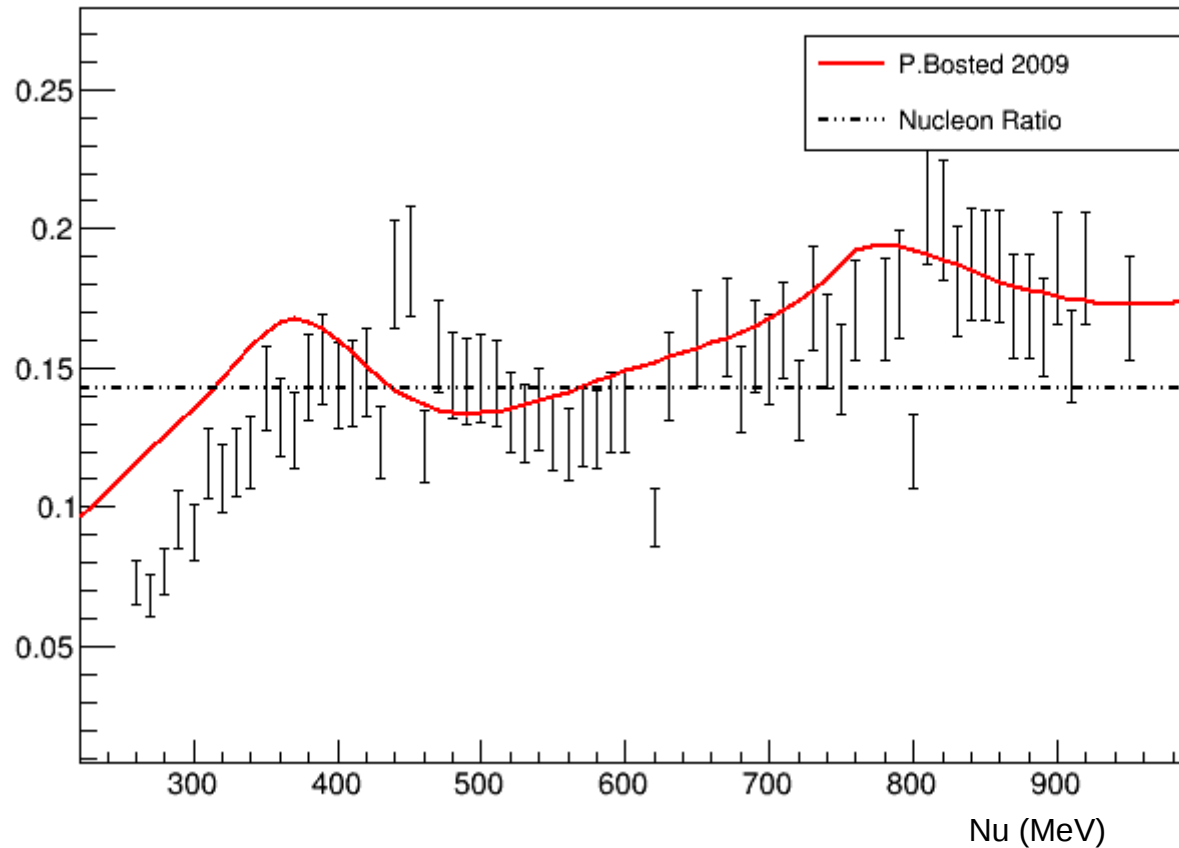


# Dilution Update

# 3.350 GeV – what's changed

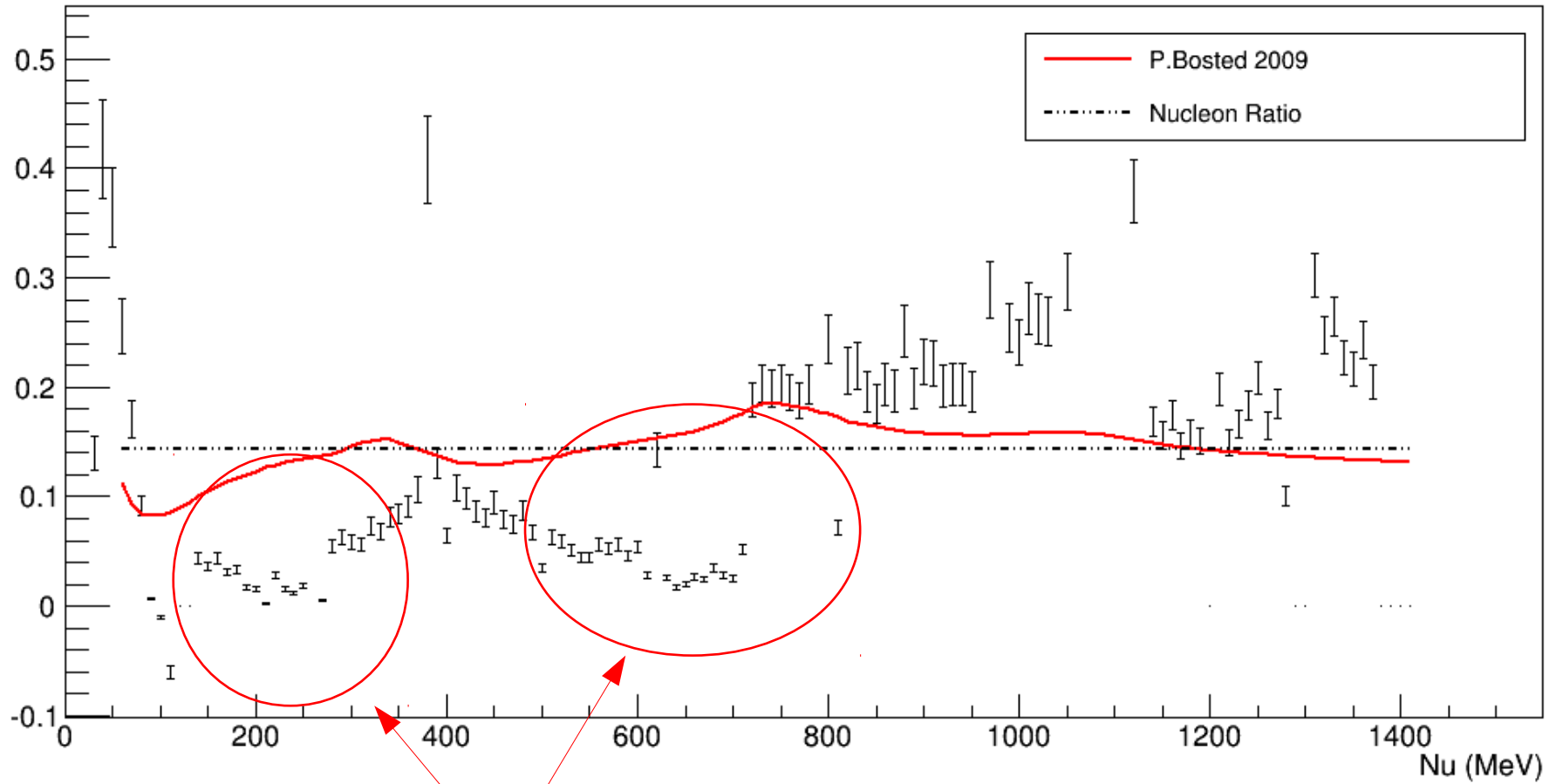
- **Included:**
  - Applied bin averaging for overlapping acceptance (weighted by statistical uncertainty)
  - Averaged all production runs at each momentum setting for dilution calculation.
  - Included improved Nitrogen model systematic uncertainty (5%).
- **Still needs to be added:**
  - Helium/Carbon model uncertainties
  - Finalized packing fraction + uncertainty
  - Calculated cell length + uncertainty ?
  - Binning/cut issue

