RYOTA SHISHIKURA

REPORT 2 IN TAIWAN WORK SHOP

Data QA for noise with Bean On/Off

Ryota Shishikura
(Rikkyo University)

For estimating the ratio of Signal/Noise, investigating noise features
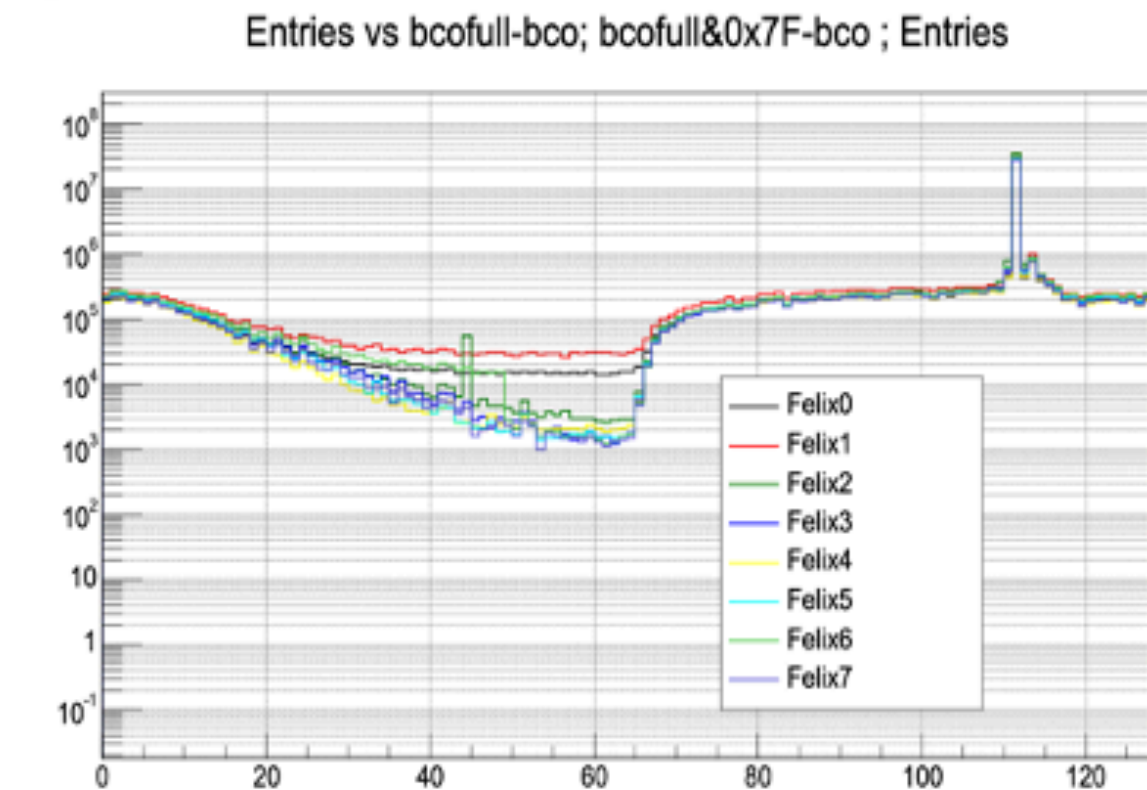
Goal in this workshop: Analyzing data, find new noise features and understand noise more
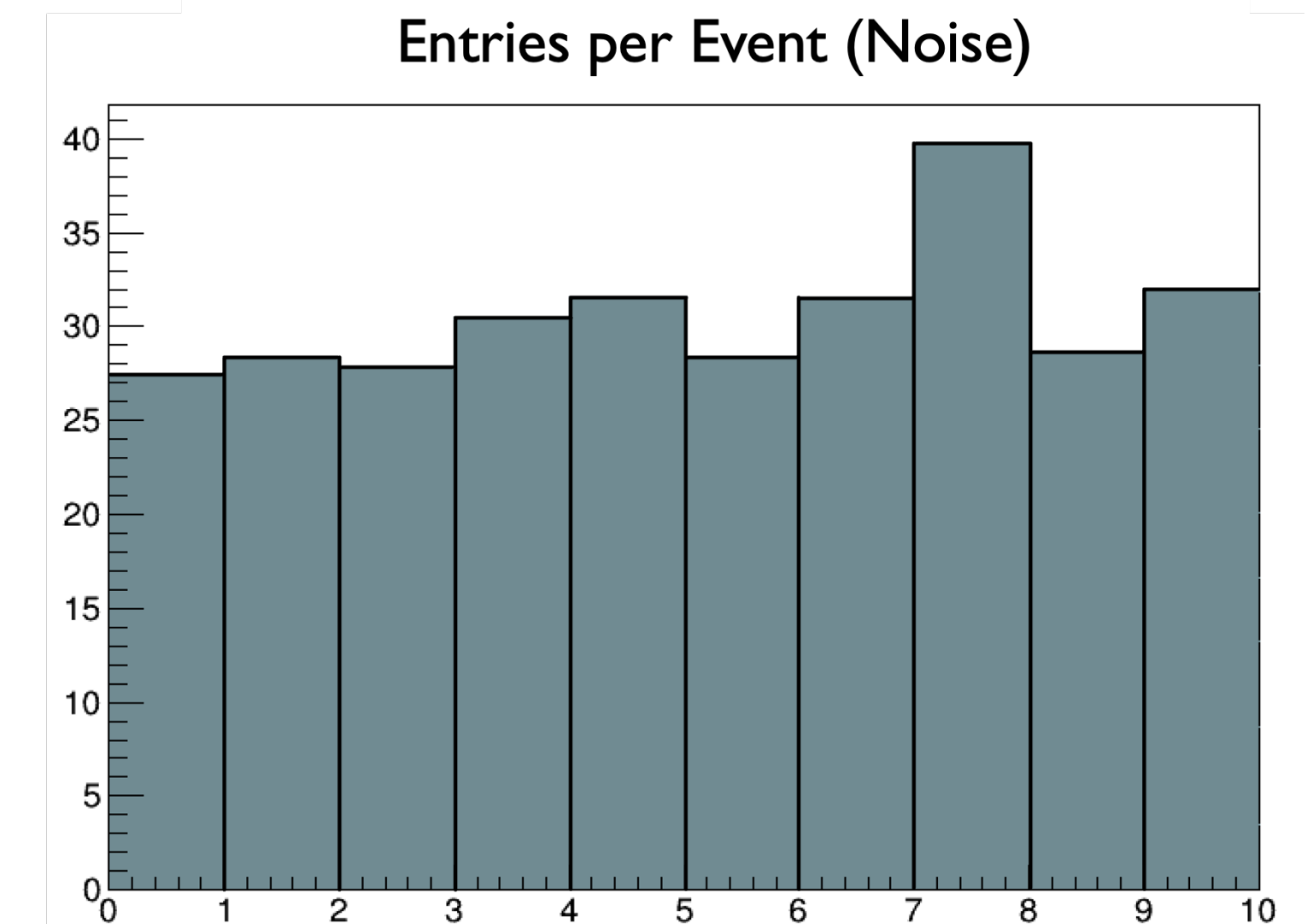
New My To-Do List

- Comparing cosmic and signal data
  - ADC / Cluster size / channel distribution

- Investigating mystery of bcofull-bco plot
  - Understanding the sharp increase of background.
  - Making document for Raul

- Run Log update
  - Checking day/time of data from time-stamp of data
  - Checking the state of Magnet from the log data given by Nukazuka-san

New

- Estimating the amount of Noise without clone hits.
- Barrel dependence of Noise

Entries vs bcofull-bco; bcofull&0x7F-bco ; Entries

n_collision = 127

Entries per Event (Noise)

