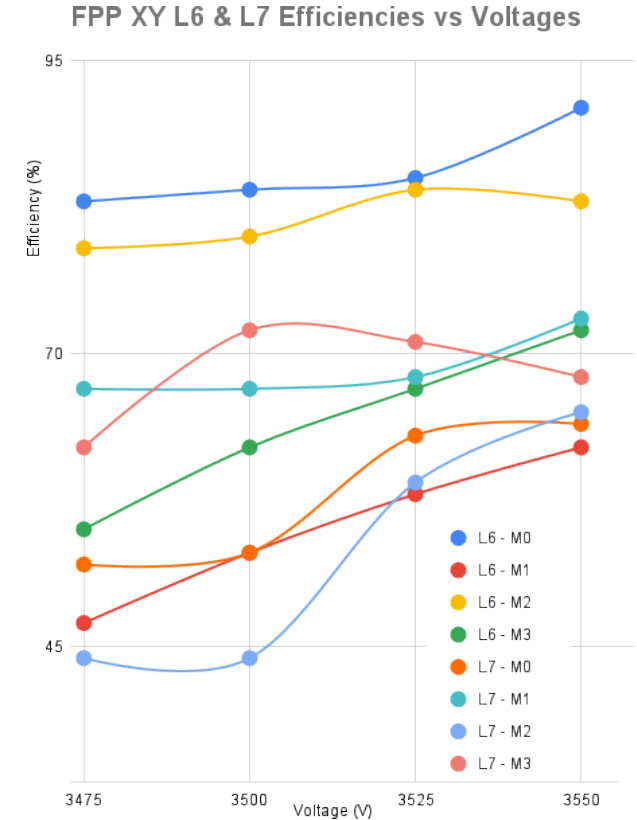
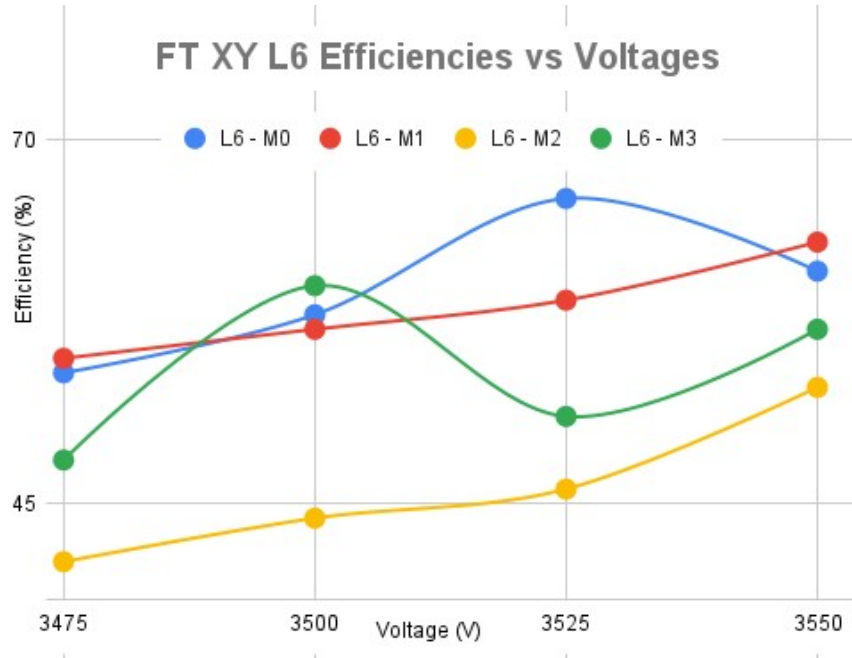


Adapted from Mark - SWING/Apr/14 on  
<https://logbooks.jlab.org/entry/4356708>

# GEMs efficiency scan

Maybe not optimal but more than acceptable;  
adjustment still possible (latency fine tuning ...)

Some GEMs spikes may cause CODA issue



Adapted from Jacob et al., DAY/Apr/13  
<https://logbooks.jlab.org/entry/4354971>

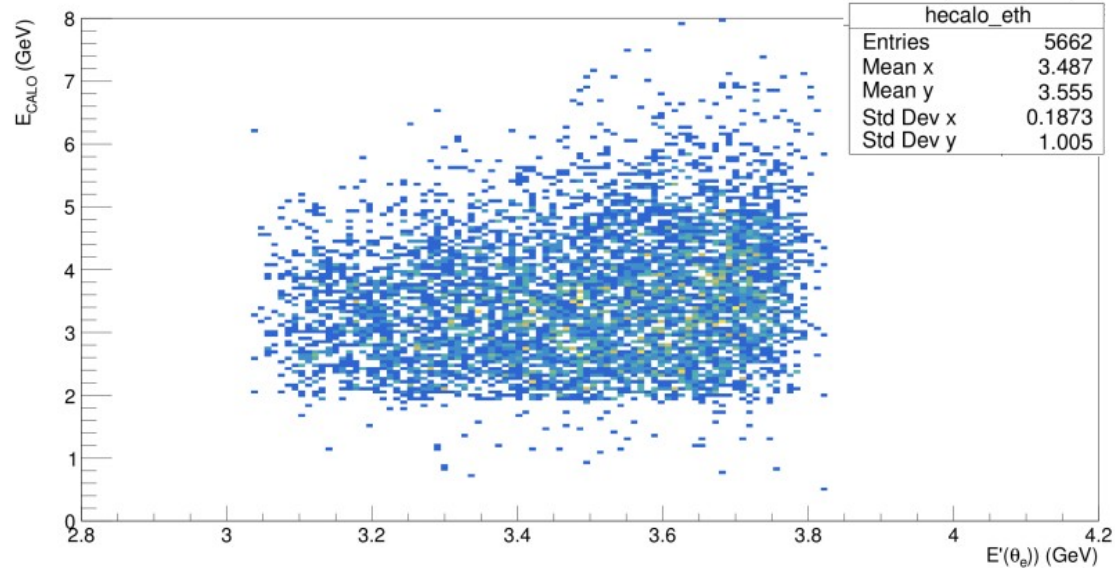
# ECal ongoing analysis

Angular correlation shows a sharp elastic peak

Energy resolution  $\sim 33\%$ ,  
expected  $\sim 6\%$

Cluster distribution  $\sim 6$   
hits/cluster versus 12  
hits/cluster from MC

Need elastic ep to calibrate and  
calibration to speed up  
statistics



Adapted from Andrew DAY/Apr/14  
<https://logbooks.jlab.org/entry/4356183>



# Next Steps

- DAY/Wed/16 controlled access:
  - Insert Analyzer in Hadron Arm,
  - check/fix hardware DAQ issues
  - ECAL work
  - GEMs work
- Moller test/measurement (maybe today night ?)
- Continue tuning trigger/detector efficiencies (with analyzer in)
- DAQ robustness improvement
- Data analysis
- Take production data
- ...