3350 5T Dilution



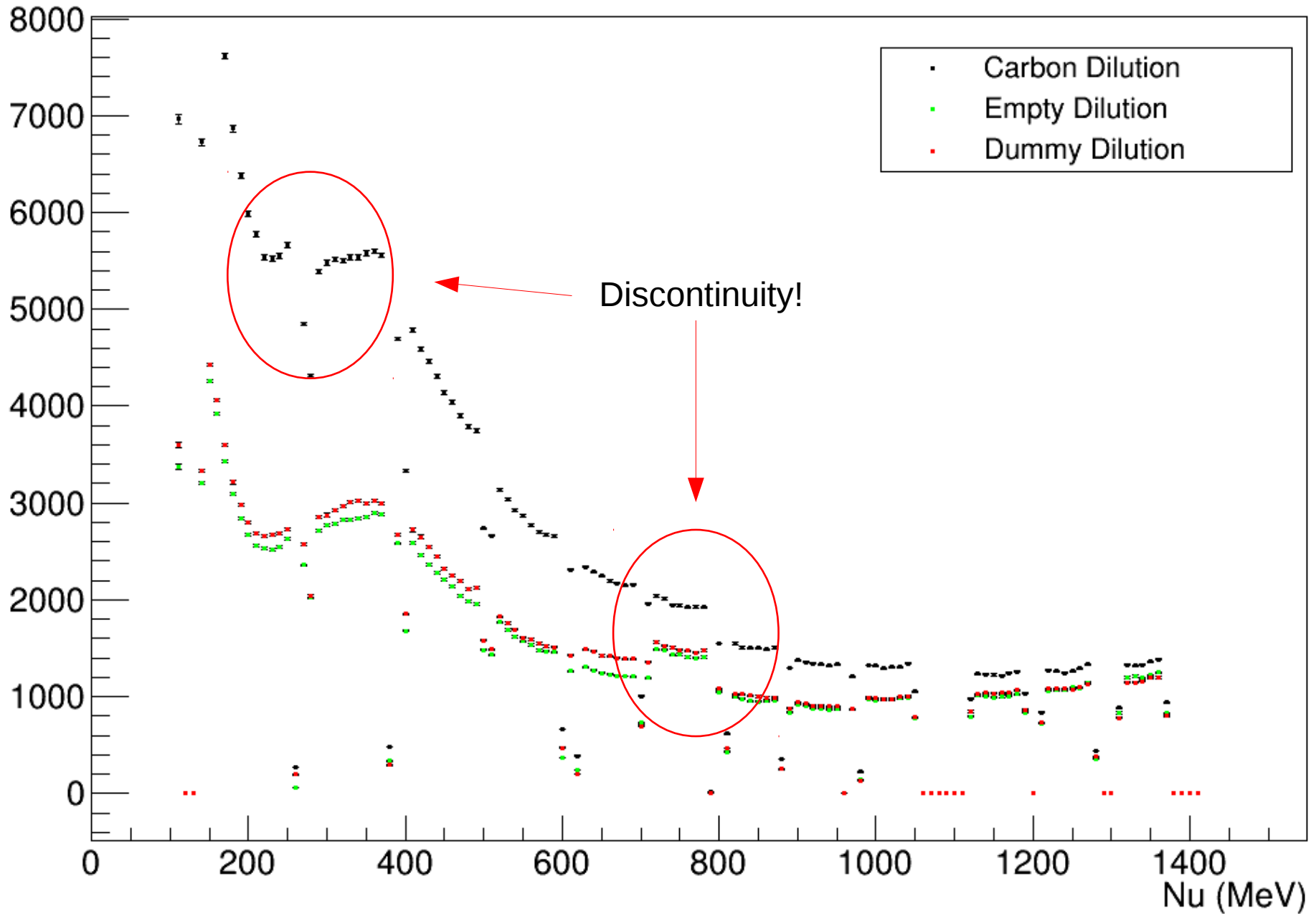
# 2.254 GeV 5T Transverse – New Problems