Data QA for noise with Bean On/Off

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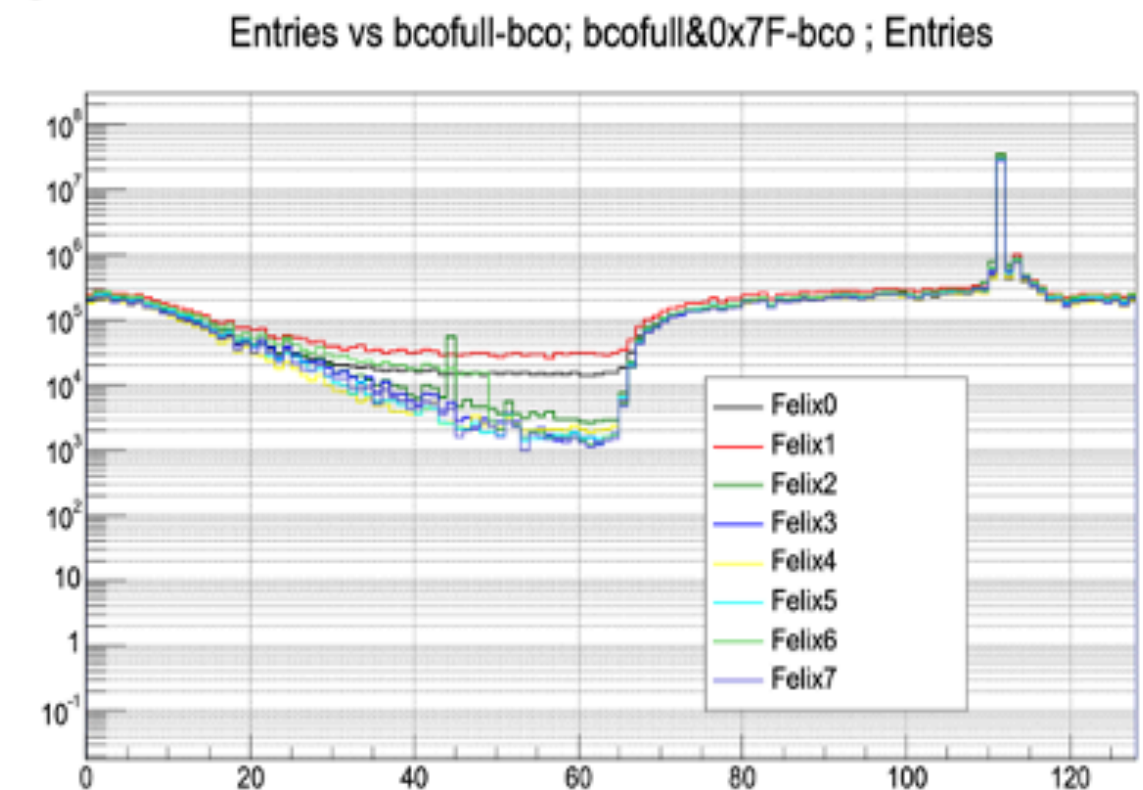**For estimating the ratio of Signal/Noise, investigating noise features**

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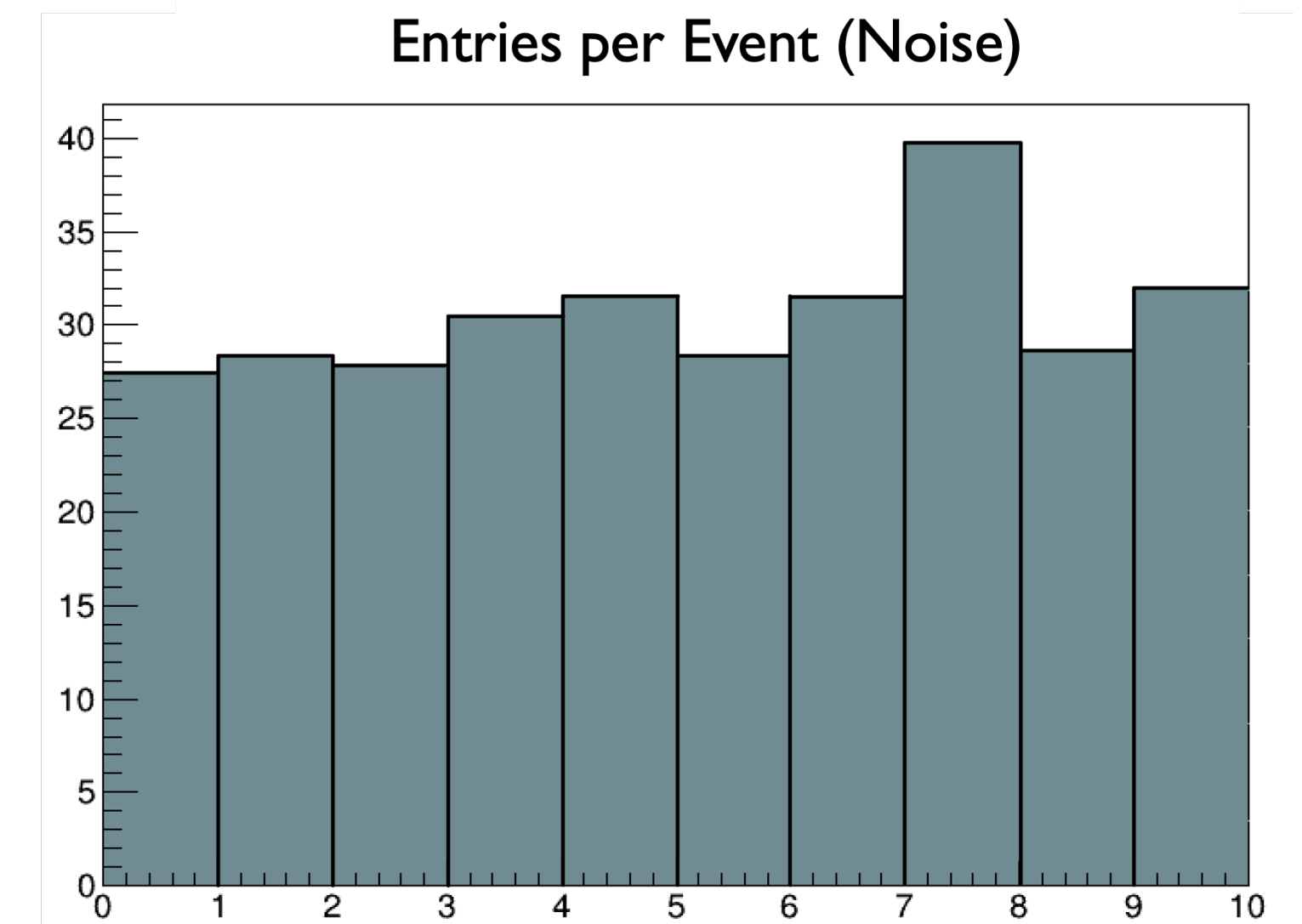
New My To-Do List

- Comparing cosmic and signal data
  - ADC / Cluster size / channel distribution

- Investigating mystery of bcofull-bco plot
  - Understanding the sharp increase of background. **Progress!**
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  - Checking day/time of data from time-stamp of data
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New

- ~~Estimating the amount of Noise without clone hits.~~
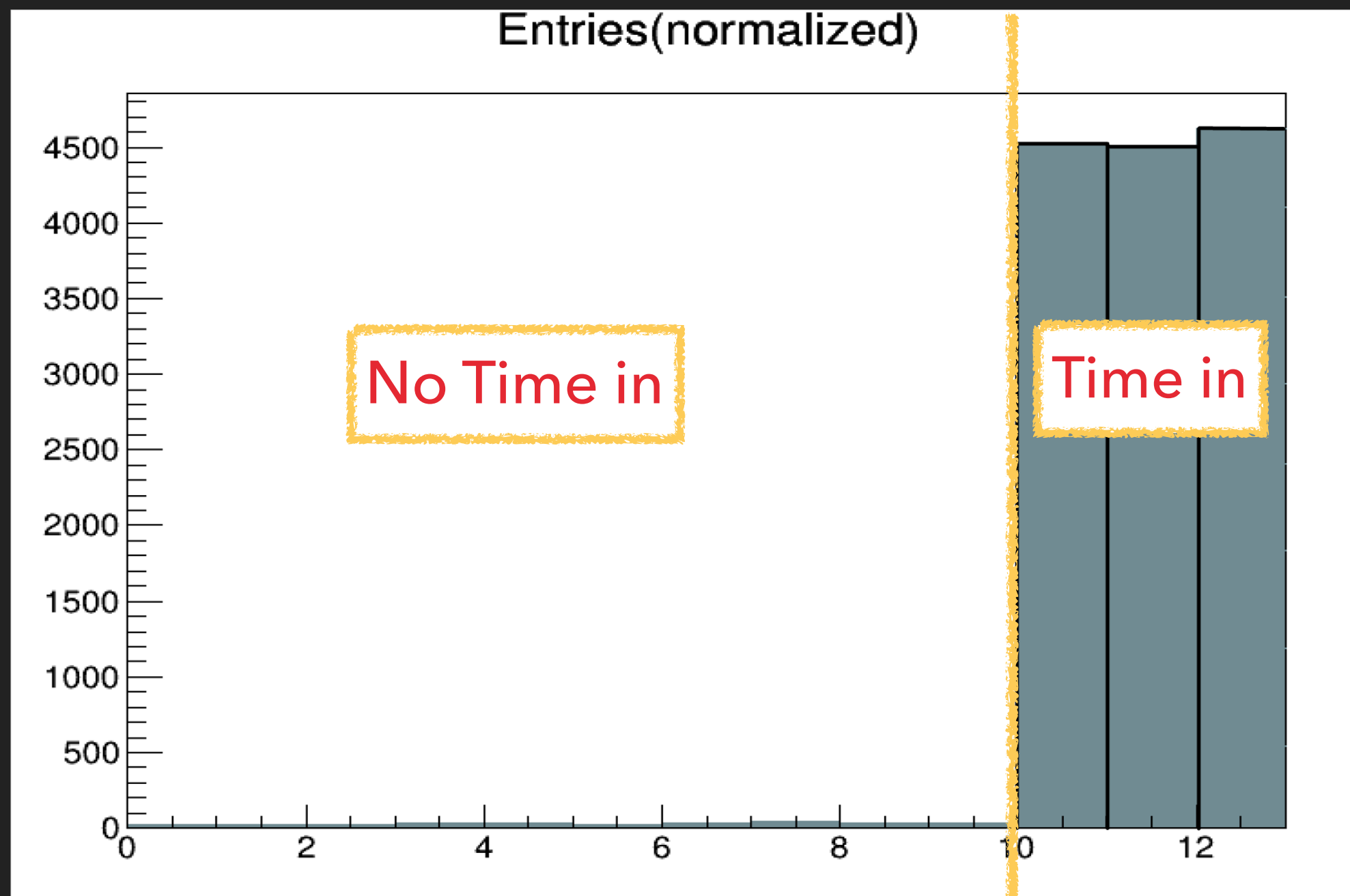
- Barrel dependence of Noise **Ongoing**

