

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

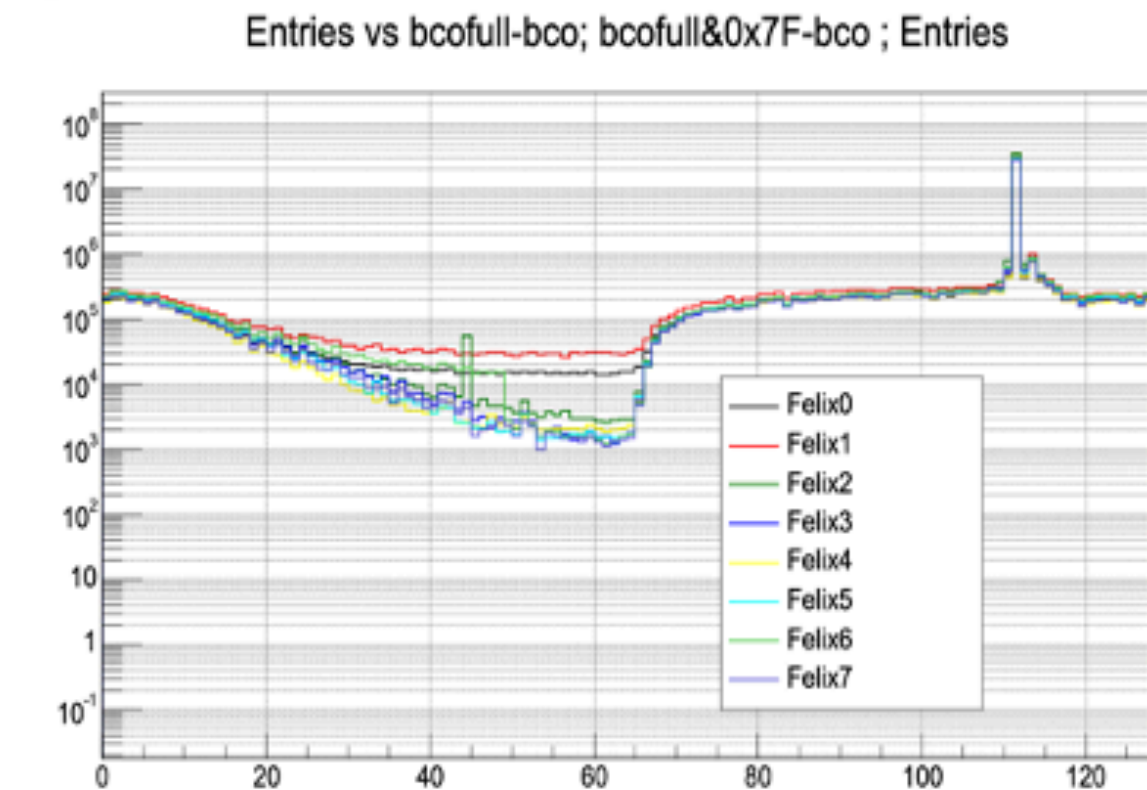
Goal in this workshop: Analyzing data, find new noise features and understand noise more

