

# Beam Update

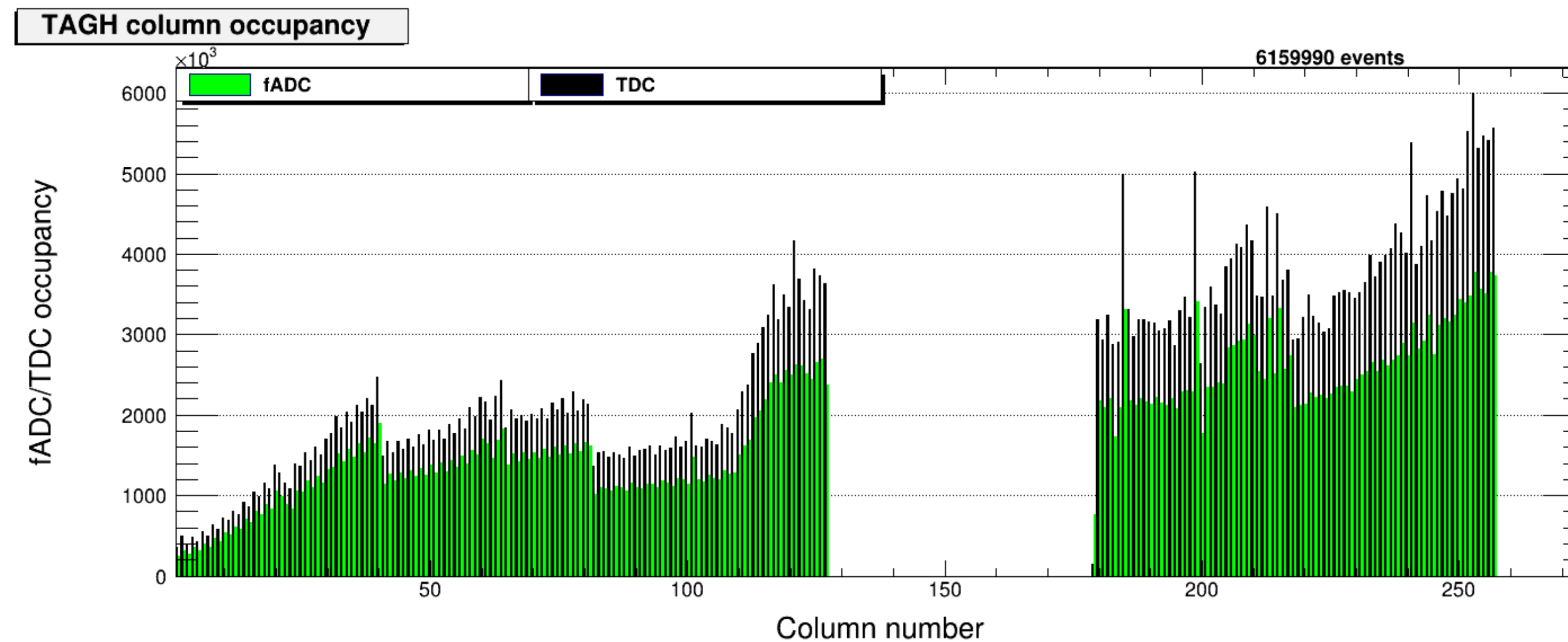
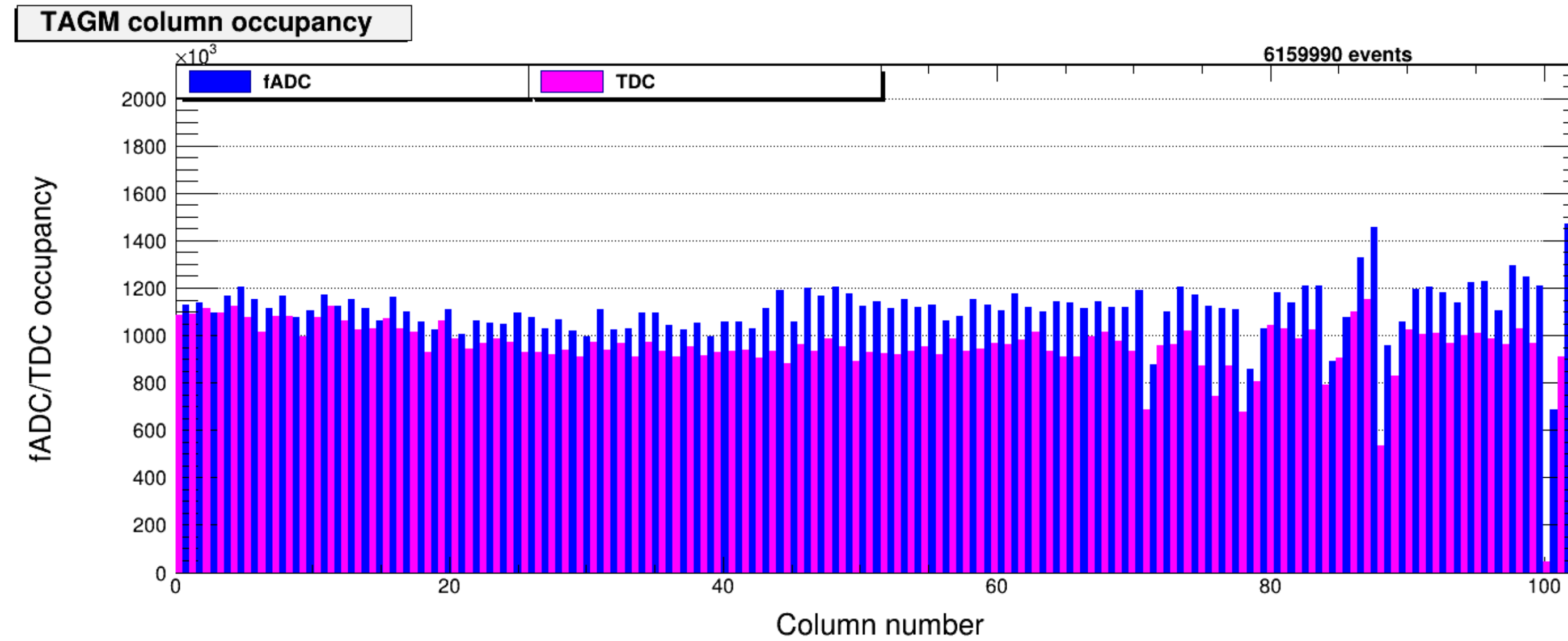
Logbook Entry:

