Beam Studies December 2014

## Runs: 7820 – 7860

December 27, 2014

Outline

- FADC and TDC Data Synchronization:
  - Mott_SemiInt Mode: good (only one run was taken – 7860)
  - Mott_Sample Mode: TDC data is off by one event (except first four runs: 7820, 7821, 7822, and 7823*)

  * After Run 7823, TDC stop signal offset (NIM740) was adjusted before going to DISC (NIM708) but nothing obvious on scope

- Beam Rep = 31 MHz (C Laser)

- Beam Rep = 62 MHz (C Laser)

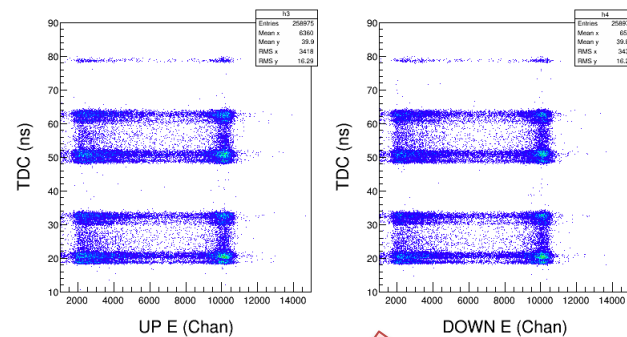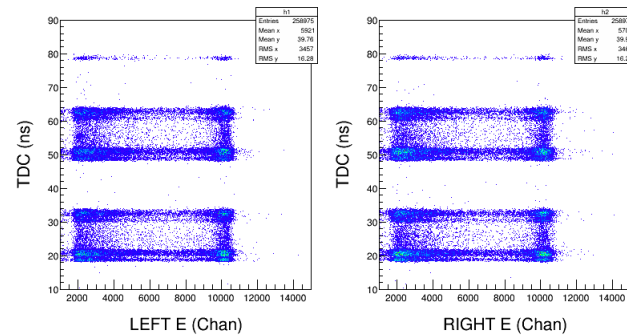- Beam Rep = 499 MHz (A Laser)