2254\_5T\_trans



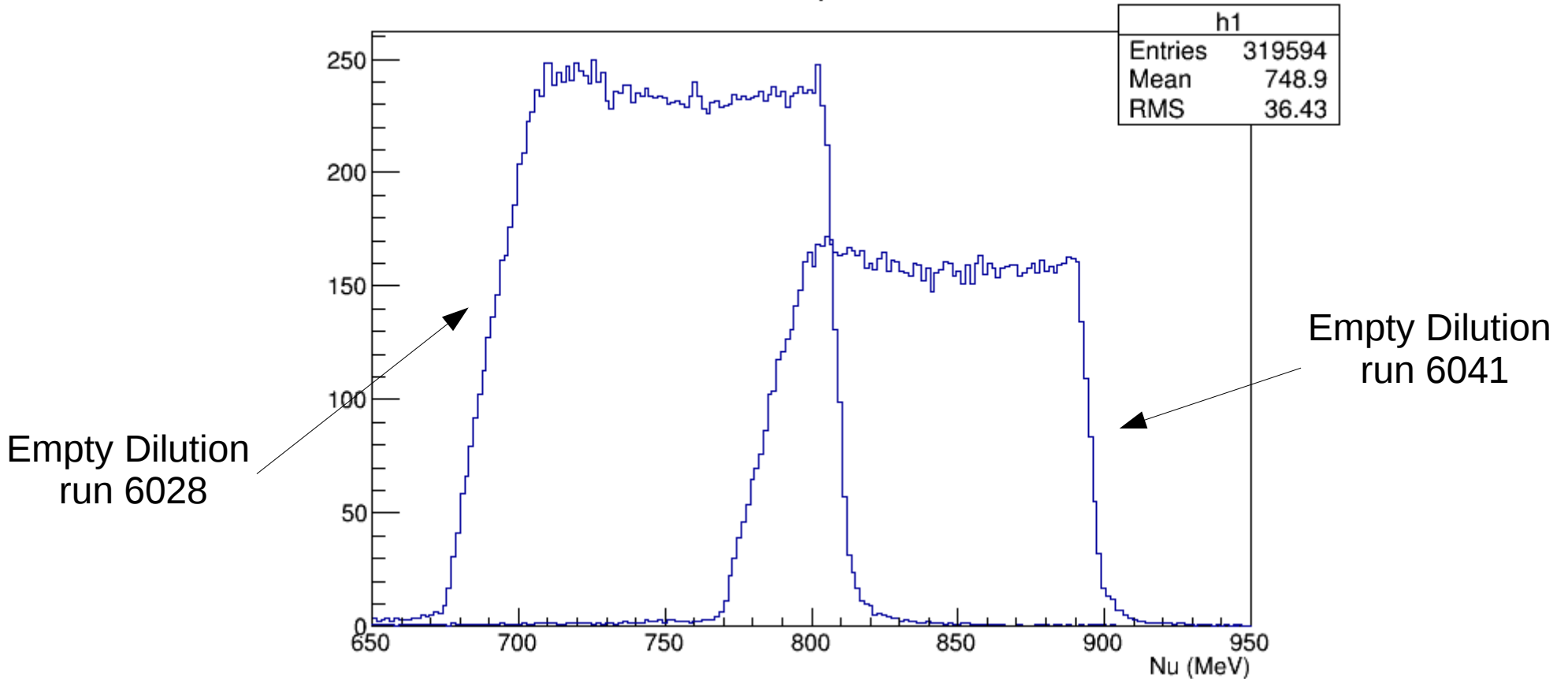
Problems with yields?

# 2254\_5T\_trans



# Taking a closer look...

Normalized Yield for p0=1.414,1.504GeV



$$\text{Yield} = N/(Q*LT)$$

Where...