Entries vs bcofull-bco; bcofull&0x7F-bco ; Entries

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Entries per Event (Noise)

CONTENTS

1. Estimating the amount of Noise without clone hits.
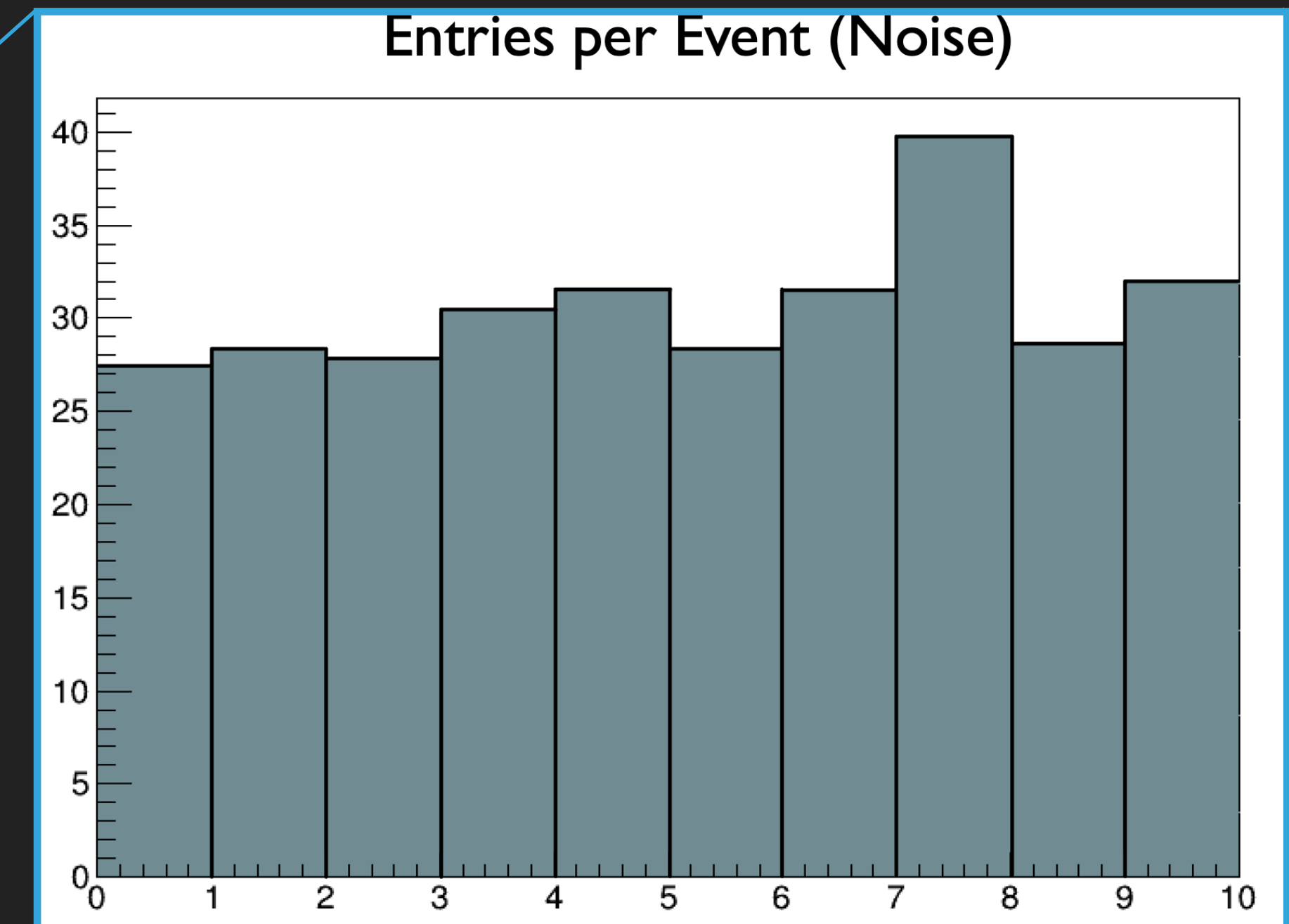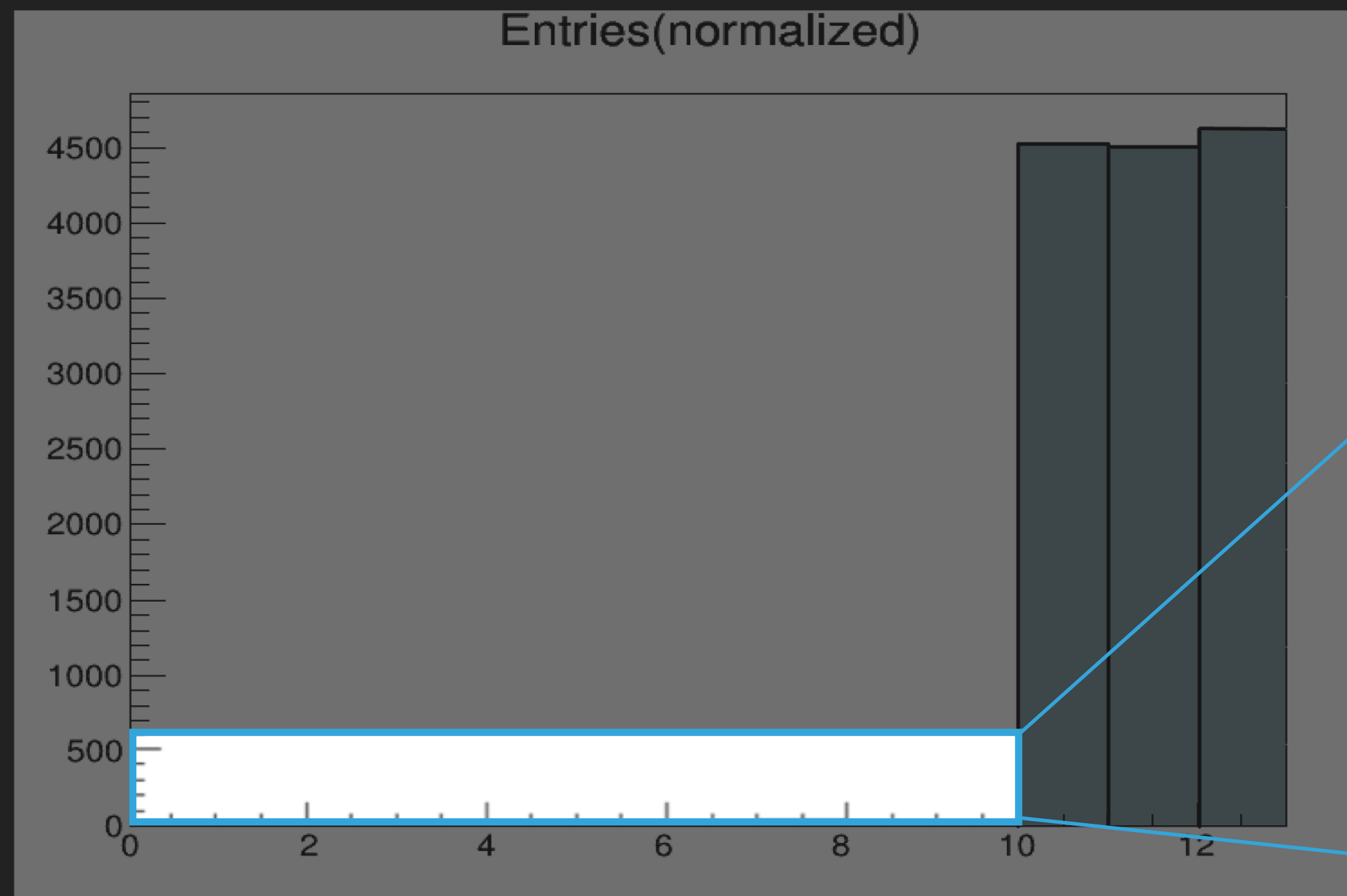
2. Mystery of Bcofull-Bco plot