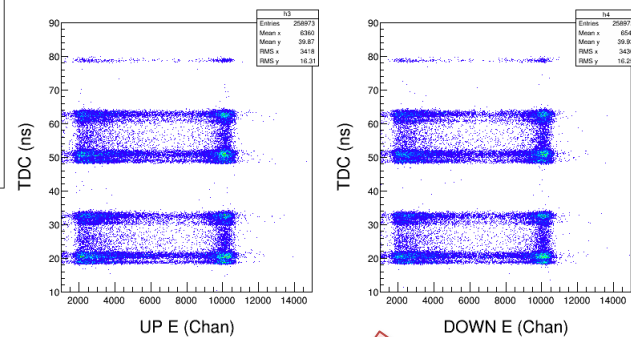- Background

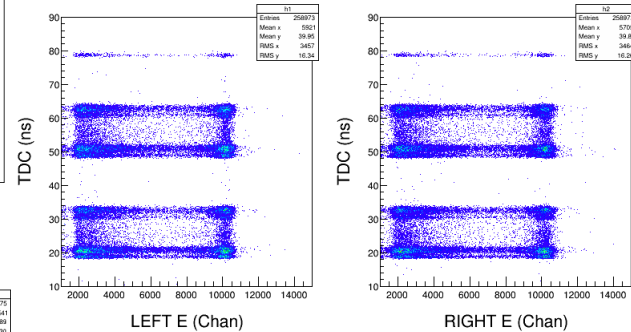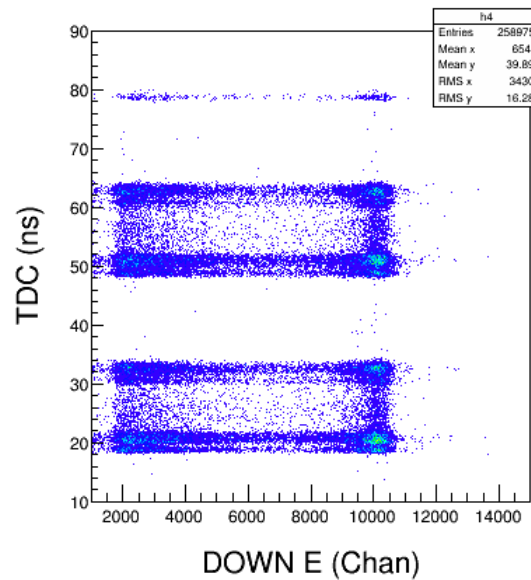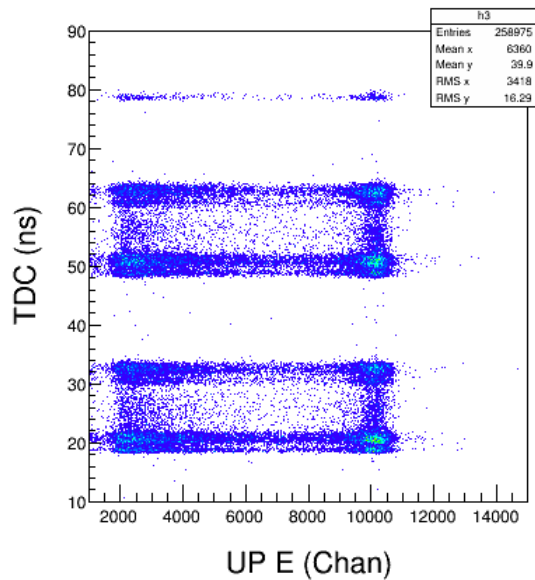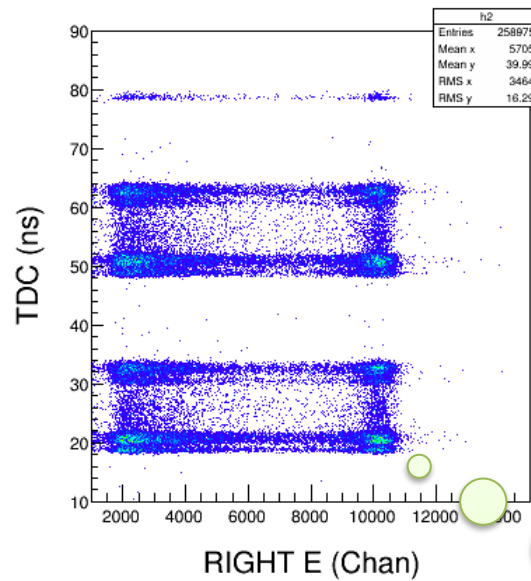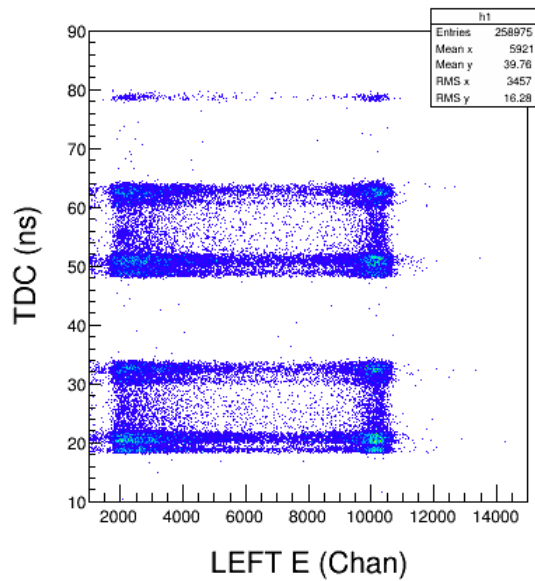# Mott_SemiInt – Run 7860
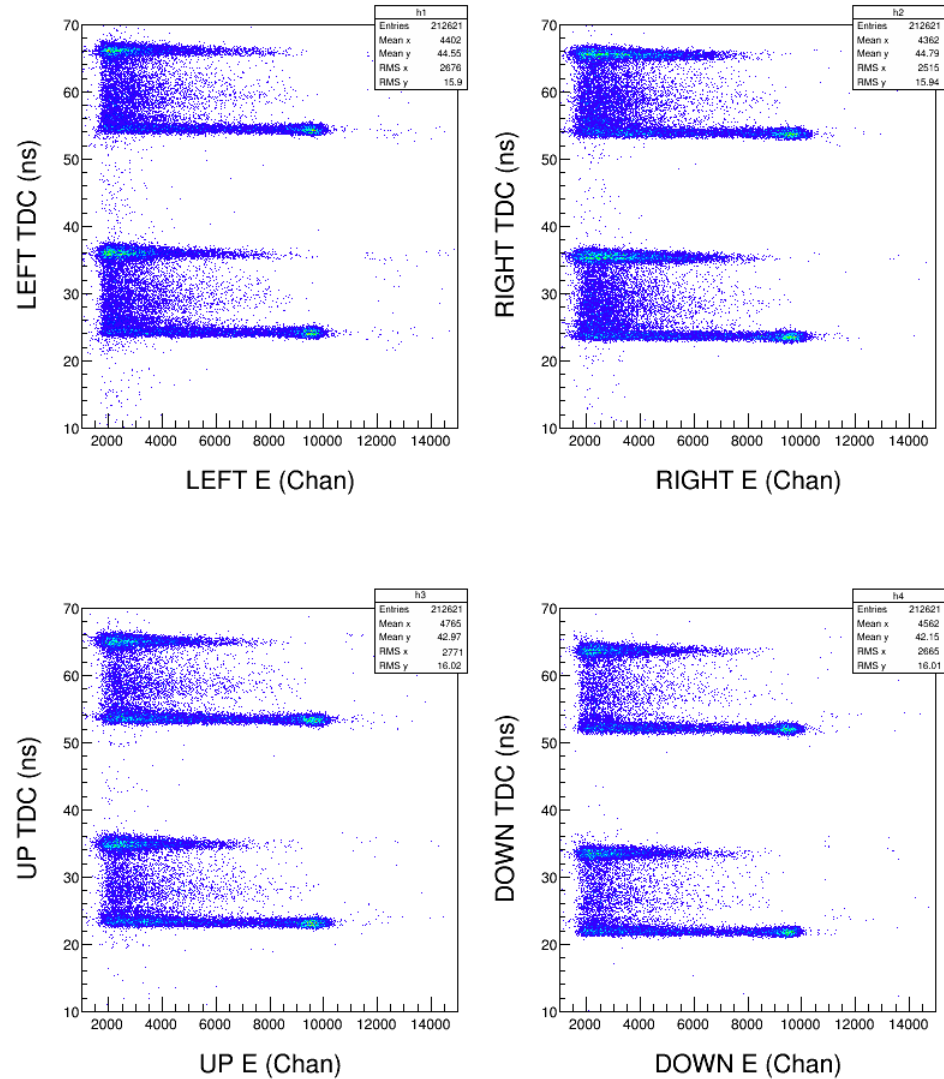
Mott_Sample – Run 7673
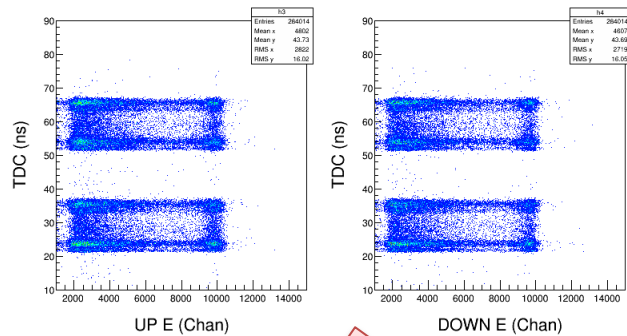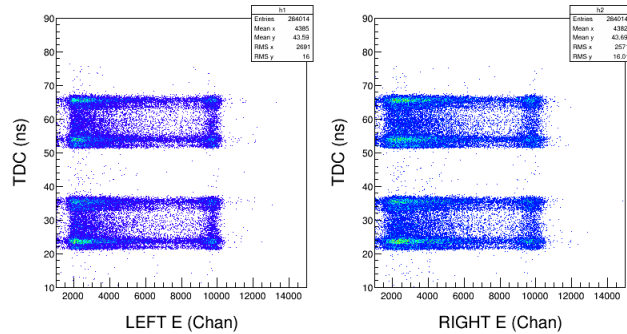

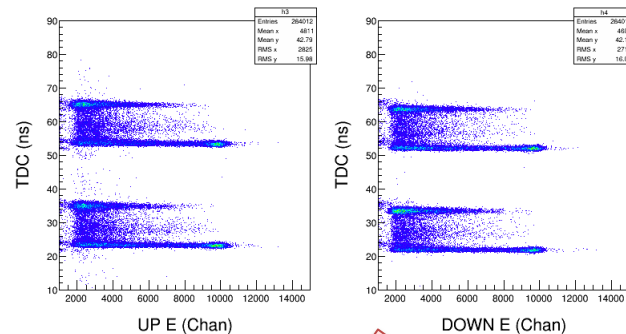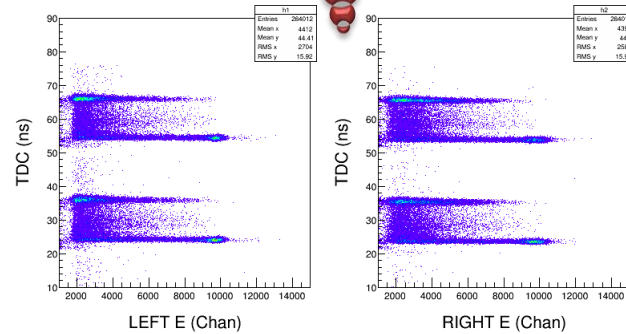Run from May 2014
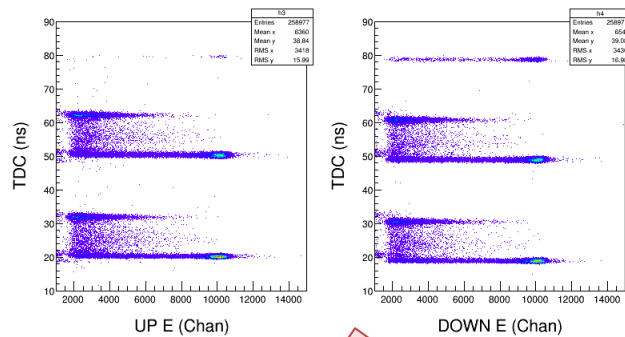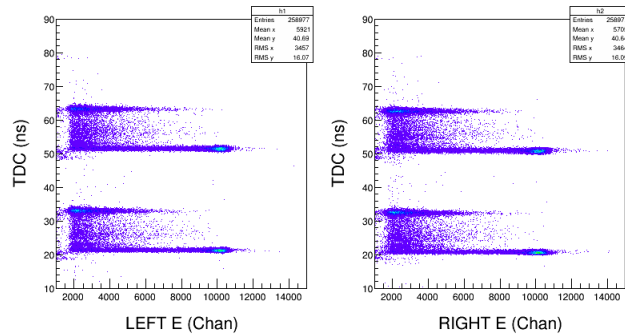
TDC Shift =0