New My To-Do List

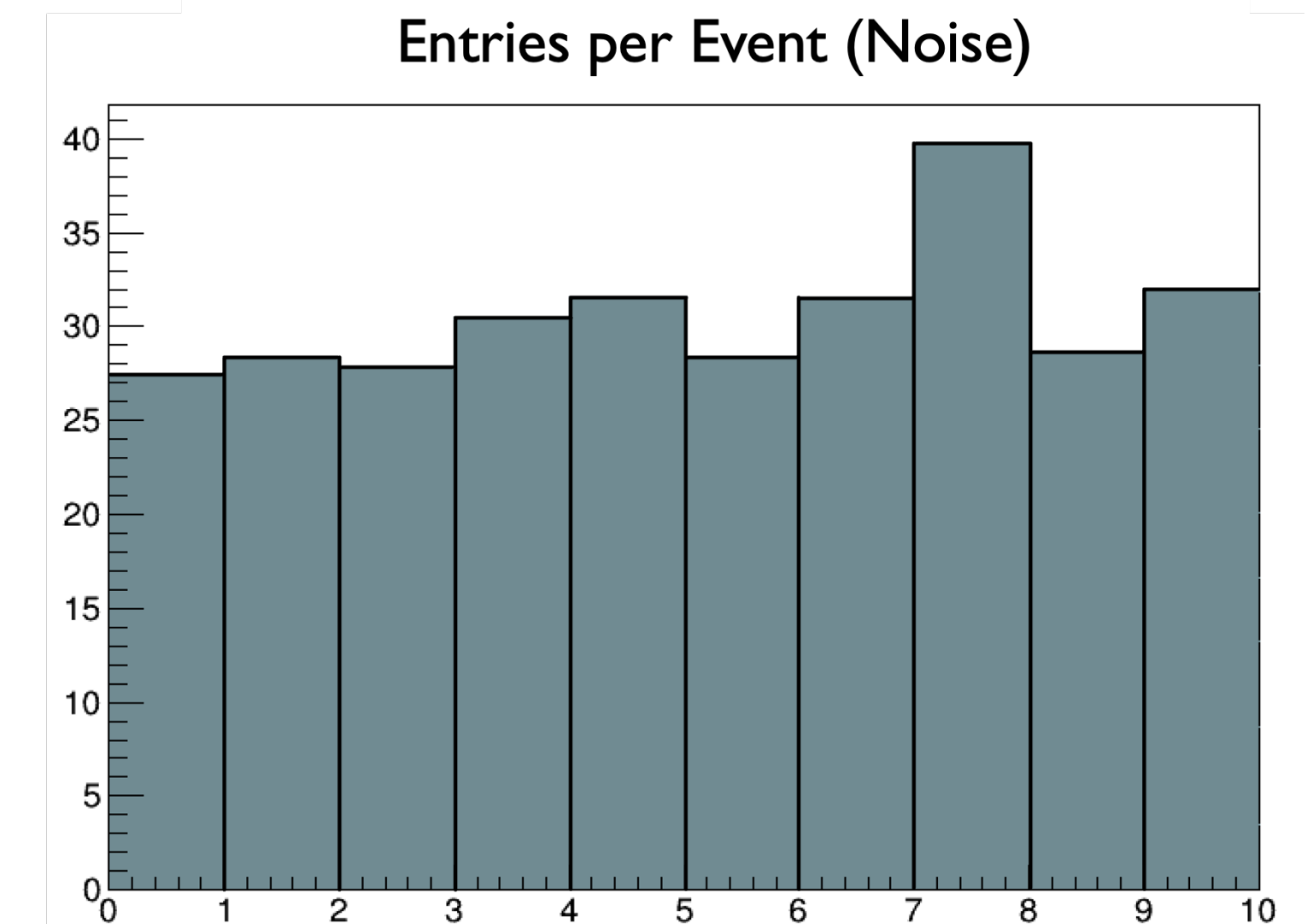
- Comparing cosmic and signal data
 - ADC / Cluster size / channel distribution
- Investigating mystery of bcofull-bco plot
 - Understanding the sharp increase of background.
 - Making document for Raul
- Run Log update
 - Checking day/time of data from time-stamp of data
 - Checking the state of Magnet from the log data given by Nukazuka-san