- Prescale = 1
- Q,LT pulled from MySQL

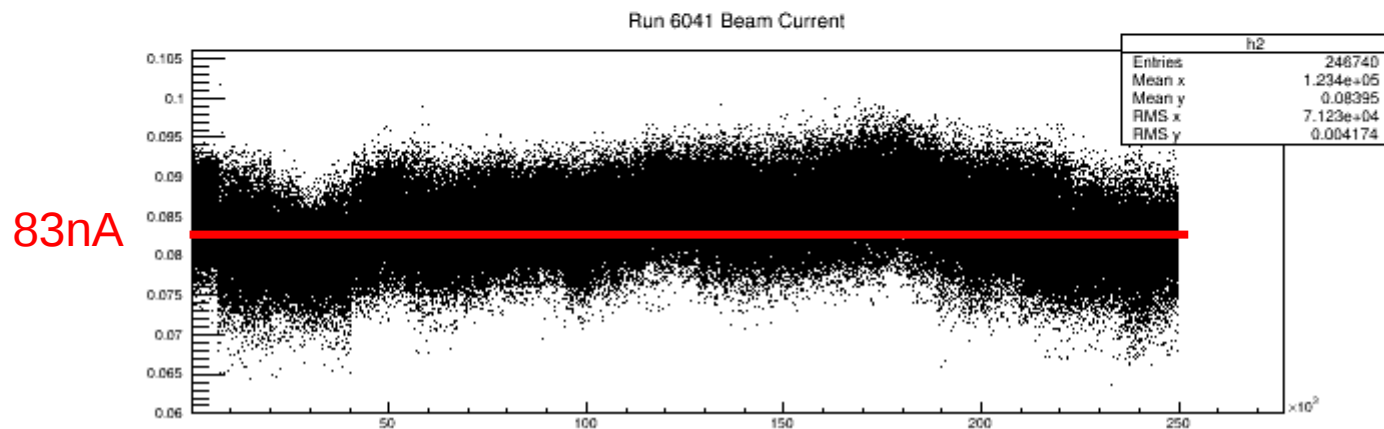
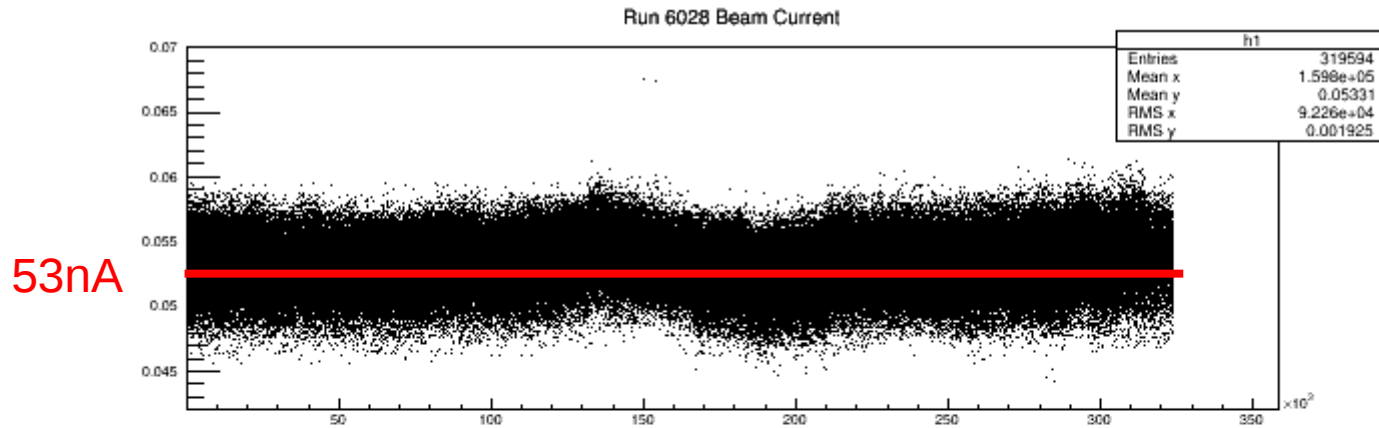
# Taking an even closer look...