<https://logbooks.jlab.org/entry/3939770>

Phoebe Sharp 11/10/21

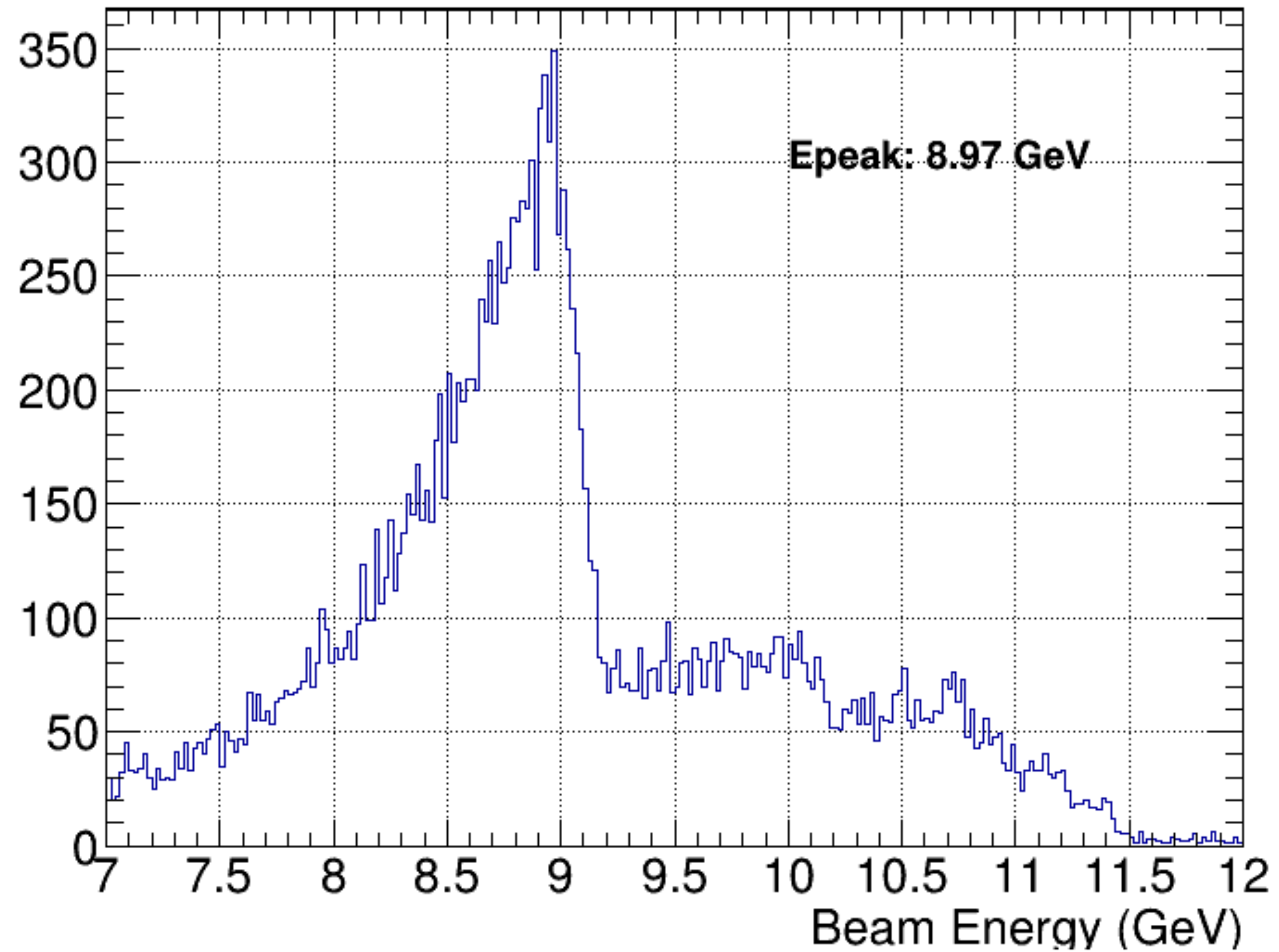
# Coherent Peak is at the hodoscope

Run: 90059