TDC Shift =1

TDC Shift =2

Extra TDC stripes because four detectors have slightly different time offsets
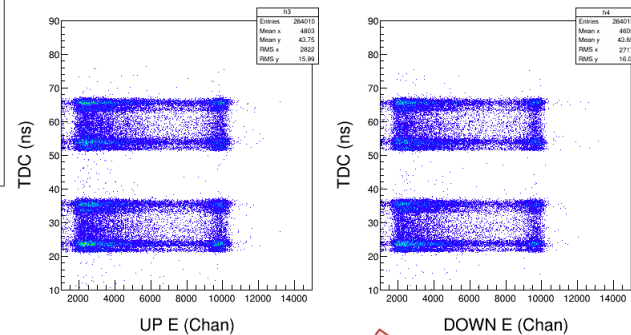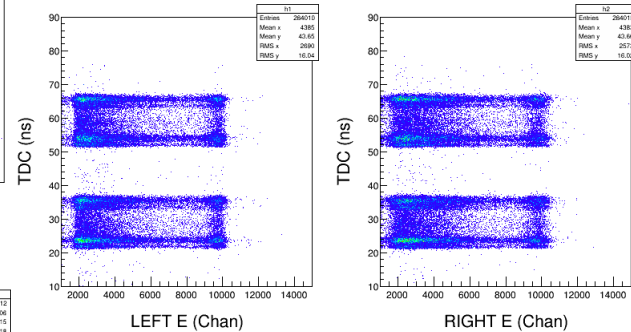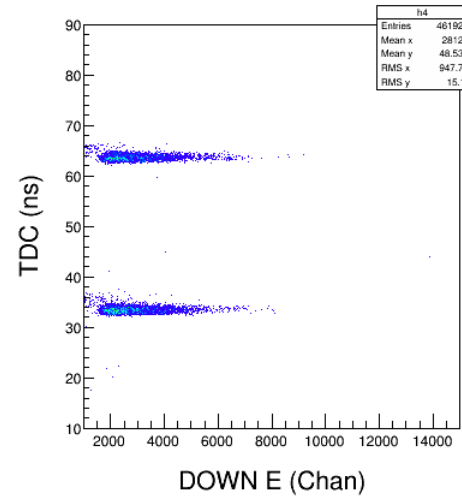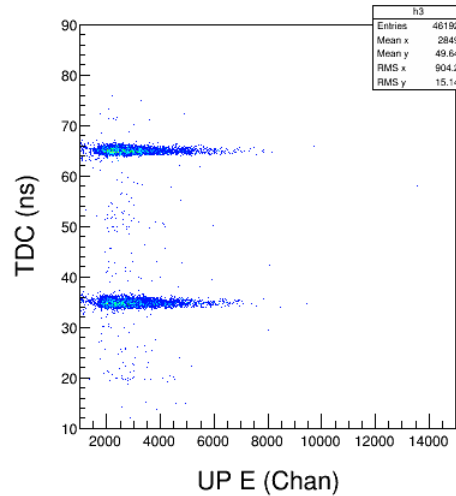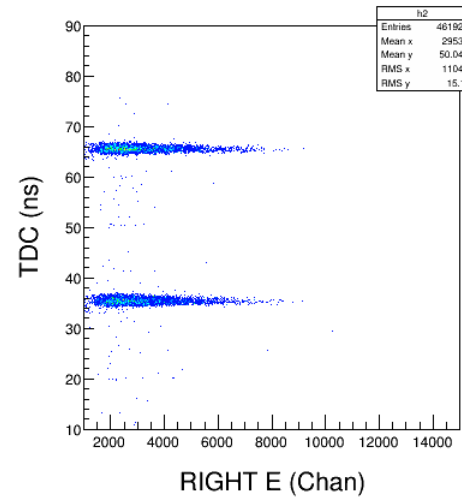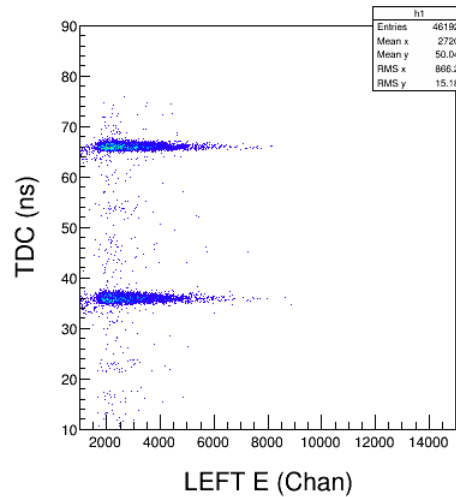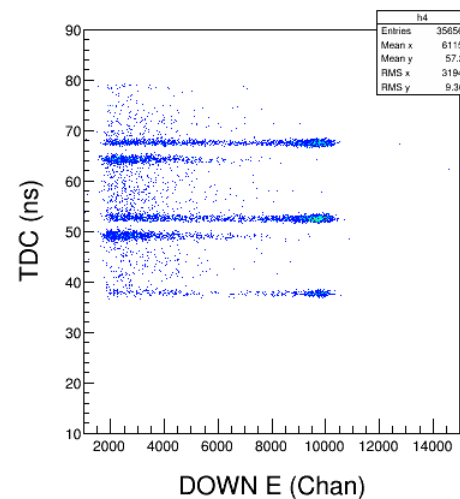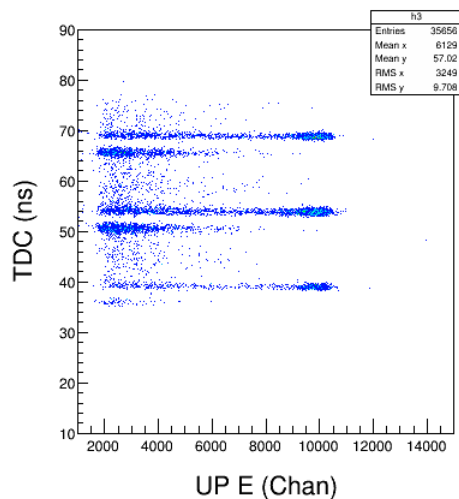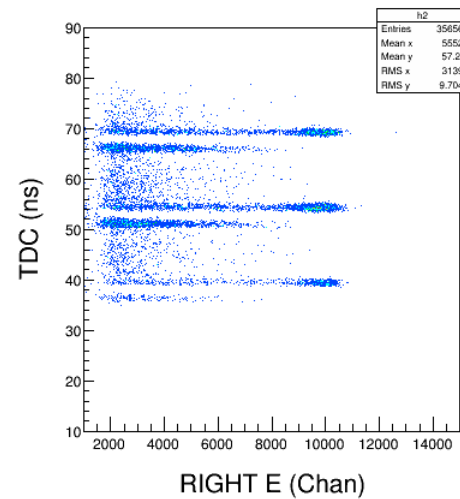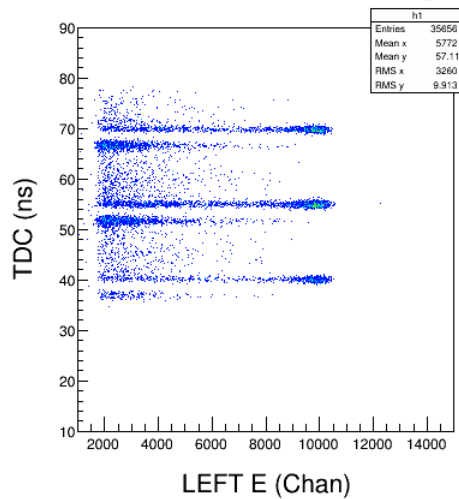
Mott_Sample – Run 7859 – 31 MHz