With clone hits

The plot shows amount of noise/beam per Event.
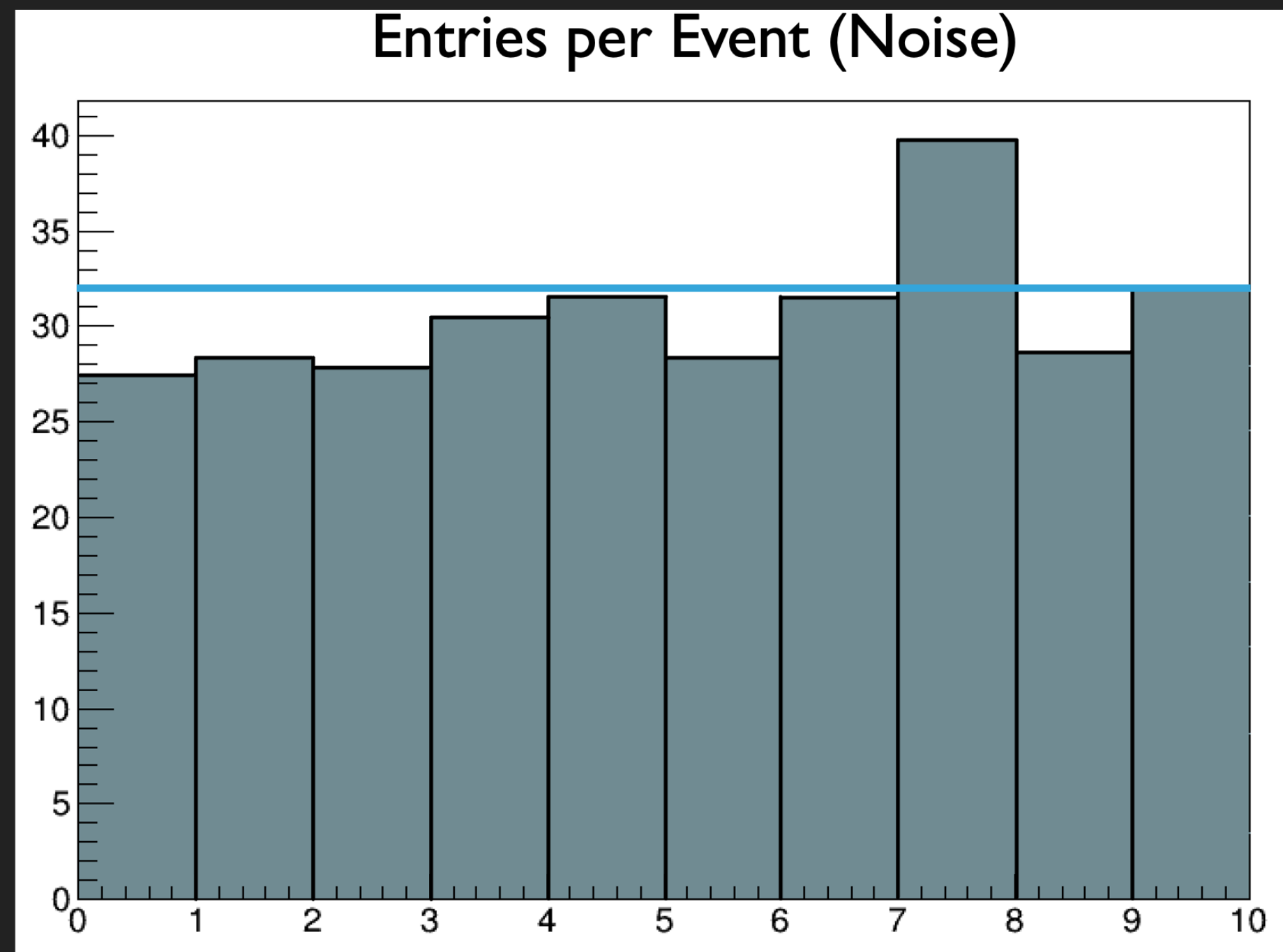
With clone hits

Entries(normalized)

Entries per Event (Noise)

The plot shows amount of noise/beam per Event.
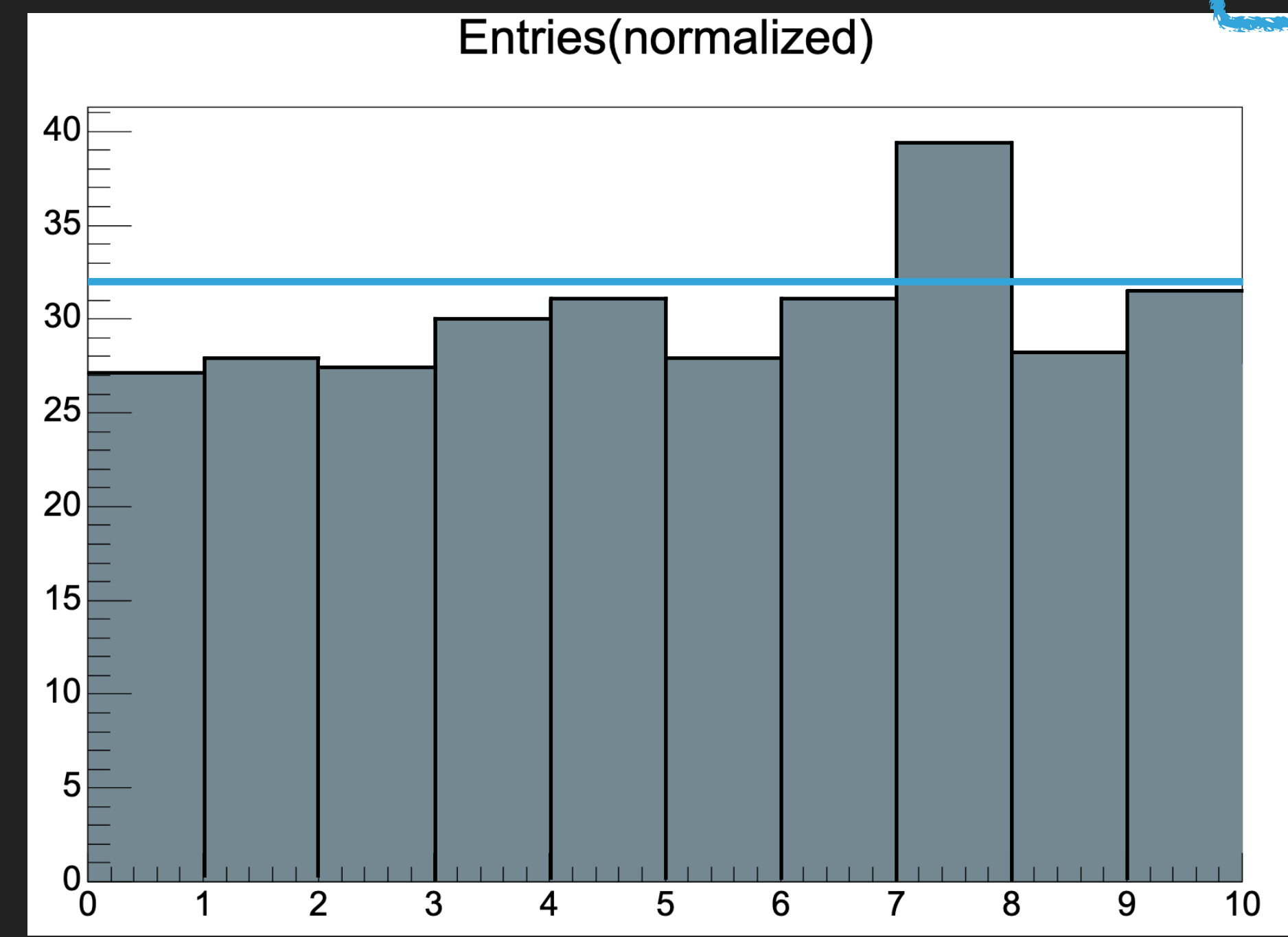The amount of noise is less than 1% of Beam data

30.591±3.65 /1bco

1.THE AMOUNT OF NOISE WITHOUT CLONE HITS

- ‣ Same pid
- ‣ Same module
- ‣ Same chip_id
- ‣ Same chan_id
- ‣ Same bco_full

With clone hits

Entries per Event (Noise)

Without clone hits

Entries(normalized)