# Beam Energy

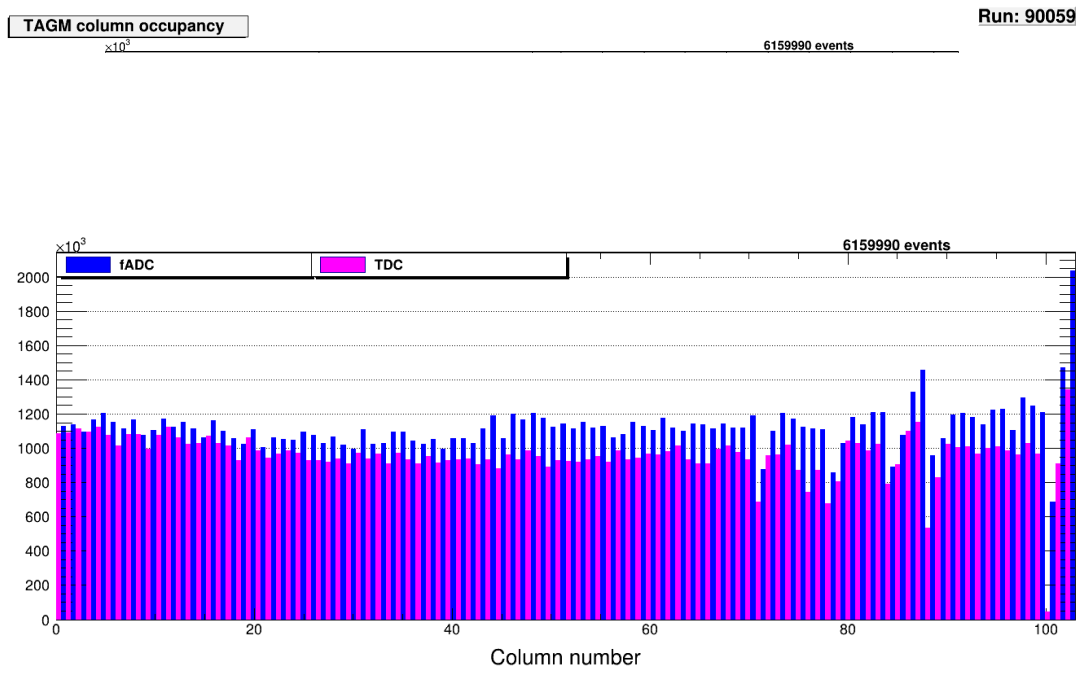
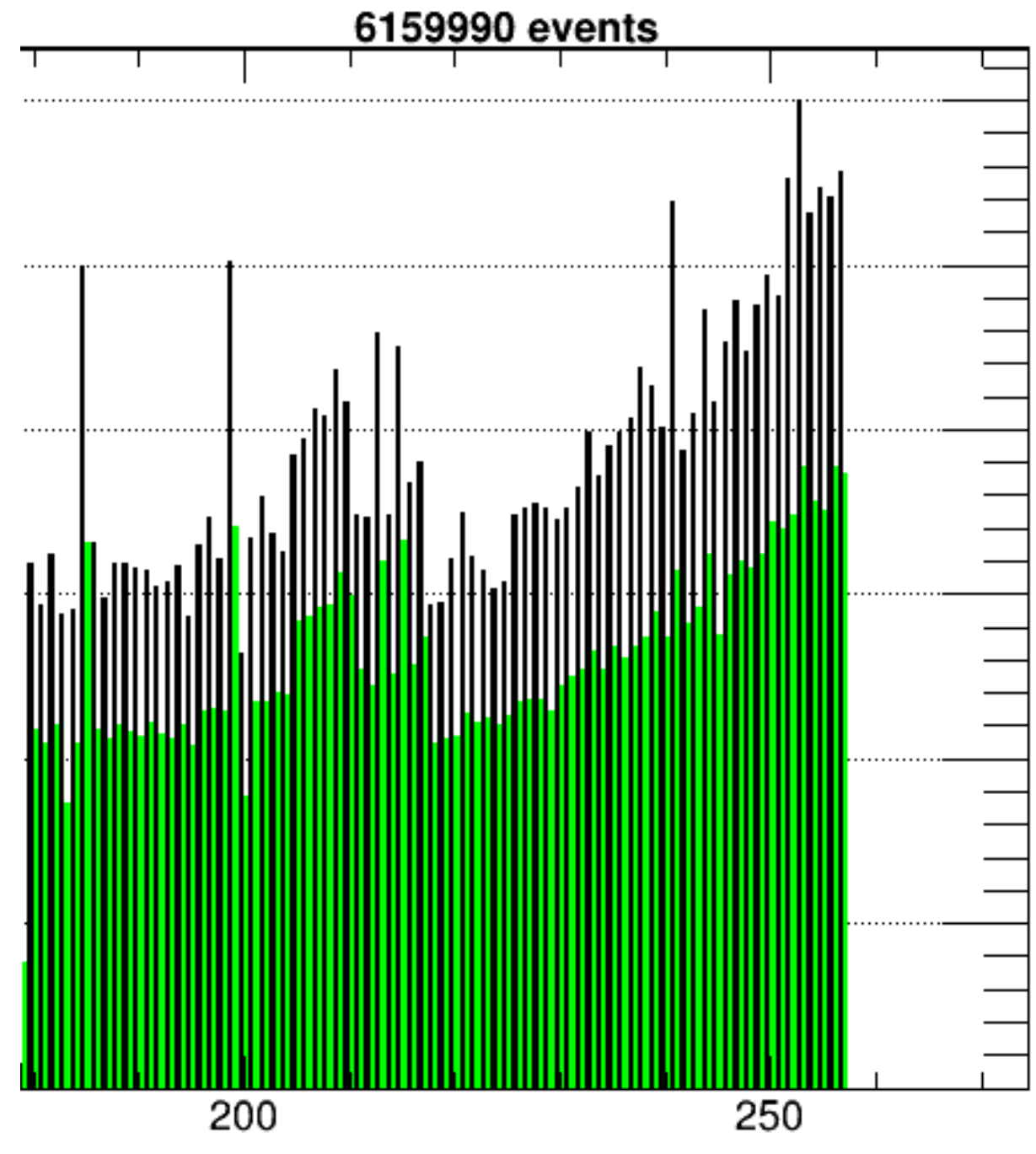
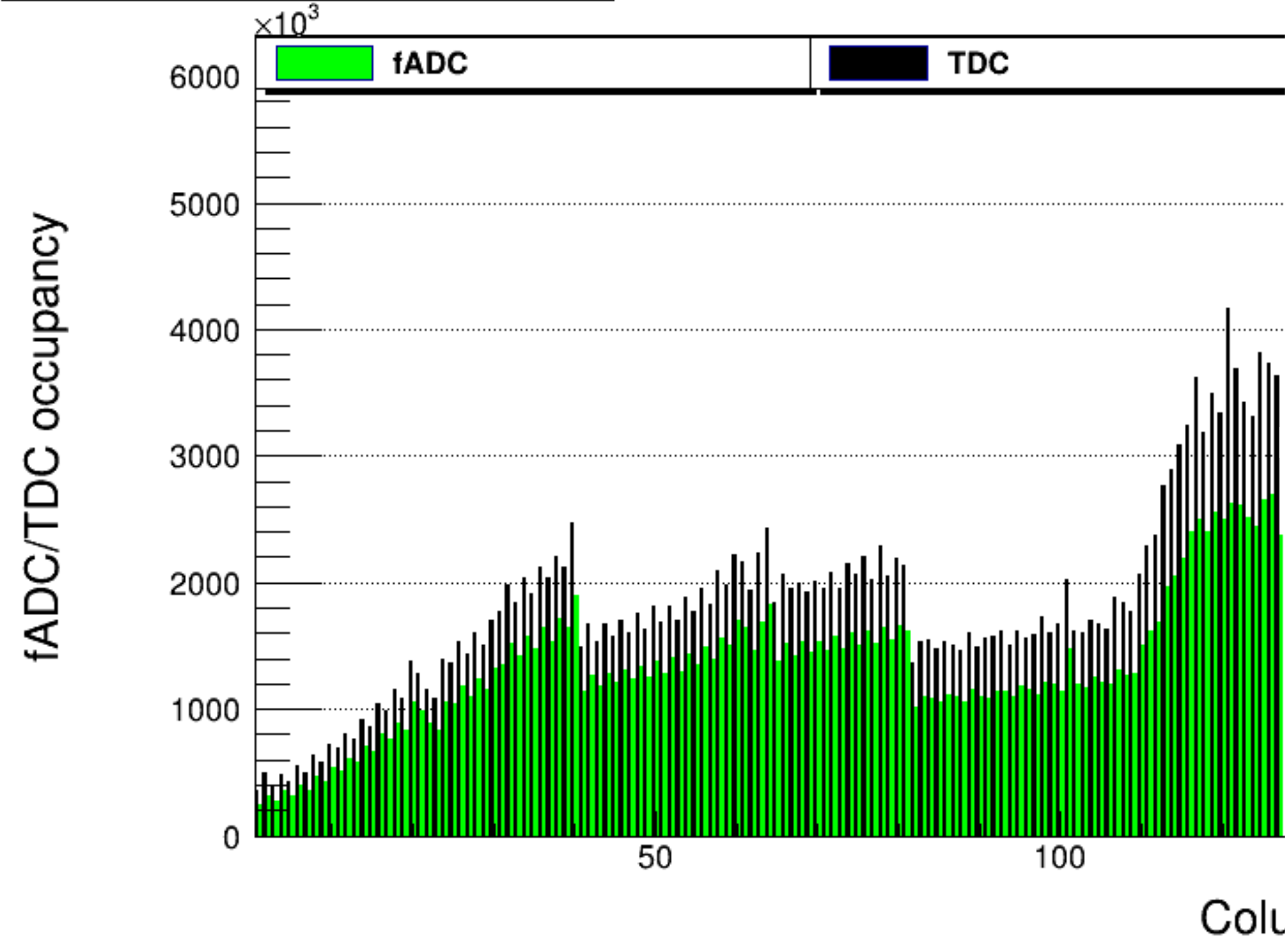
Reconstructed PS Beam Energy