Run 7858 – Thru Hole

TDC Shift =1

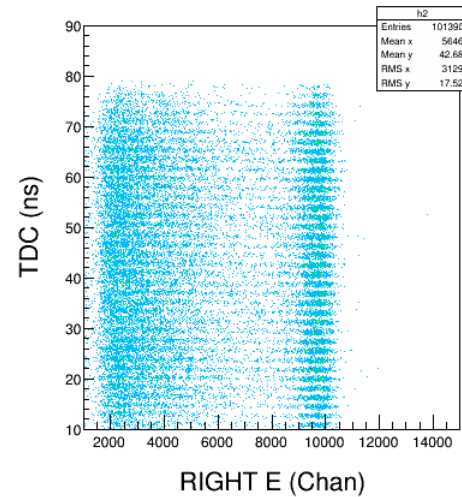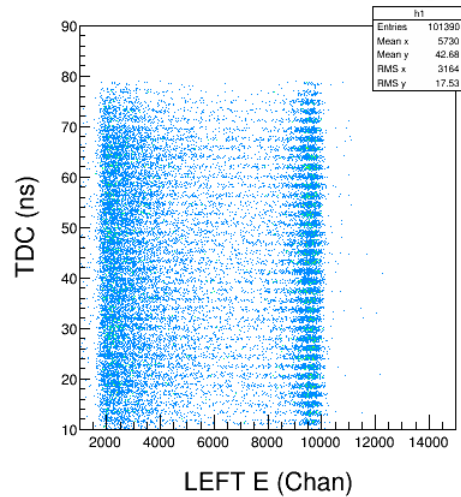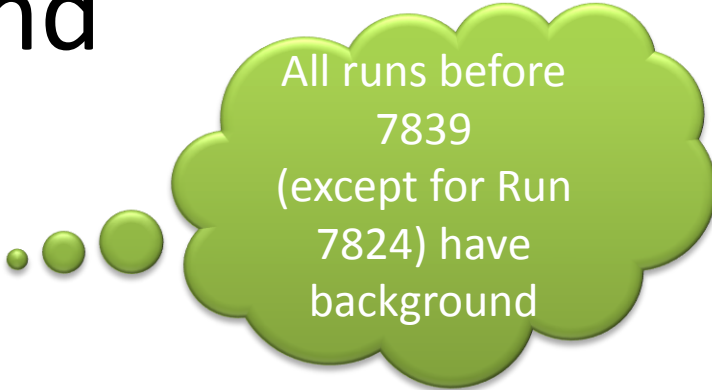# Run 7824 – 62 MHz

Run 7839 – 499 MHz
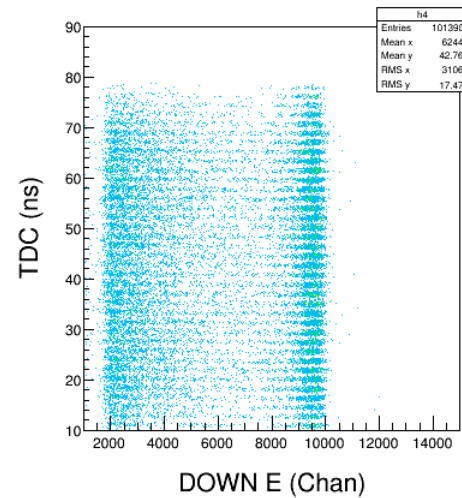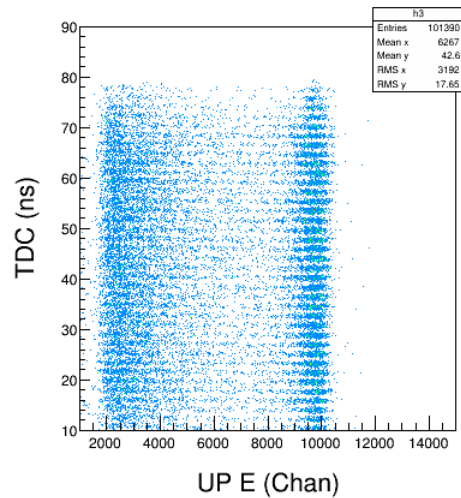
Solution

- B. Moffit thinks it's possible that loss of synchronization was actually coming from fadc250, instead of TDC.

- With prescription that was in current readout-lists may have left data on fadc250 that was not cleared before next run.

- This would explain why changing configuration, or resetting and downloading again would clear it up.

- Added a ***faClear(..)*** into start-of-run to see if this should help.
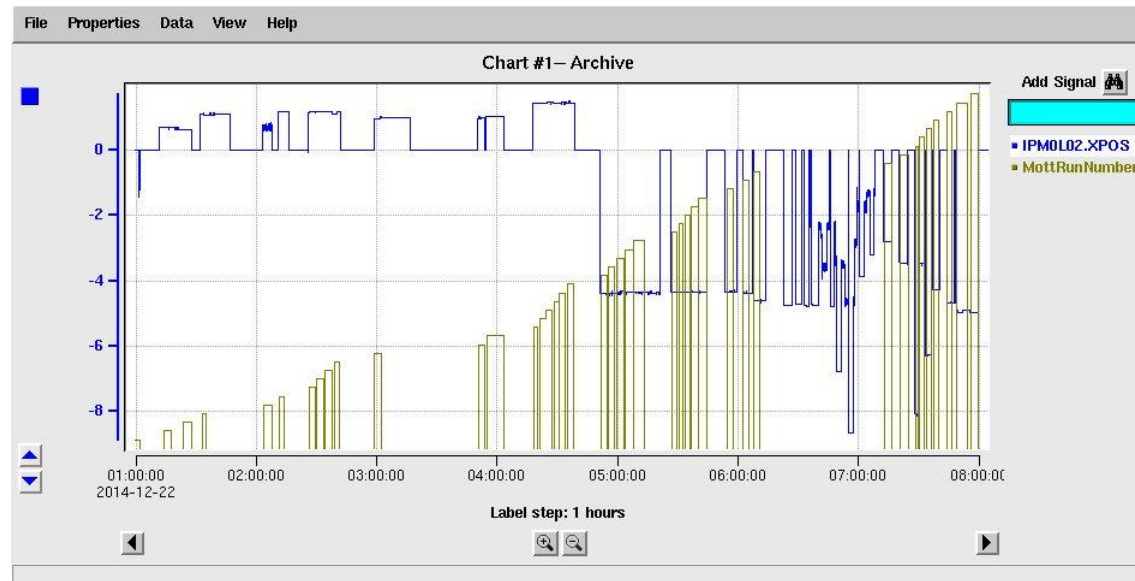
Background