## Empty Dilution run 6028:

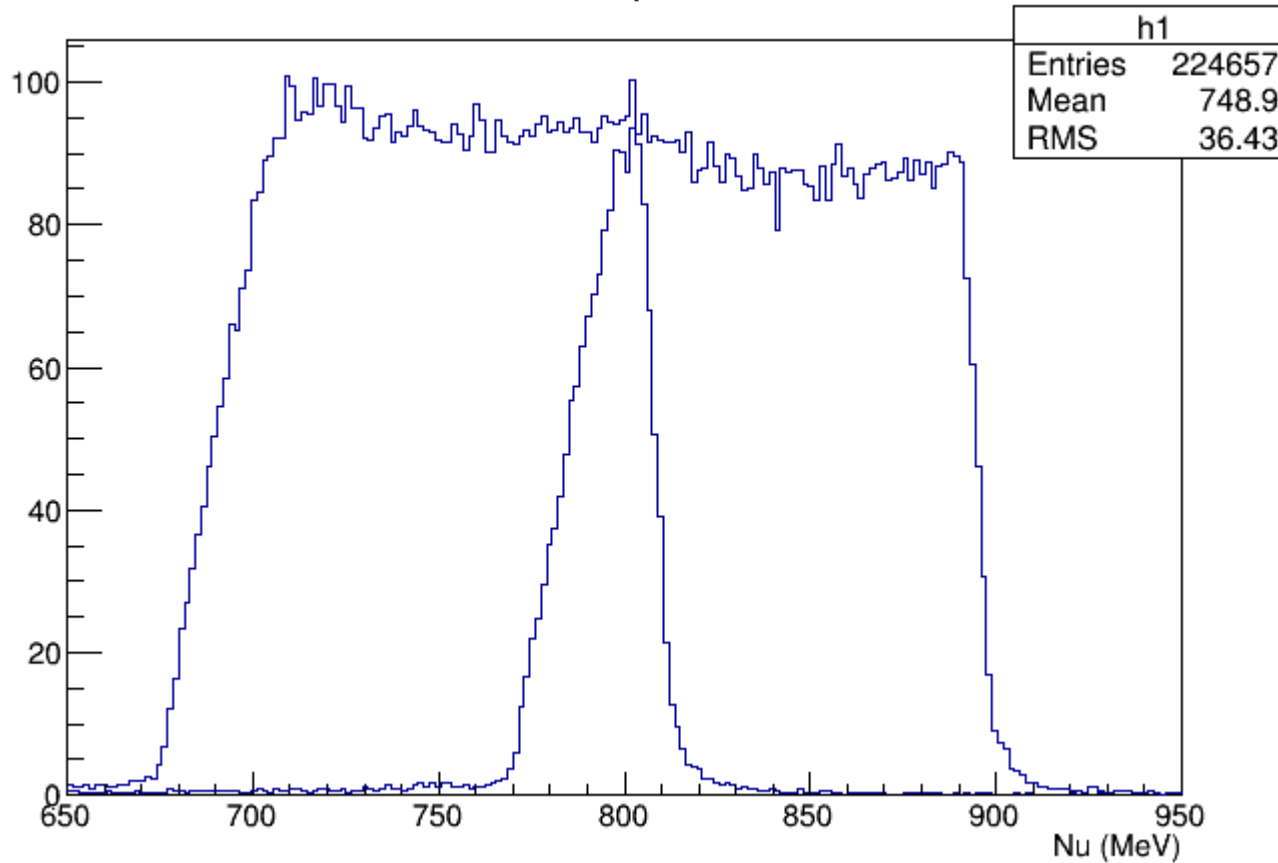
- 7 minutes 39 seconds
- I\_beam = 53nA
- **Crude Q\_total calculation**  
= I\_beam\*time = **24.464uC**
- MySQL Q\_total = **13.9127uC**

## Empty Dilution run 6041:

- 4 minutes 33 seconds
- I\_beam = 83nA
- **Crude Q\_total calculation**  
= I\_beam\*time = **22.659uC**
- MySQL Q\_total = **16.1487uC**



### Normalized Yield for $p_0=1.414, 1.504\text{GeV}$



Good agreement!!!

- $Q_{\text{total}}$  in MySQL is gated by good helicity events (cut on hel error)
- Need an ungated  $Q_{\text{total}}$  for unpolarized (or total) yields!
- *Might* solve yield mismatch problems...