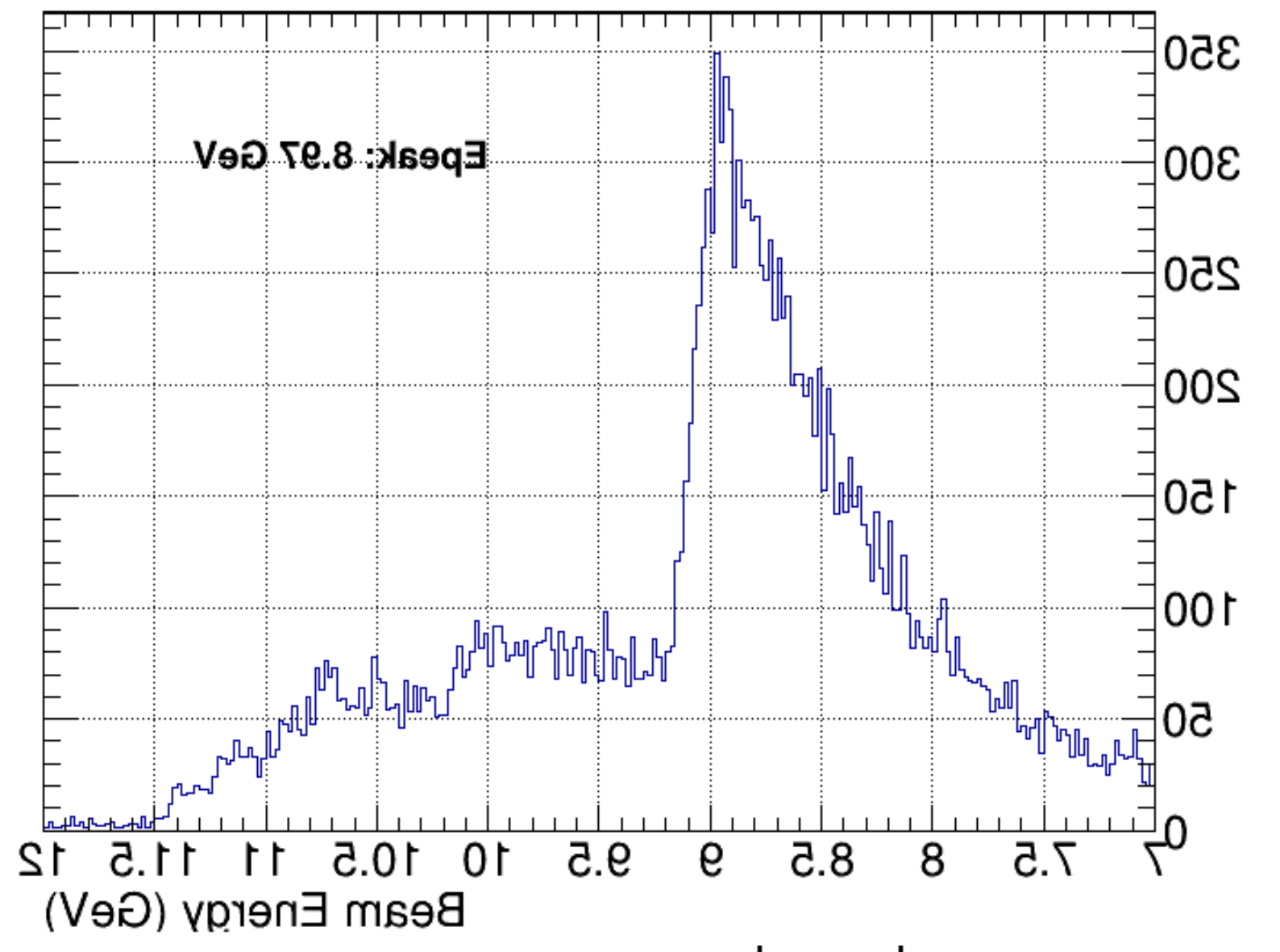
# Tagger

## Run 90059

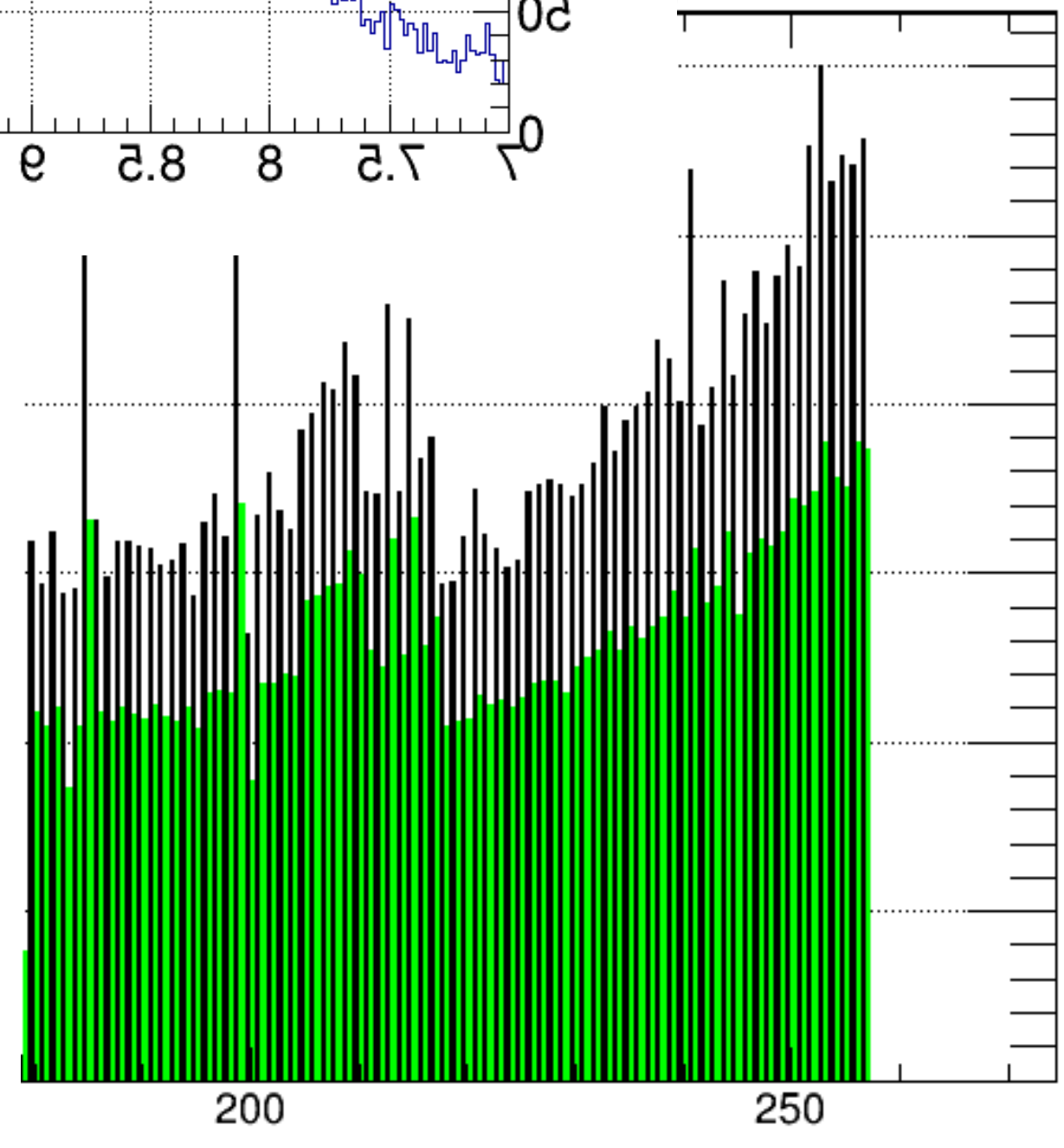