New

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



n_collision = 127



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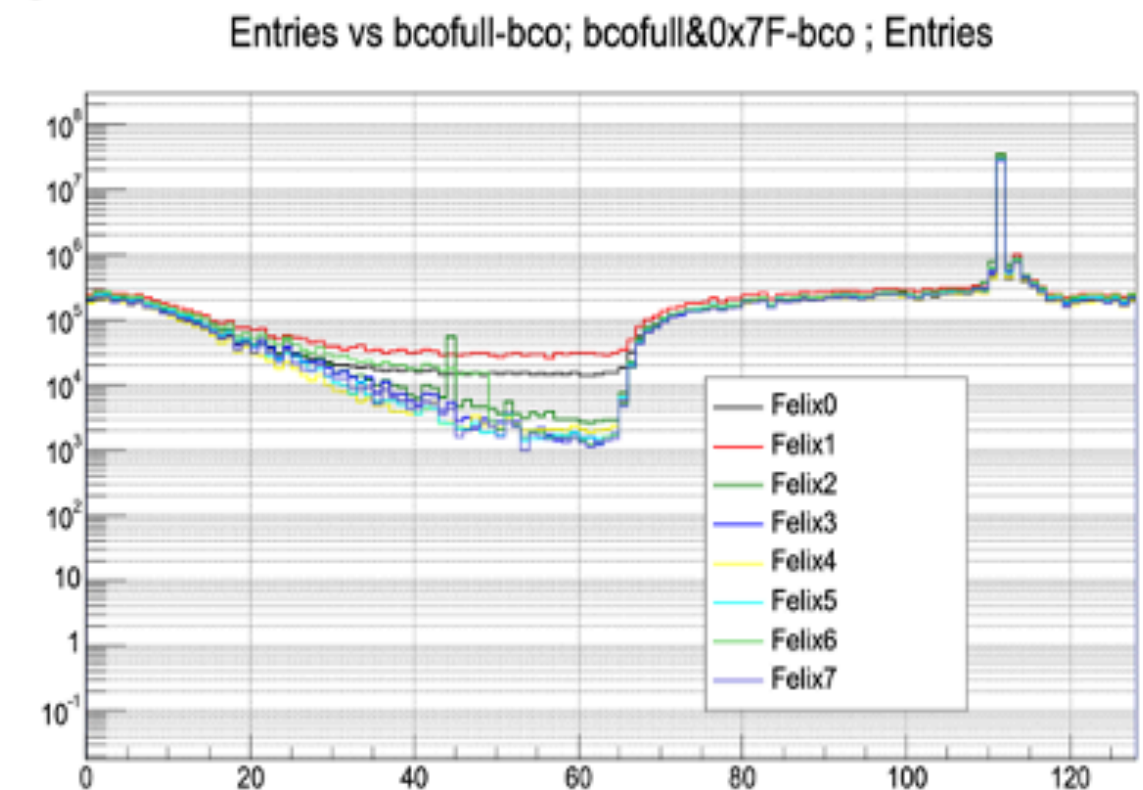
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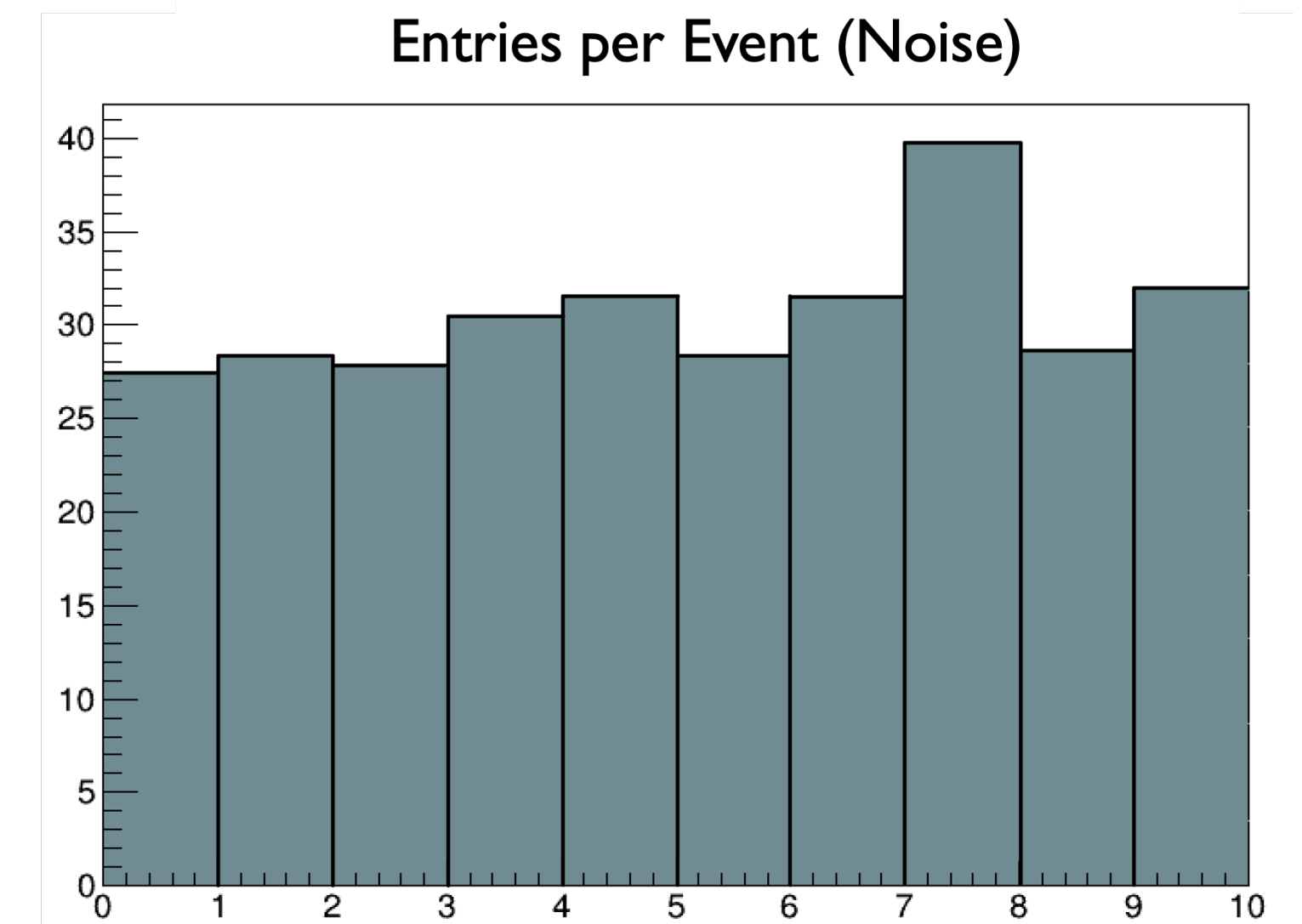
- Comparing cosmic and signal data
 - ADC / Cluster size / channel distribution
- Investigating mystery of bcofull-bco plot
 - Understanding the sharp increase of background. **Progress!**
 - Making document for Raul
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New