30.591±3.65 /1bco   −1.58%   →   **30.107±3.65 /1bco**

2. MYSTERY OF BCOFULL–BCO PLOT

Mystery

▸ The rapidly increase at some point

→ I already checked many data and
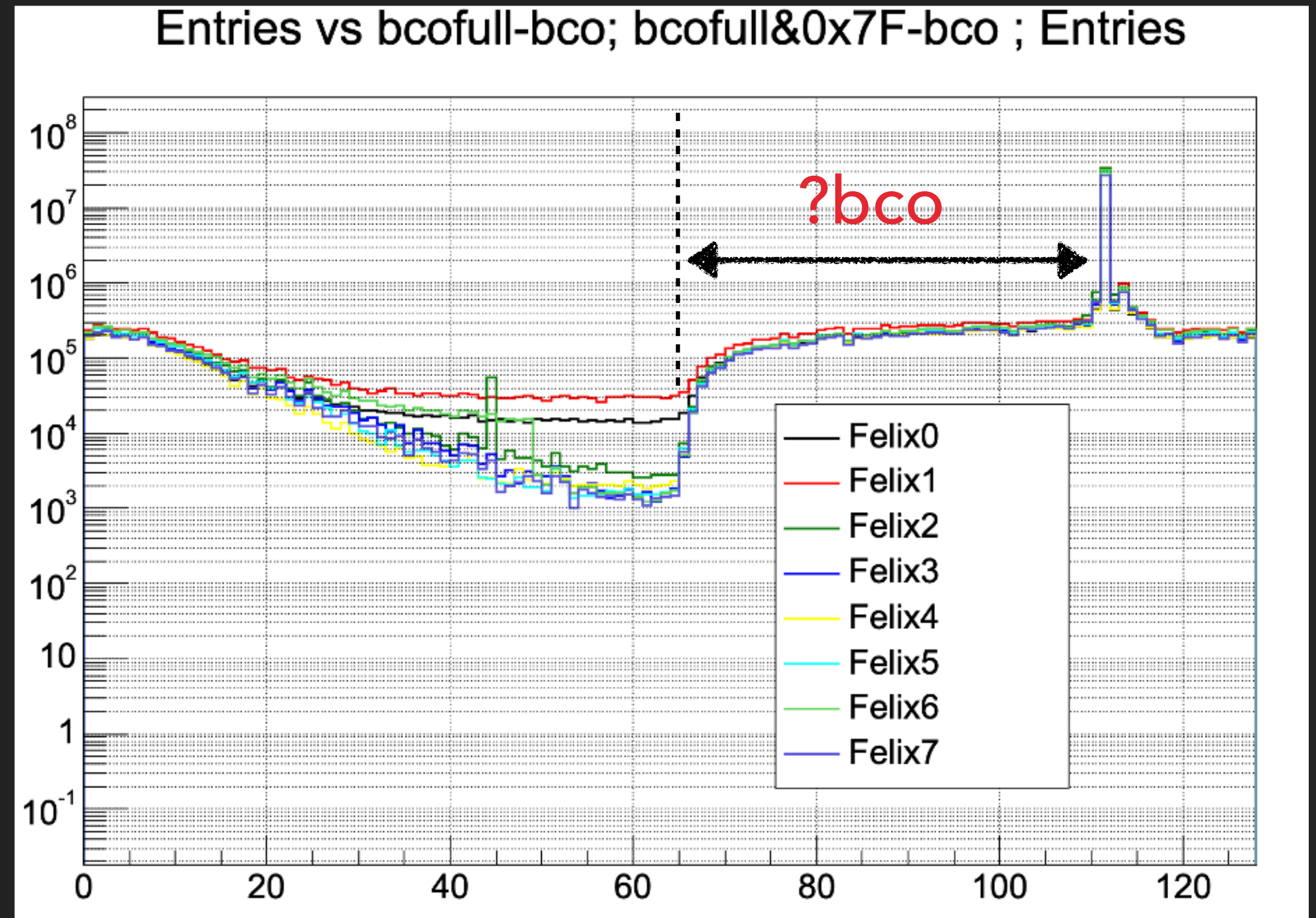I could see this increase from almost
all of the data

Entries vs bcofull-bco; bcofull&0x7F-bco ; Entries
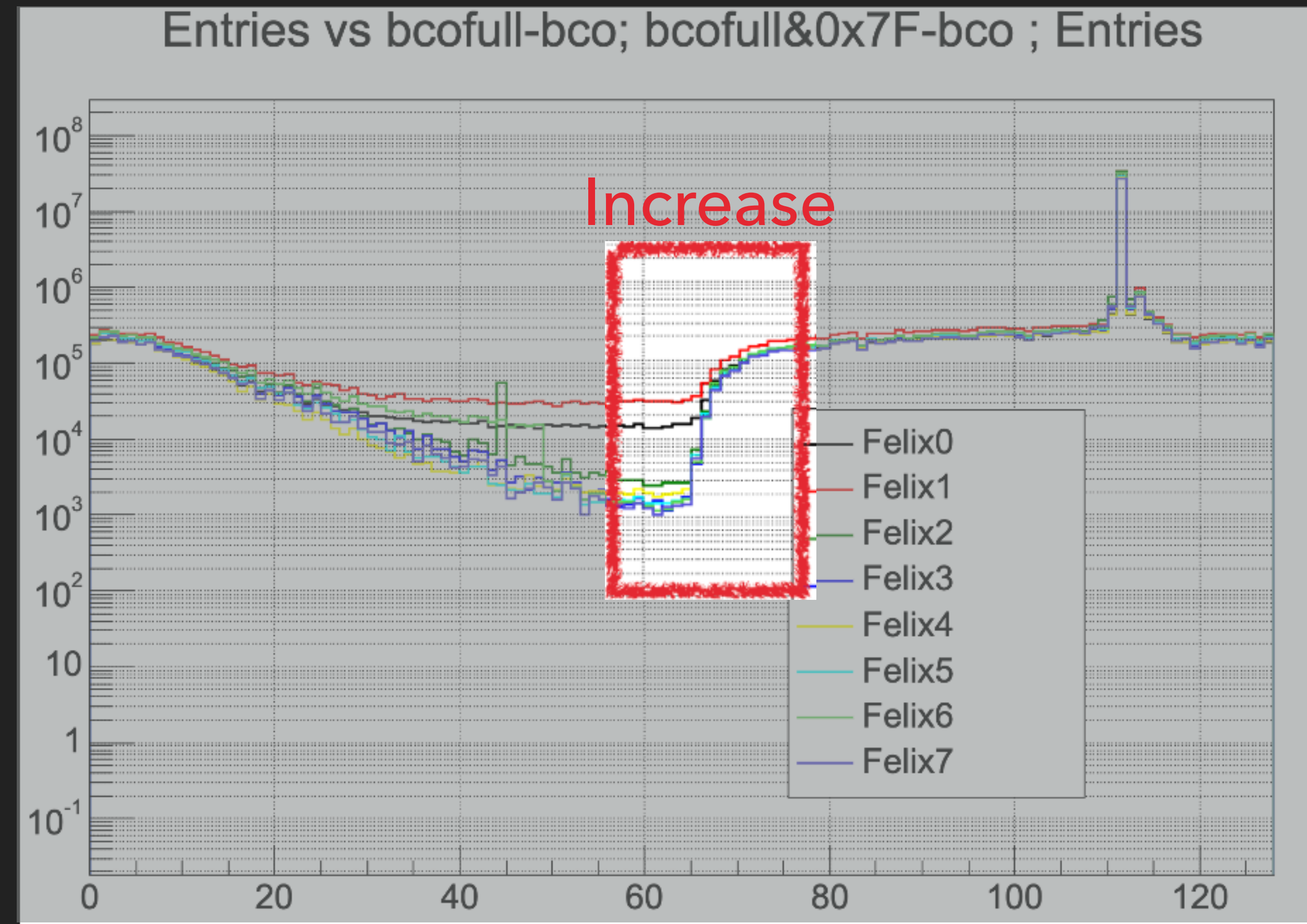
Increase