- ## Rep Rate = 499 MHz (A Laser):
  - Runs: 7821, 7822, 7833-7838 → yes background
  - Runs: 7839-7850, 7852-7858 → no background

- ## Rep Rate = 62 MHz (C Laser):
  - Runs: 7820, 7823-7829 → yes background
  - Run: 7824* → no background
  * C Laser, amp=2.0W, A-slit = 60mm

- ## Rep Rate = 31 MHz (C Laser):
  - Runs: 7831, 7832, 7833 → yes background
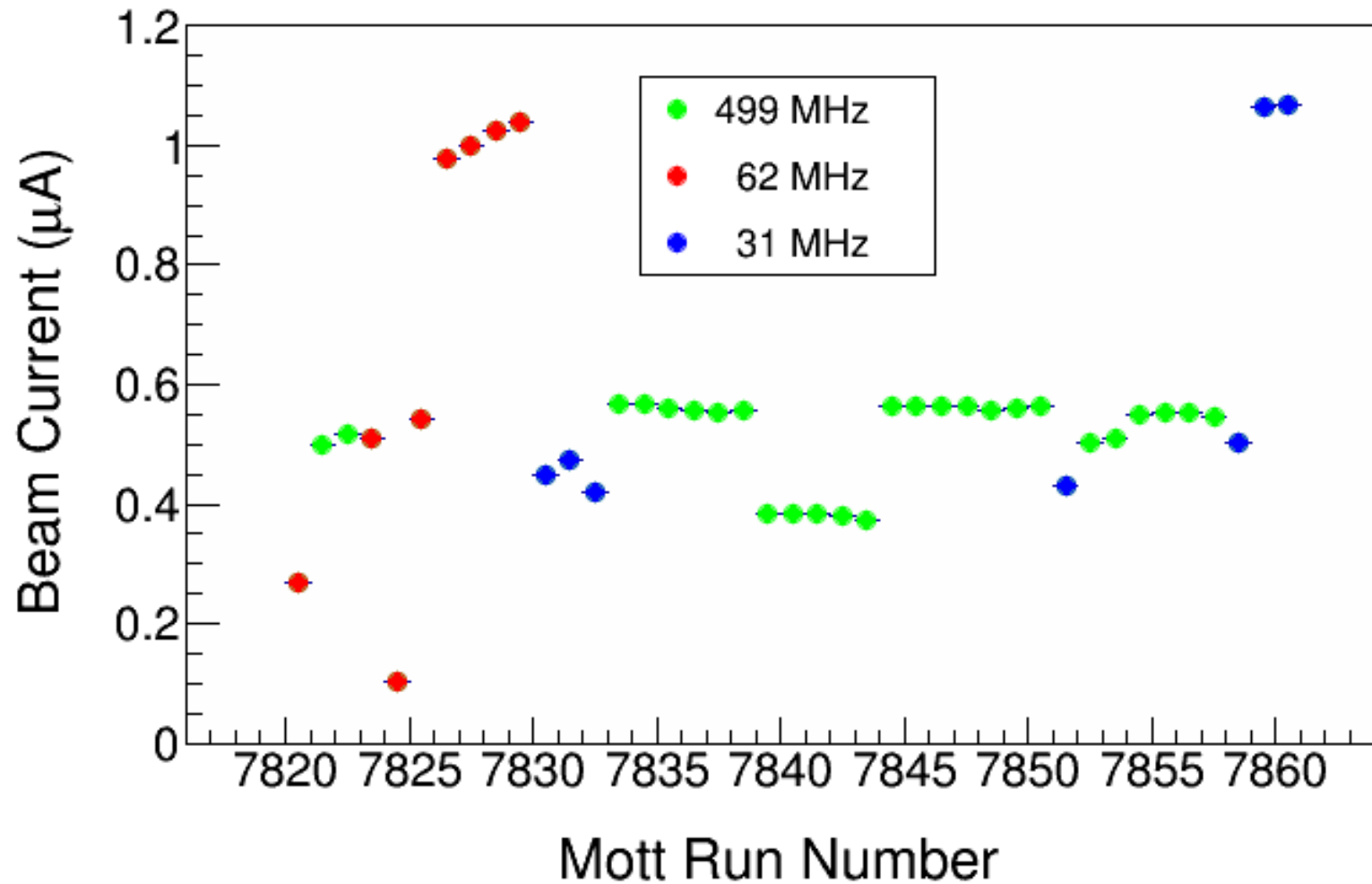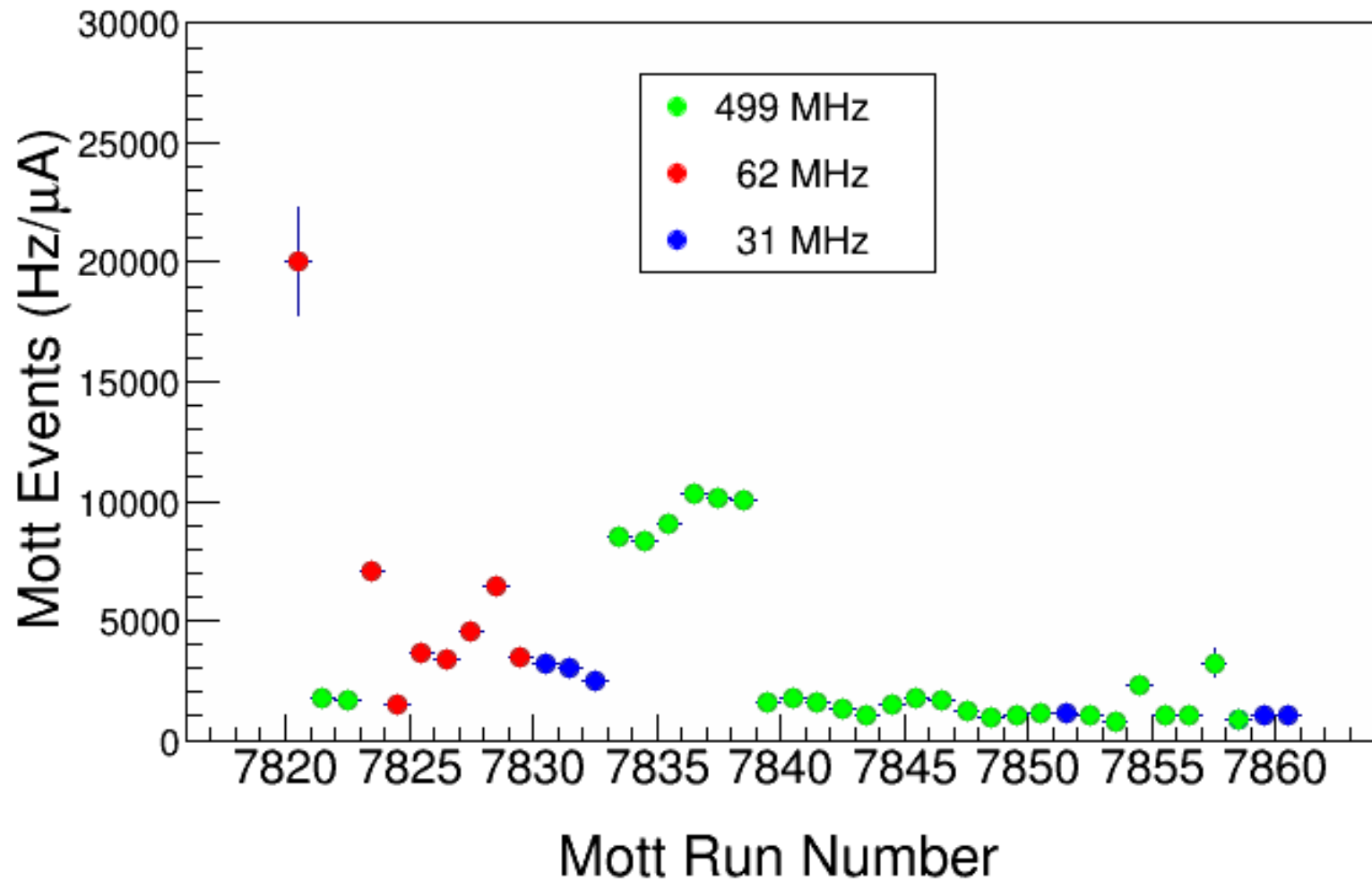 - Runs: 7851, 7858, 7859 → no background