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



n_collision = 127

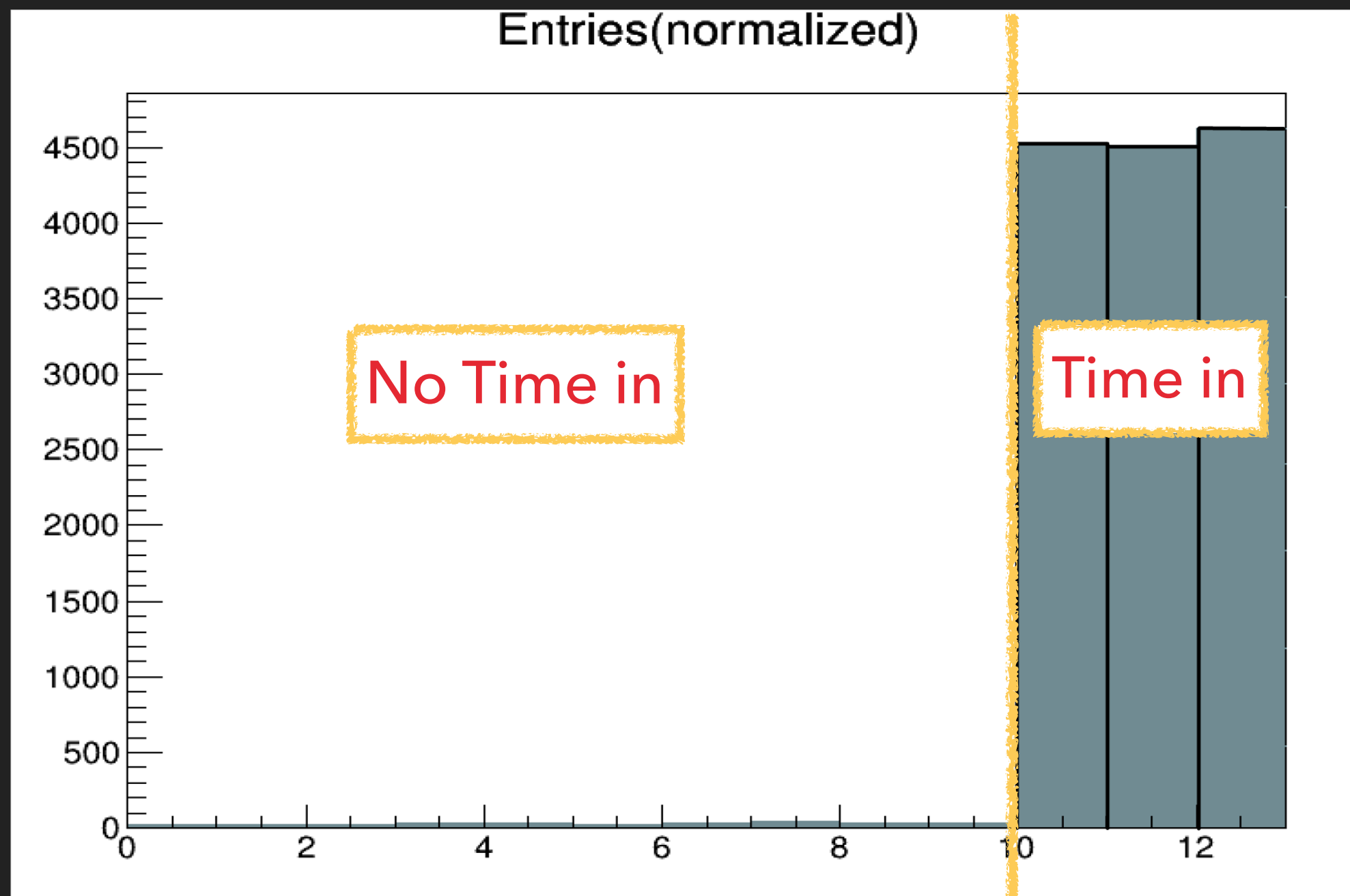


CONTENTS