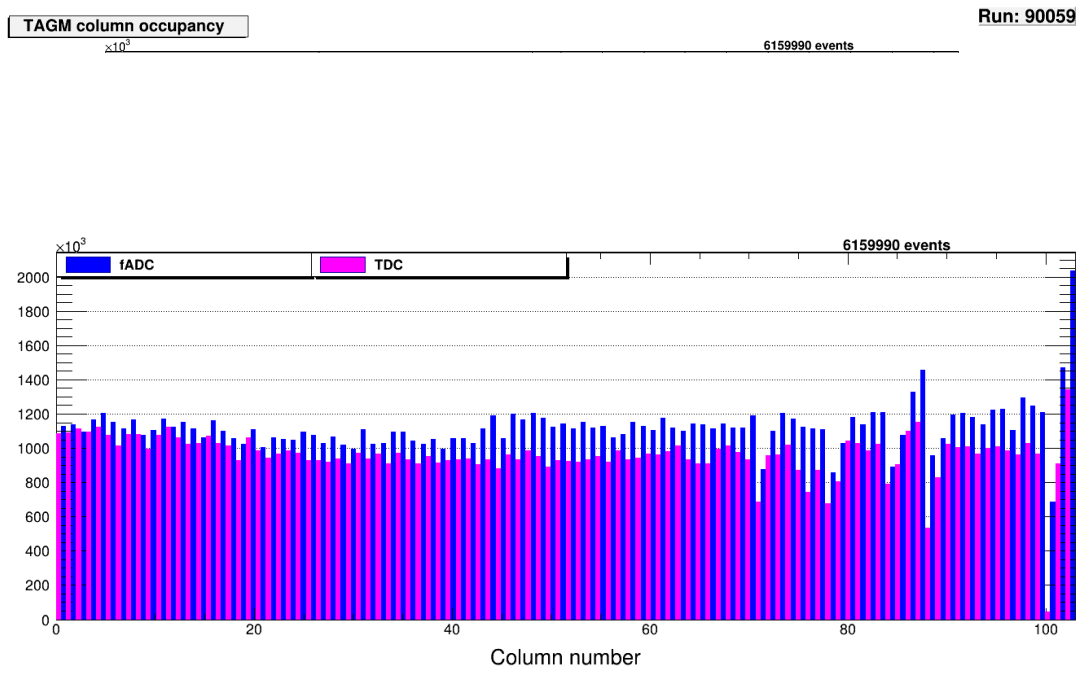
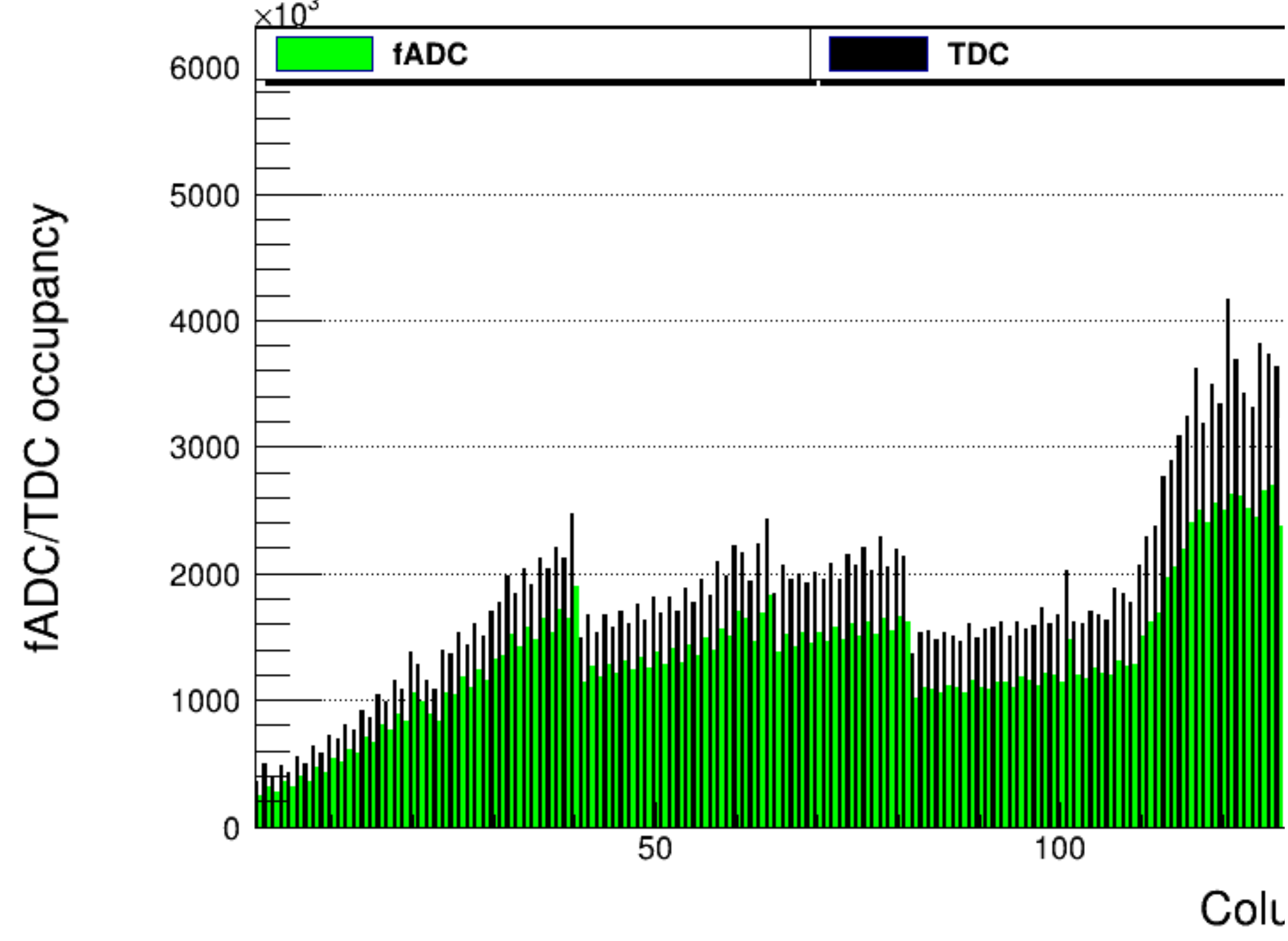
TAGH column occupancy