BPM0L02 x-position
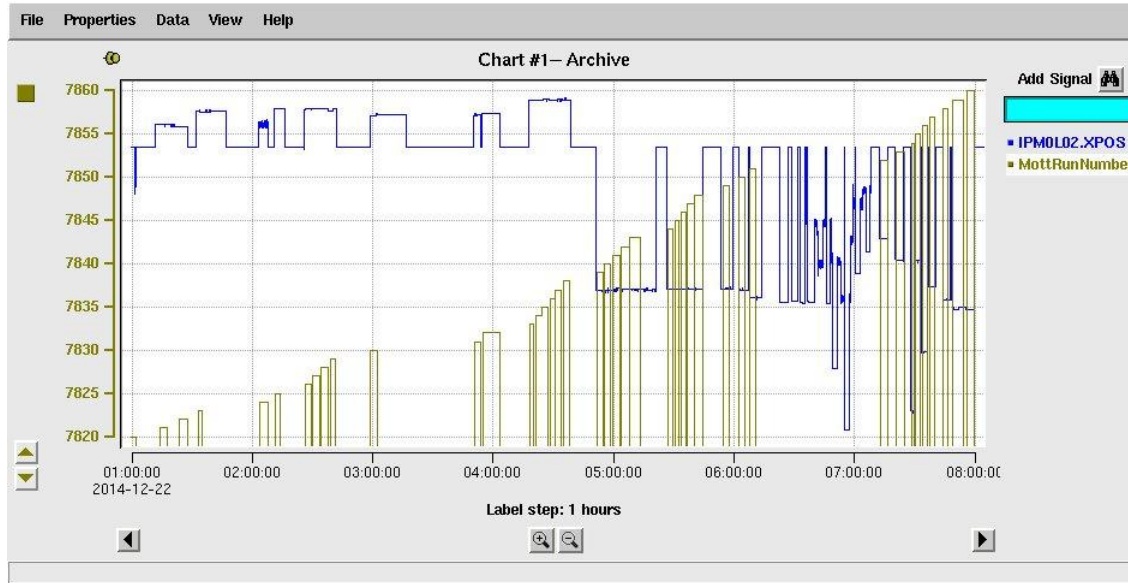
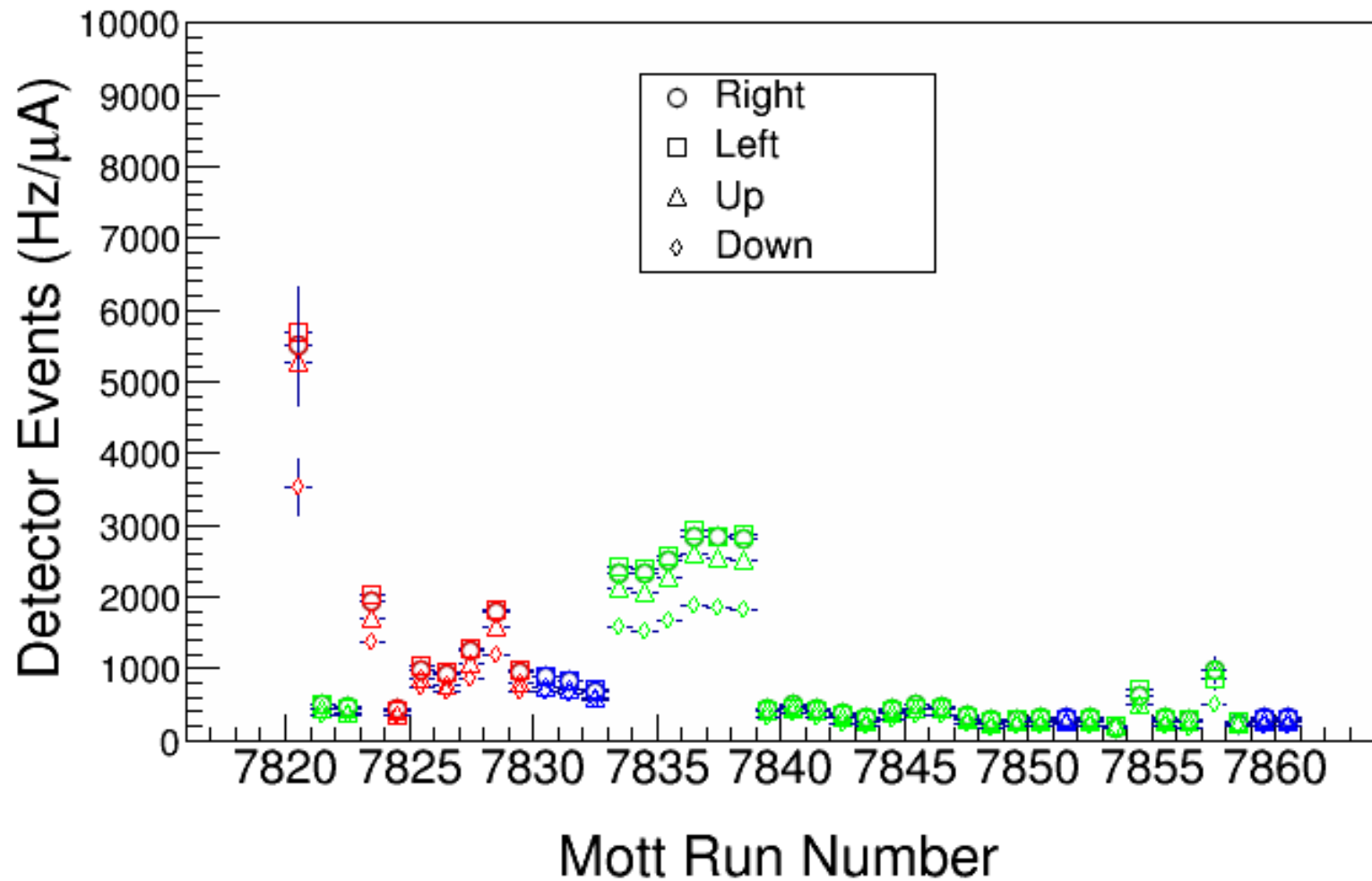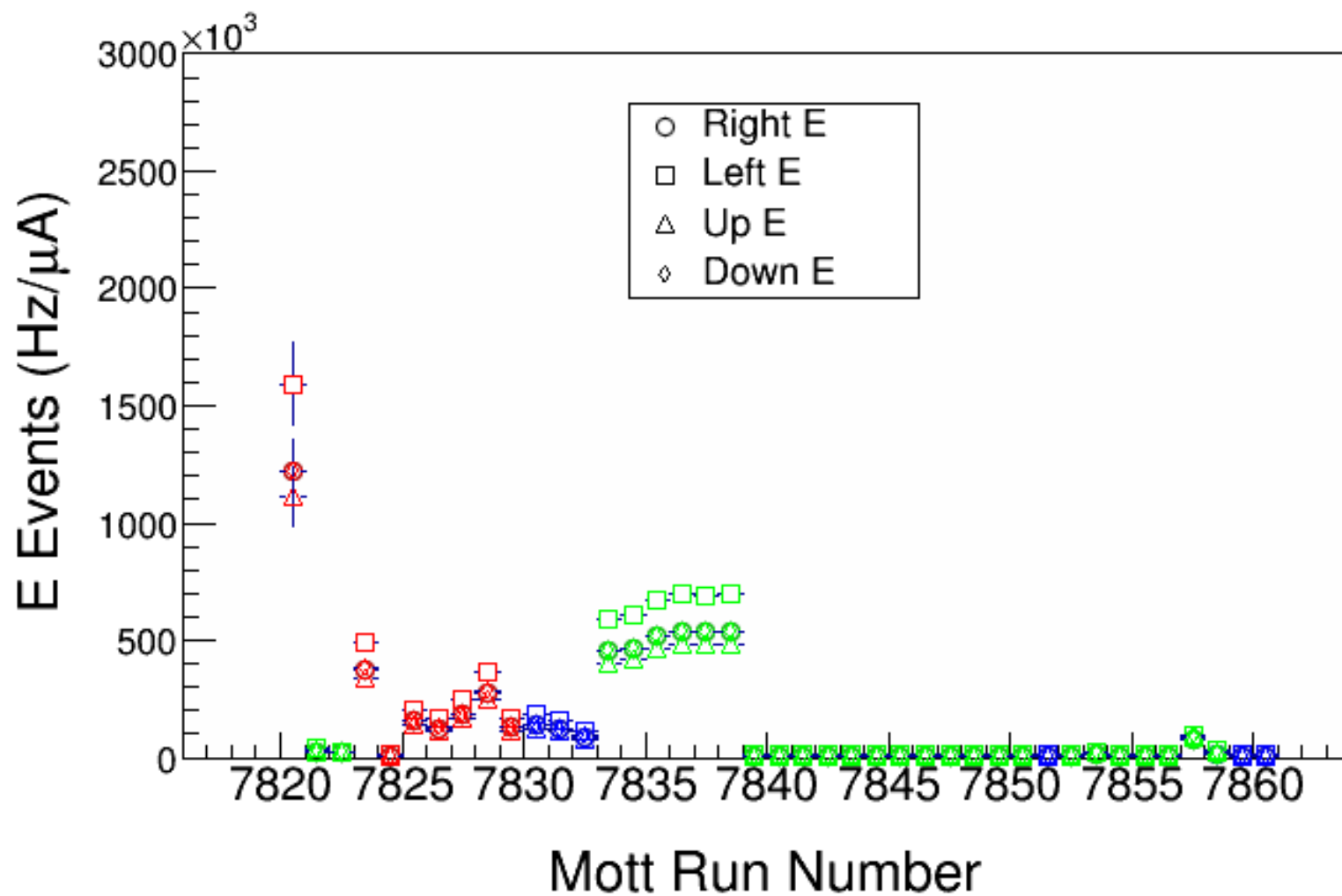Before