Mystery

‣ The sharp increase of background

I Did

‣ Check the time
between peak and sharp increase
Run by Run

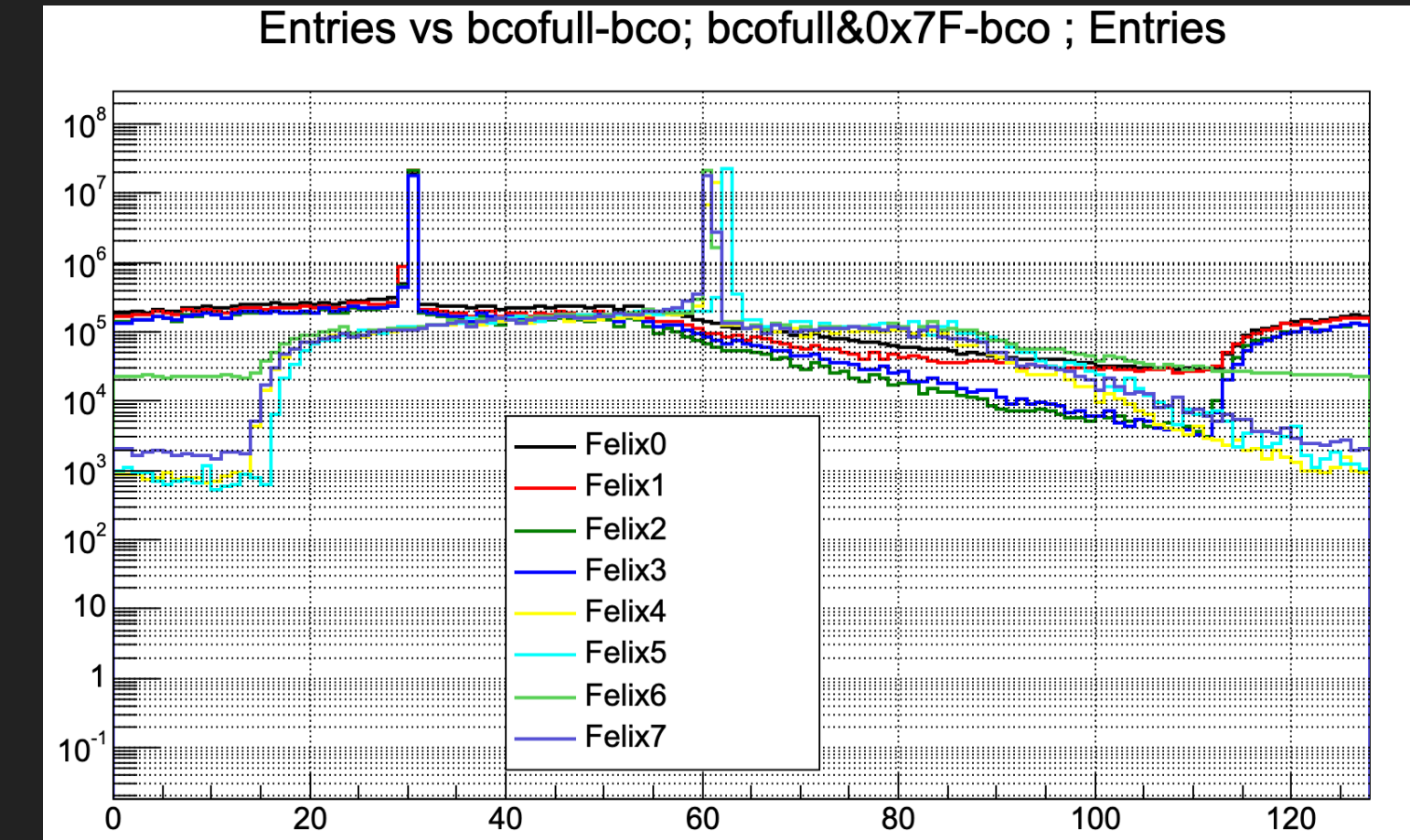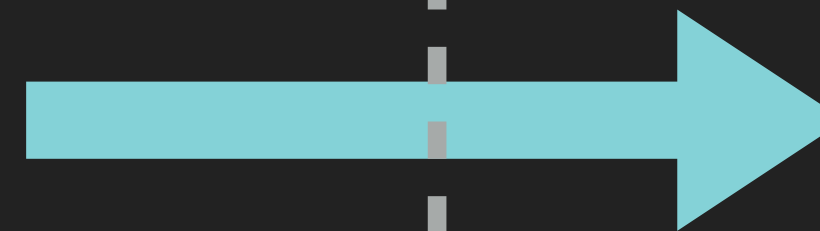Entries vs bcofull-bco; bcofull&0x7F-bco ; Entries

7/20

Entries vs bcofull-bco; bcofull&0x7F-bco ; Entries

New felix firmware 7/21
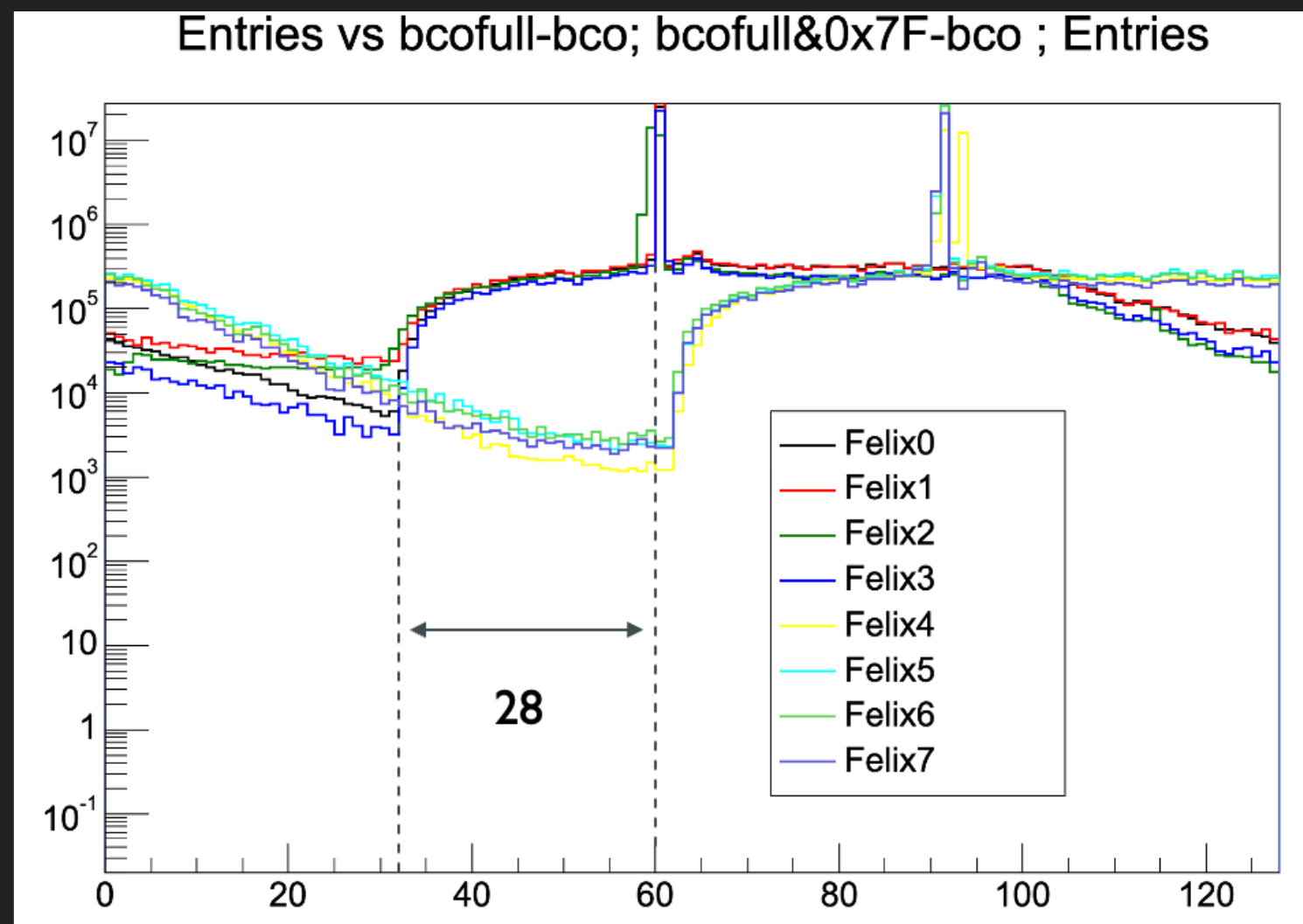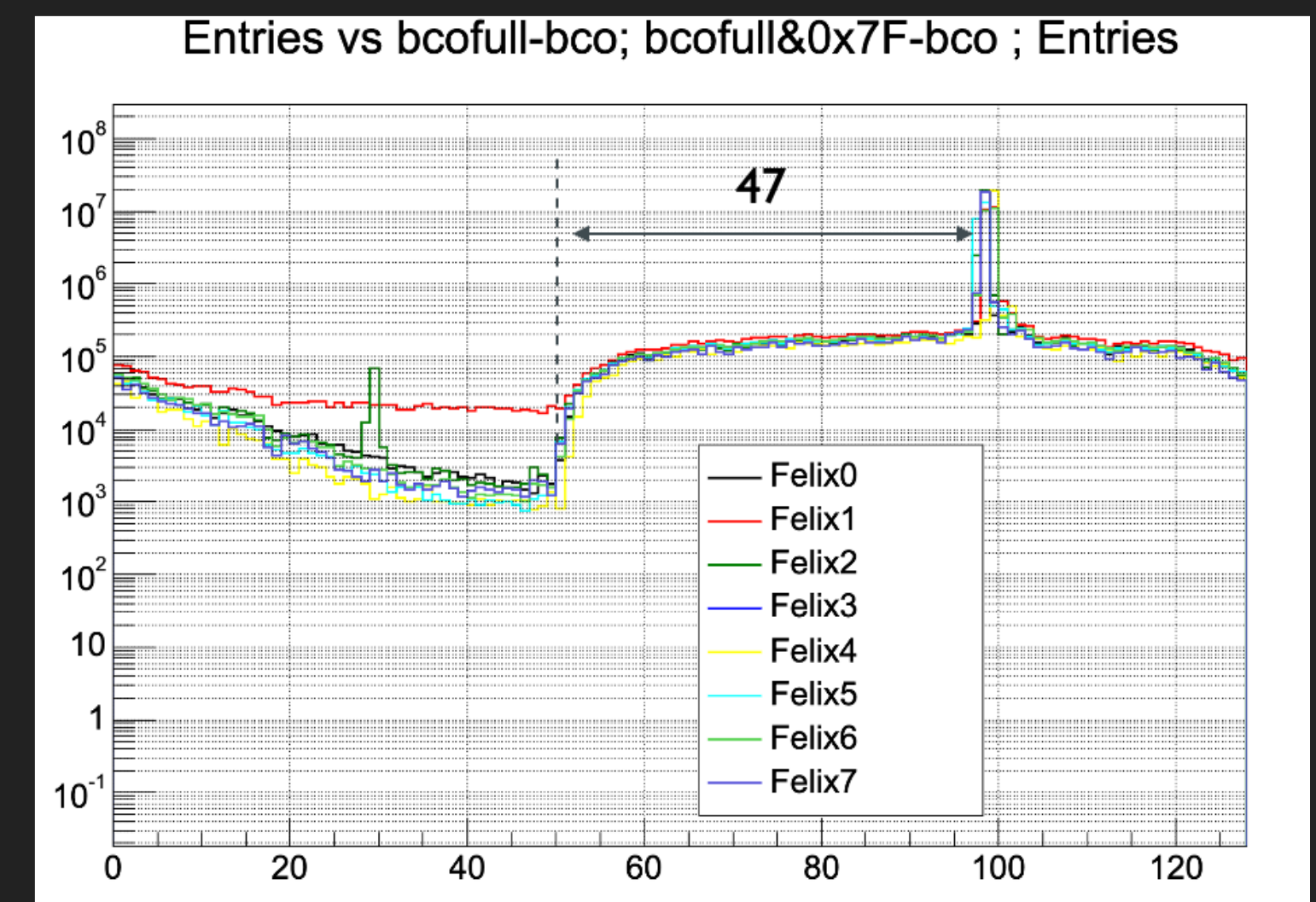New GTM firmware 7/31