Reconstructed P2 Beam Energy



TAGH column occupancy

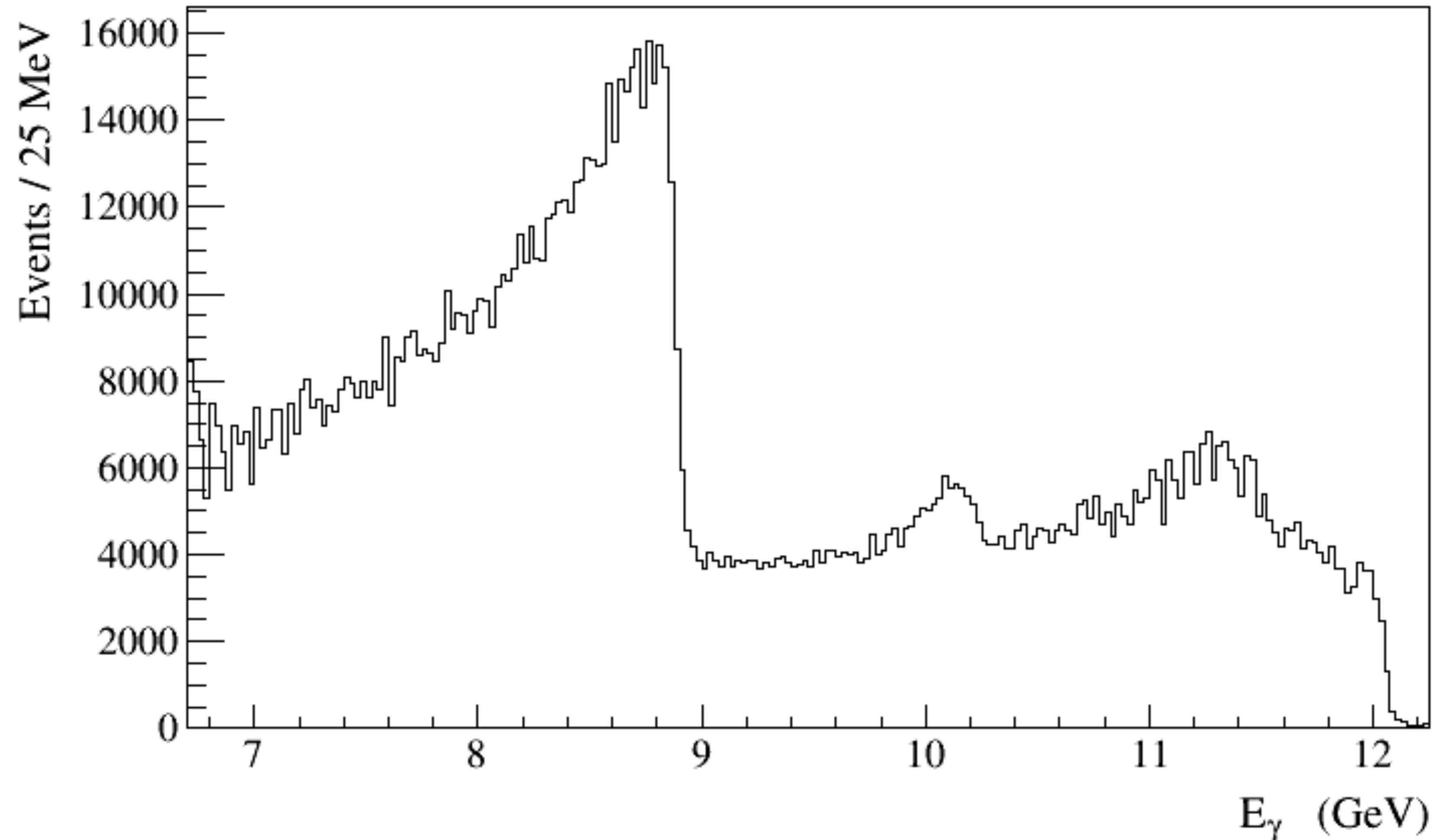


# Notes

- Coherent Peak is set at 8.6 GeV
  - Making the plateau region from FOM (slide 8) over the Tagger microscope
- Peak in microscope region is at 8.2
  - Coherent will go to smaller energy
  - Set peak where is at the plateau
  - Keep peak at same position between para and perp radiator configurations