Run 7839, BPM0L02X was changed from 1.5 to -4.5 mm
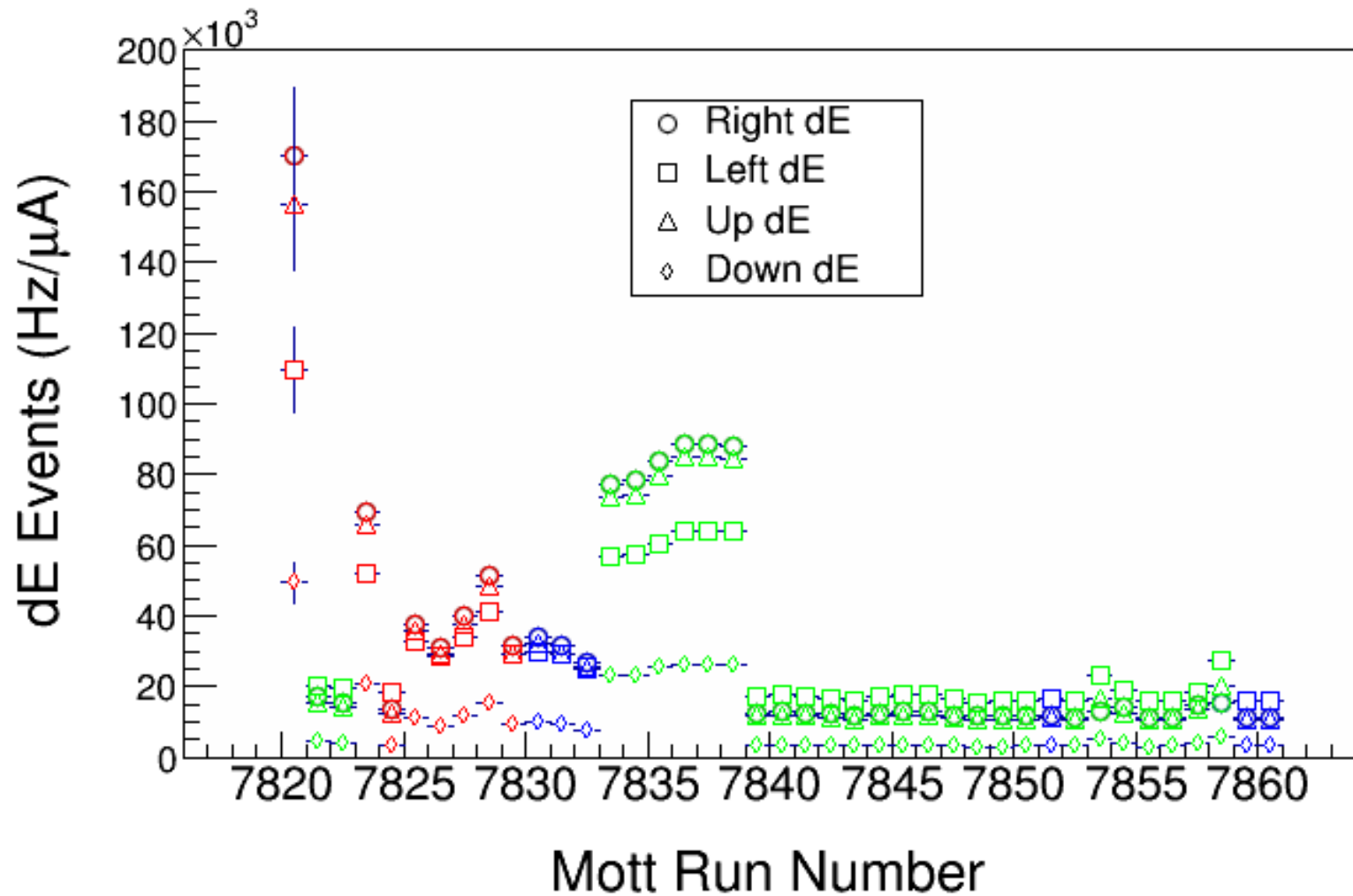
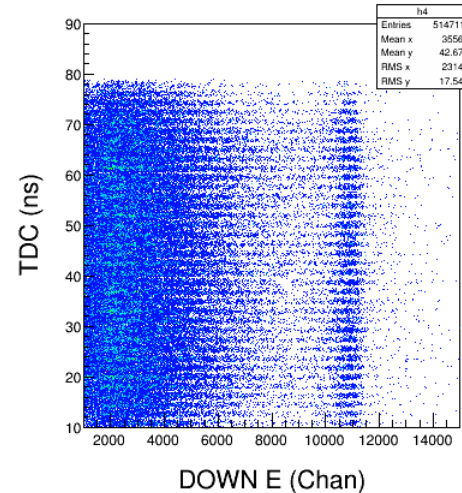# Beam Current