7/21

Entries vs bcofull-bco; bcofull&0x7F-bco ; Entries
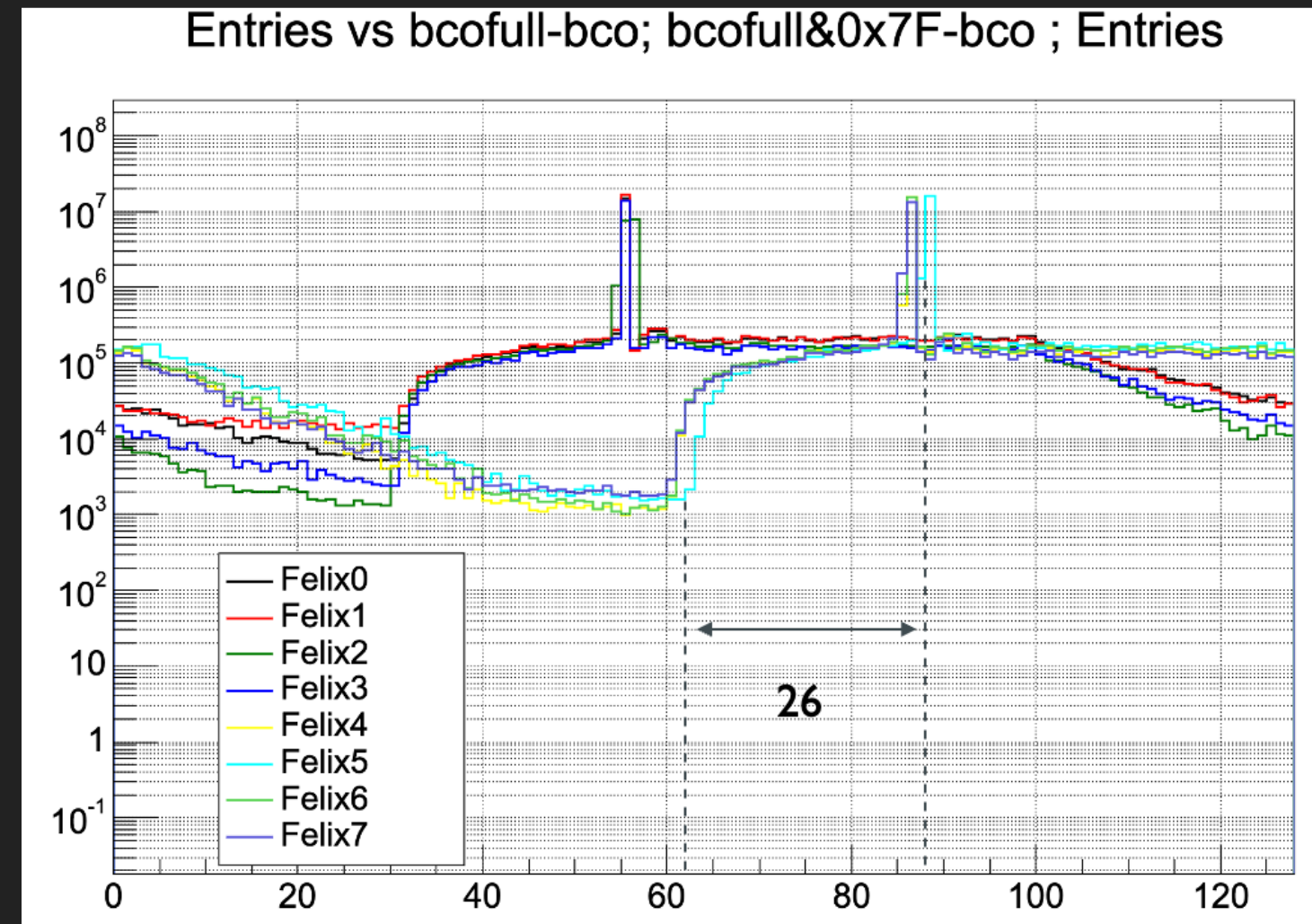
- L1 Delay   = 0
- Open time = 35
- n_collision = 127
- Modebits   = 79

- L1 Delay   = 21
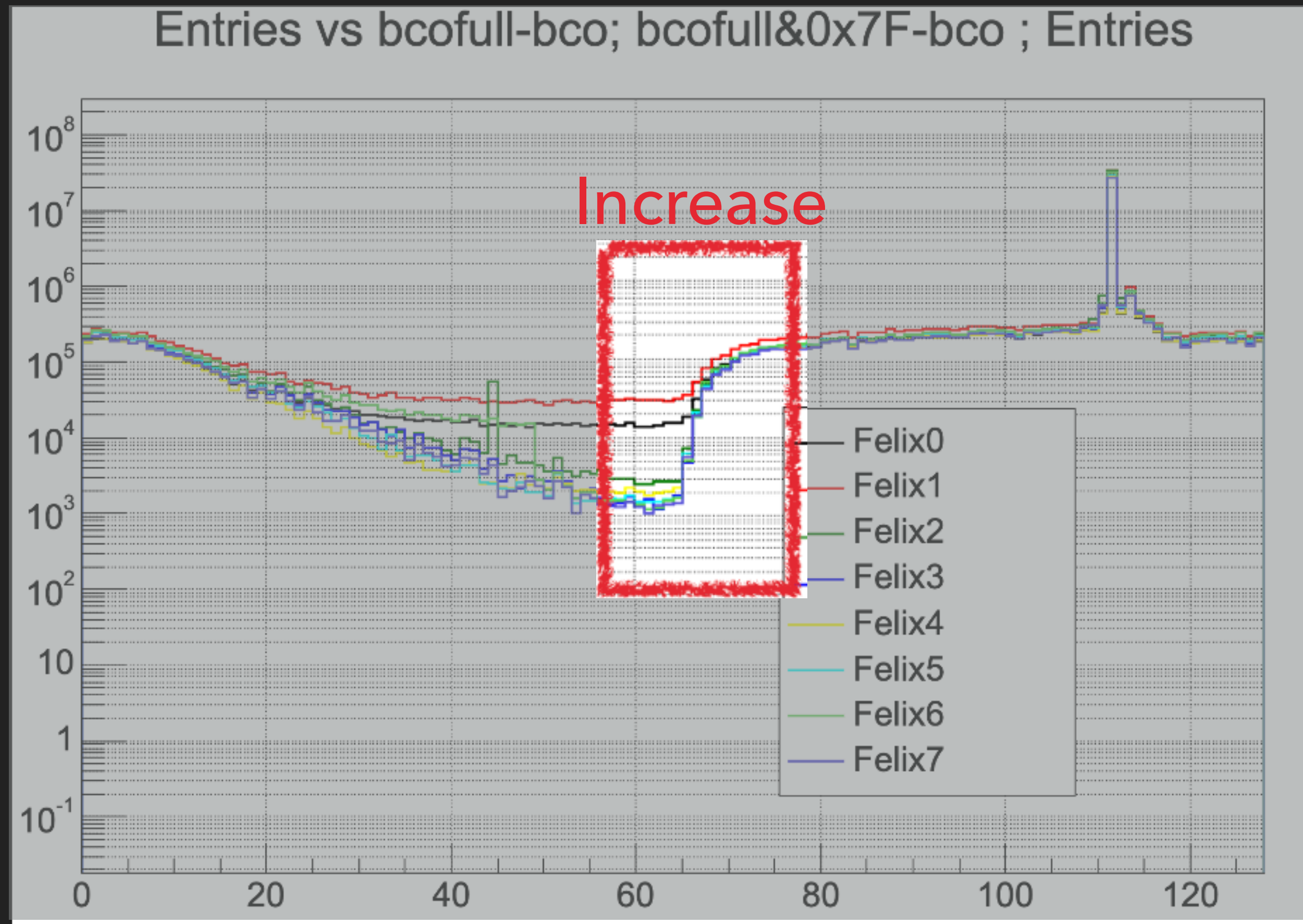- Open time = 35
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- Modebits   = 79