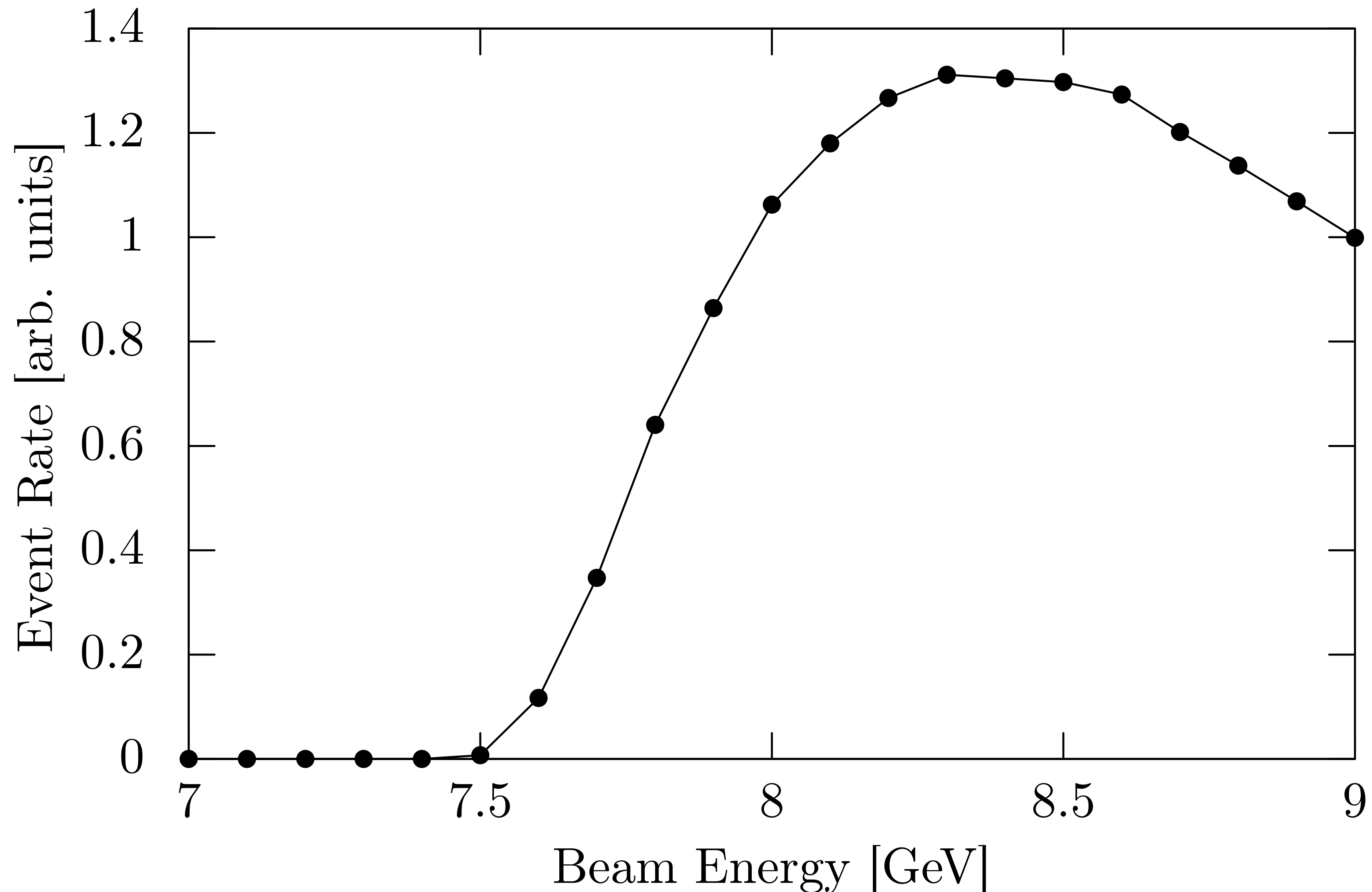
# PS Beam Energy Plot

Email Sasha with questions about this plot



# FOM from Simulation

Rate of  $|t| > 2$ ,  $|u| > 2$ ,  $|p_{rel}| > 200$  MeV Events





# Radiator Configurations

- AMO (4.5 E-4 Al)
- JD 0/90 PARA
- JD 0/90 PERP
- JD 45/135 PERP
- JD 45/135 PARA



# Notes on Radiator Configuration Plan

- Going from para to perp takes times
- Changing between configurations take some time, but fast
- Energy spectrum goes  $1/E$  on AMO radiator
  - Need reference plots on AMO
  - Don't need it all of the time, but continue to iterate over different orientations of the crystal
  - Would make sense to use AMO for the
- At the moment, make sense to alternate polarization settings for each run, over deuterium, collect data over all configurations for that target.
  - Do some reference runs when over all targets?
  - Over 2-3 runs in helium, avoid AMO in deuterium runs
  - One AMO is over 20% of runs.

# Overview of Coherent Brem. Peak GUI

CSS

HD:CBREM: ✕

**Installed radiator**

Index	Name	ID
8	<b>JD70-105 47um 0/90 deg</b>	11,000

**Polarization Plane**  
**PARA**

**PARA**      **PERP**

**Coherent Edge Fit Estimate**  
8,577.6 MeV

Move/nudge peak

<<   <   >   >>

Save as default

Force PARA      Force PERP

Goni Angle Position

Pitch ● -0.8436 deg  
Yaw ● 2.5922 deg  
Roll ● -12.1000 deg

Beam Energy (MeV)      10,891

Norm Energy (MeV)      4,000

Min current (nA)      2

The top plot shows Enhancement vs Tagged Photon Energy / MeV. The y-axis ranges from 70E-2 to 3E0. The x-axis ranges from 3E3 to 1.2E4. A red dotted line represents the 'Template' and a blue solid line represents the 'Current'. A vertical dashed line is at approximately 8.5776 MeV. A yellow callout box says 'Set current as template'.

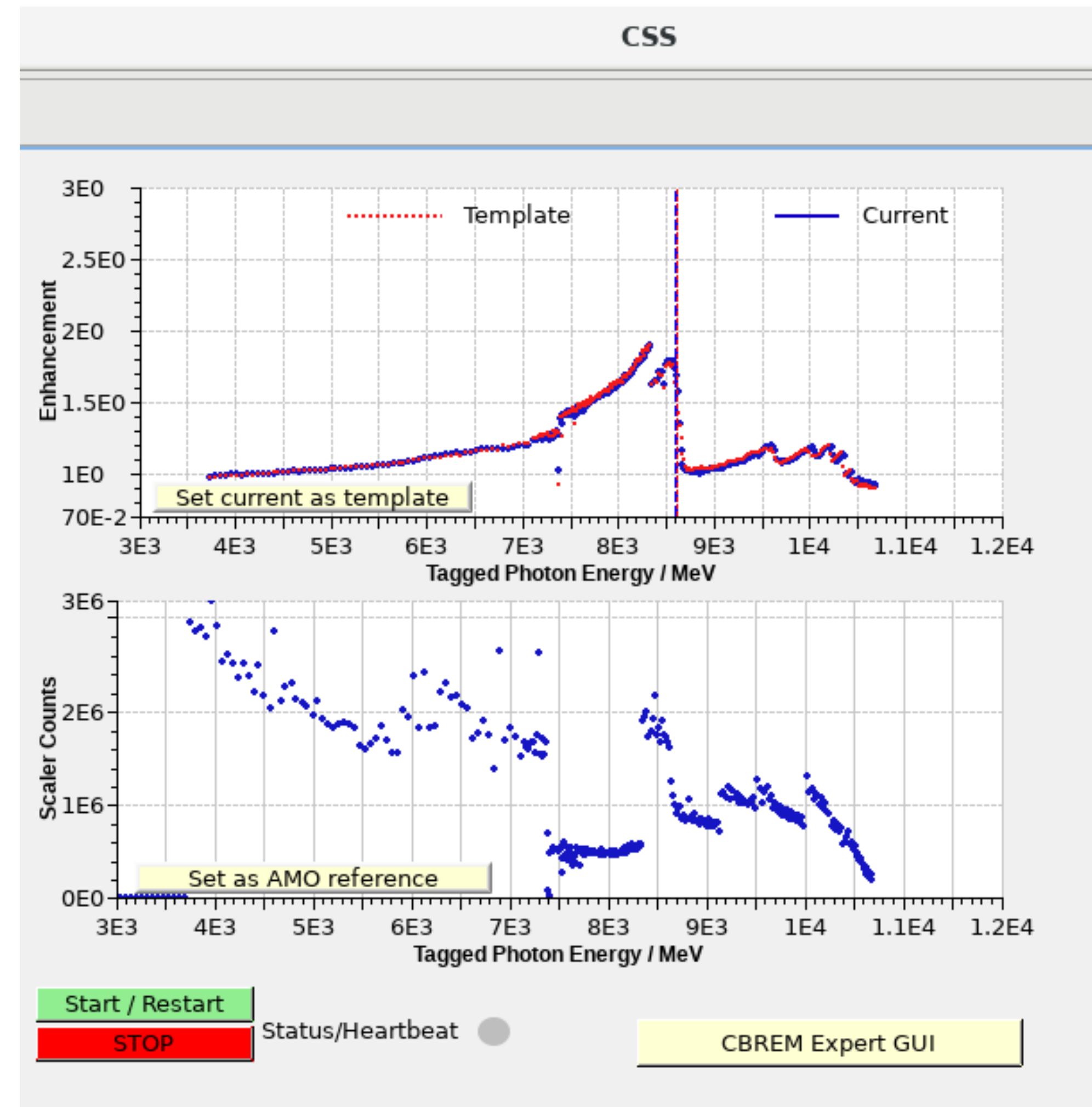
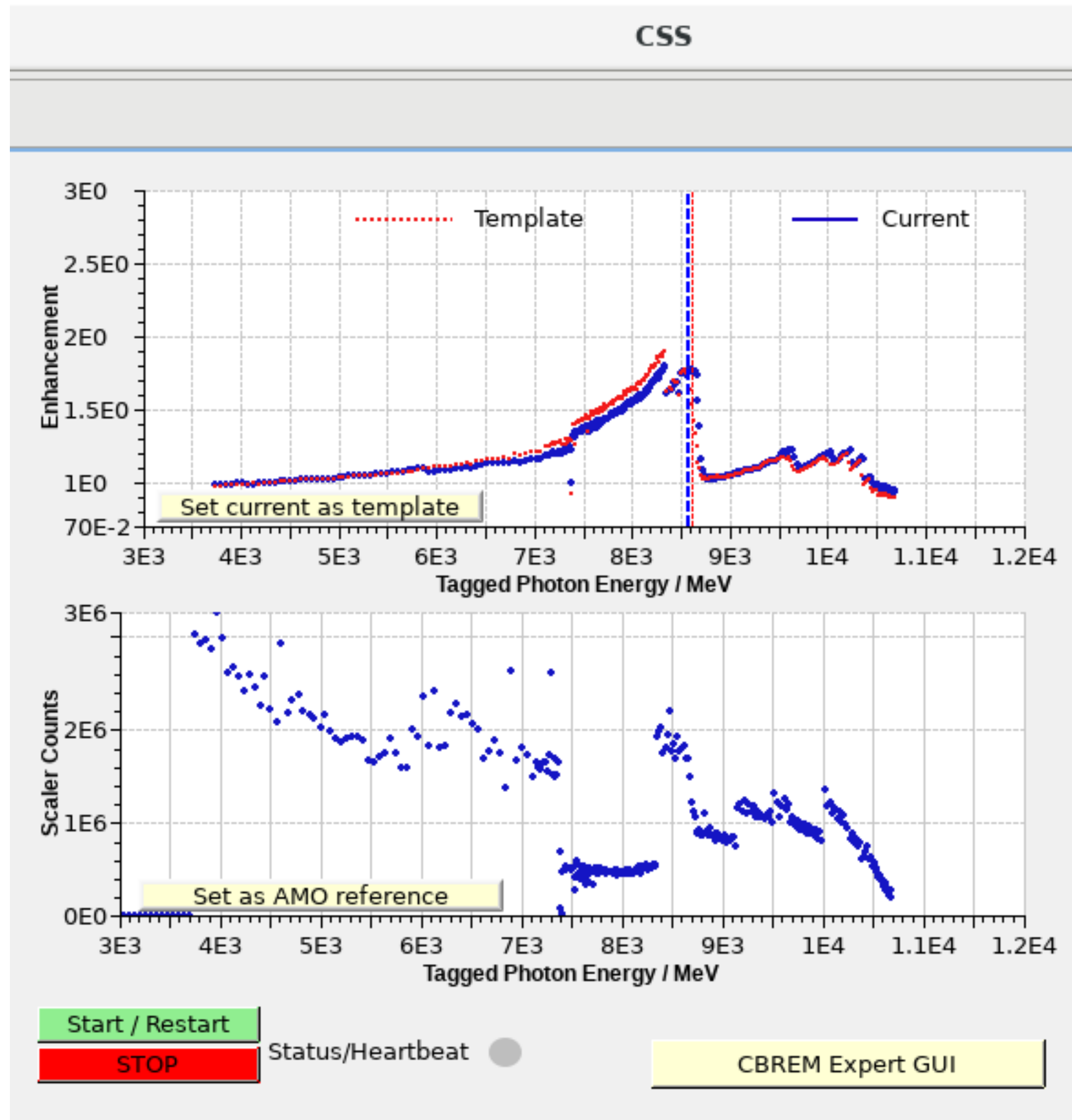
The bottom plot shows Scaler Counts vs Tagged Photon Energy / MeV. The y-axis ranges from 0E0 to 3E6. The x-axis ranges from 3E3 to 1.2E4. Blue dots represent the data points. A yellow callout box says 'Set as AMO reference'.