Mott Events

Detector Events

E Events

dE Events

Run 7838 – 499 MHz
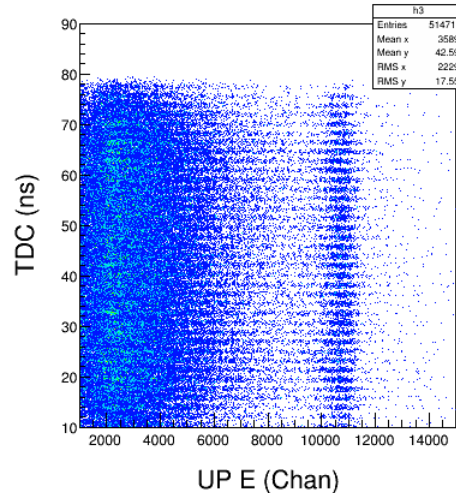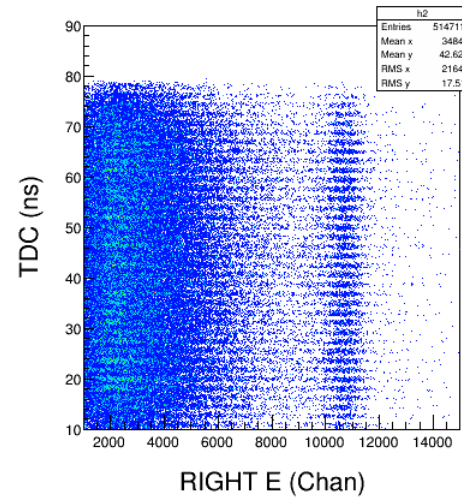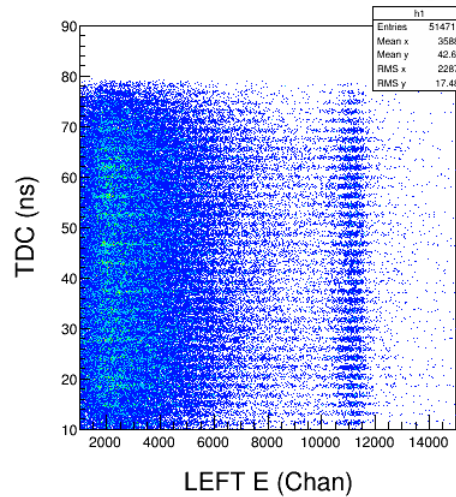
Run 7830 – 31 MHz
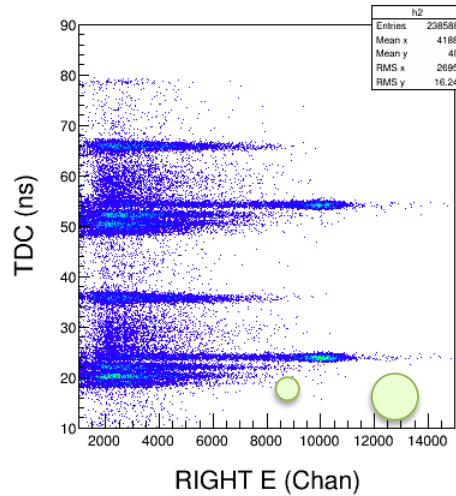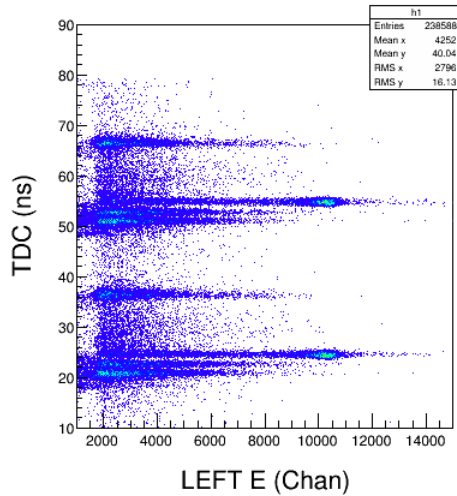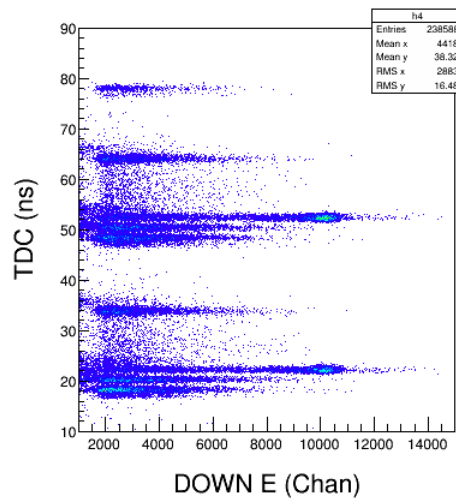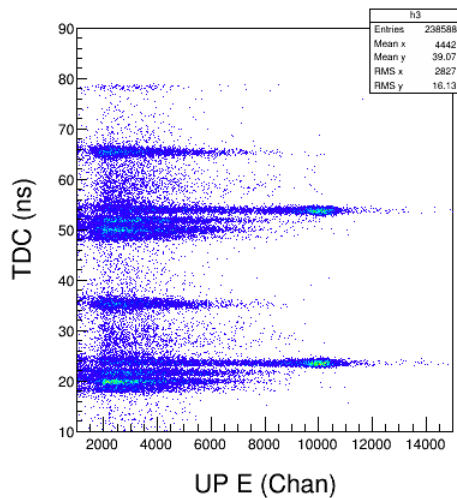
Run 7825 – 62 MHz

TDC Shift =1