7/31

- L1 Delay   = 25
- Open time = 35
- n_collision = 127
- Modebits   = 79

- L1 Delay   = 21
- Open time = 35
- n_collision = 127
- Modebits   = 95

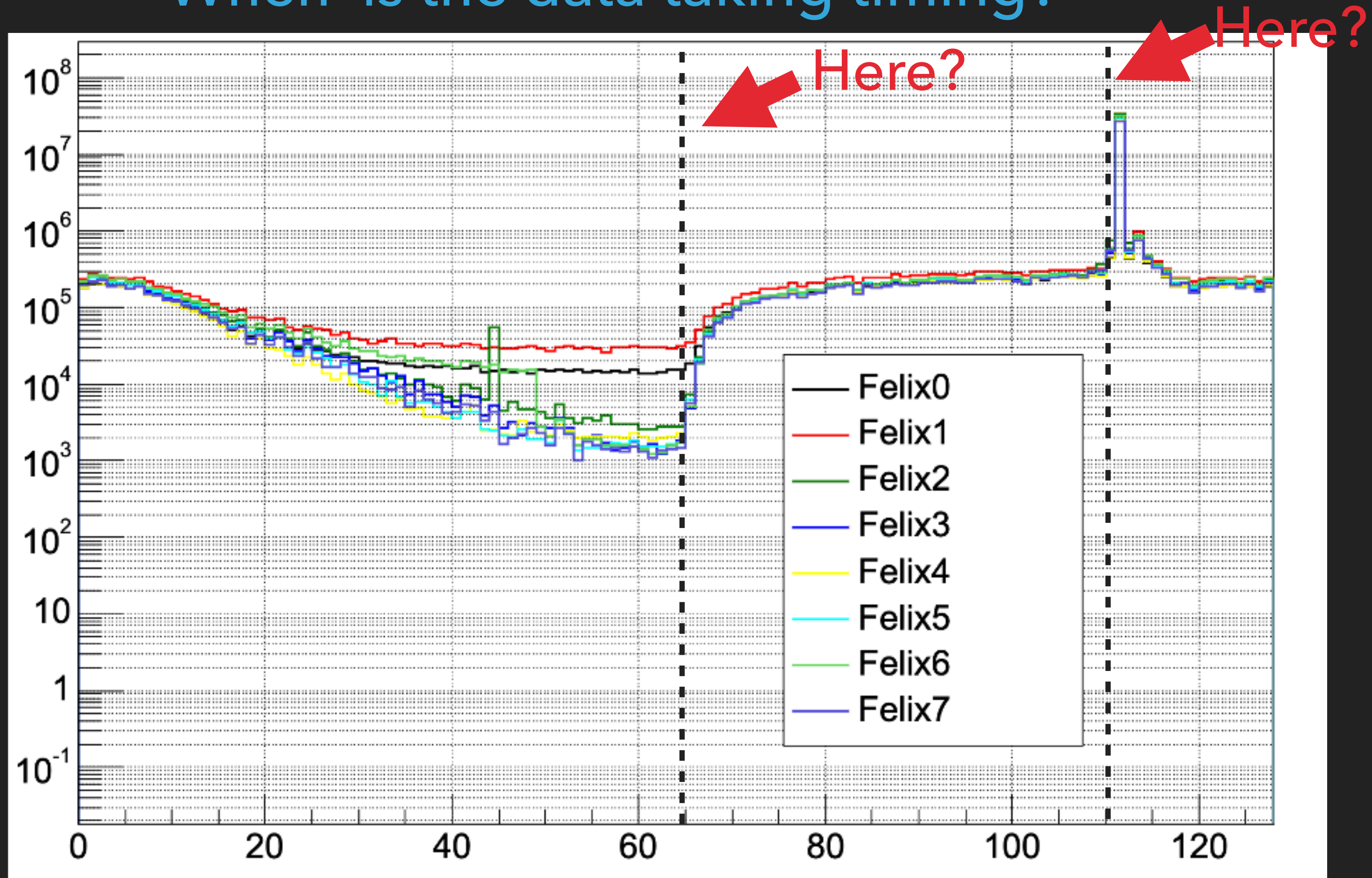Entries vs bcofull-bco; bcofull&0x7F-bco ; Entries

Entries vs bcofull-bco; bcofull&0x7F-bco ; Entries

The increase timing is

after peak or before peak?

The key is

when the data taking timing is.

When is the data taking timing?

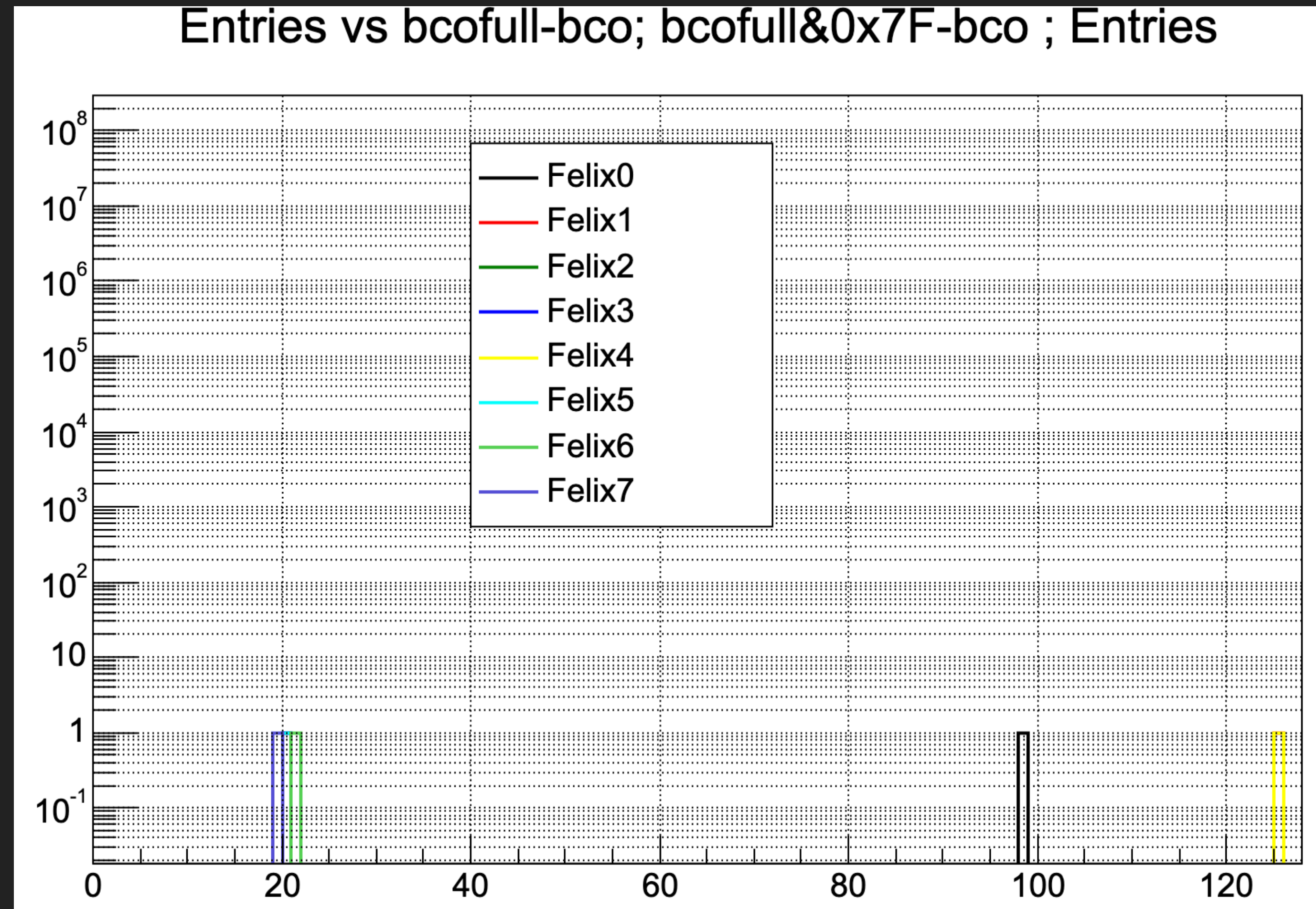## When is the data taking timing?

Using hit-based root files, I checked first hit Felix by Felix.

Result (only 1Run)

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