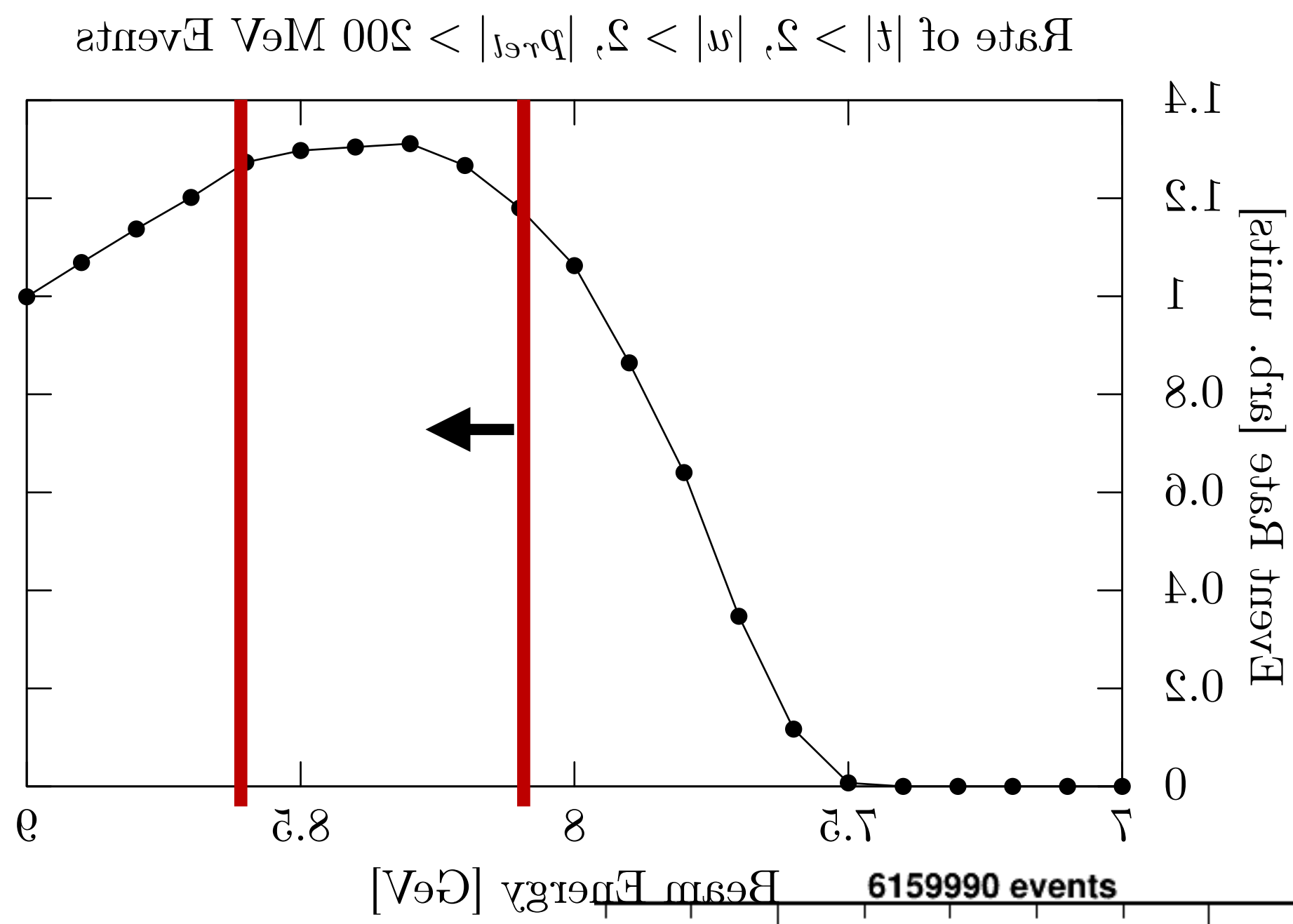
Start / Restart

STOP      Status/Heartbeat ●

CBREM Expert GUI

# Coherent Peak Modification





**TAGH column occupancy**