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

1. THE AMOUNT OF NOISE WITHOUT CLONE HITS

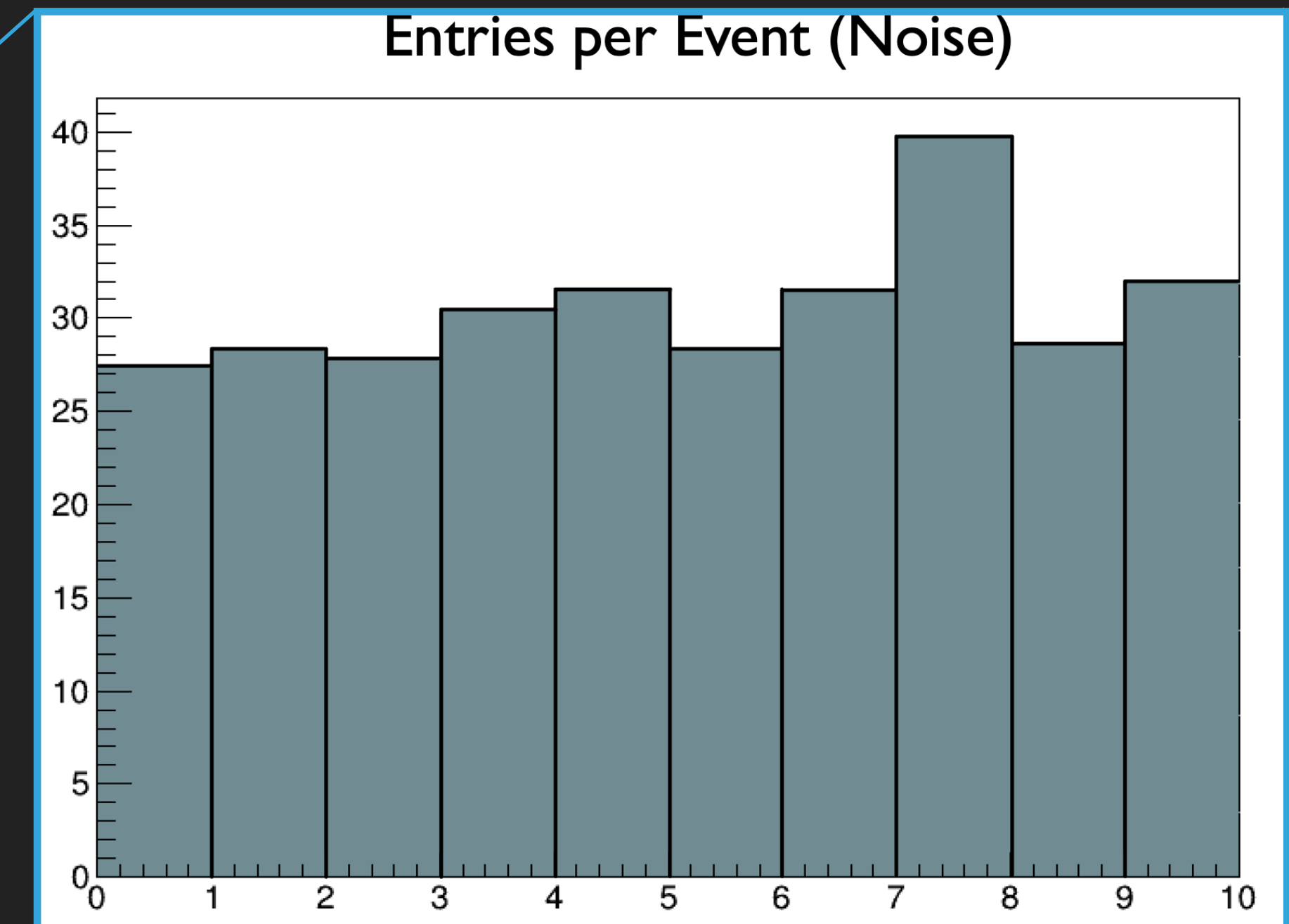
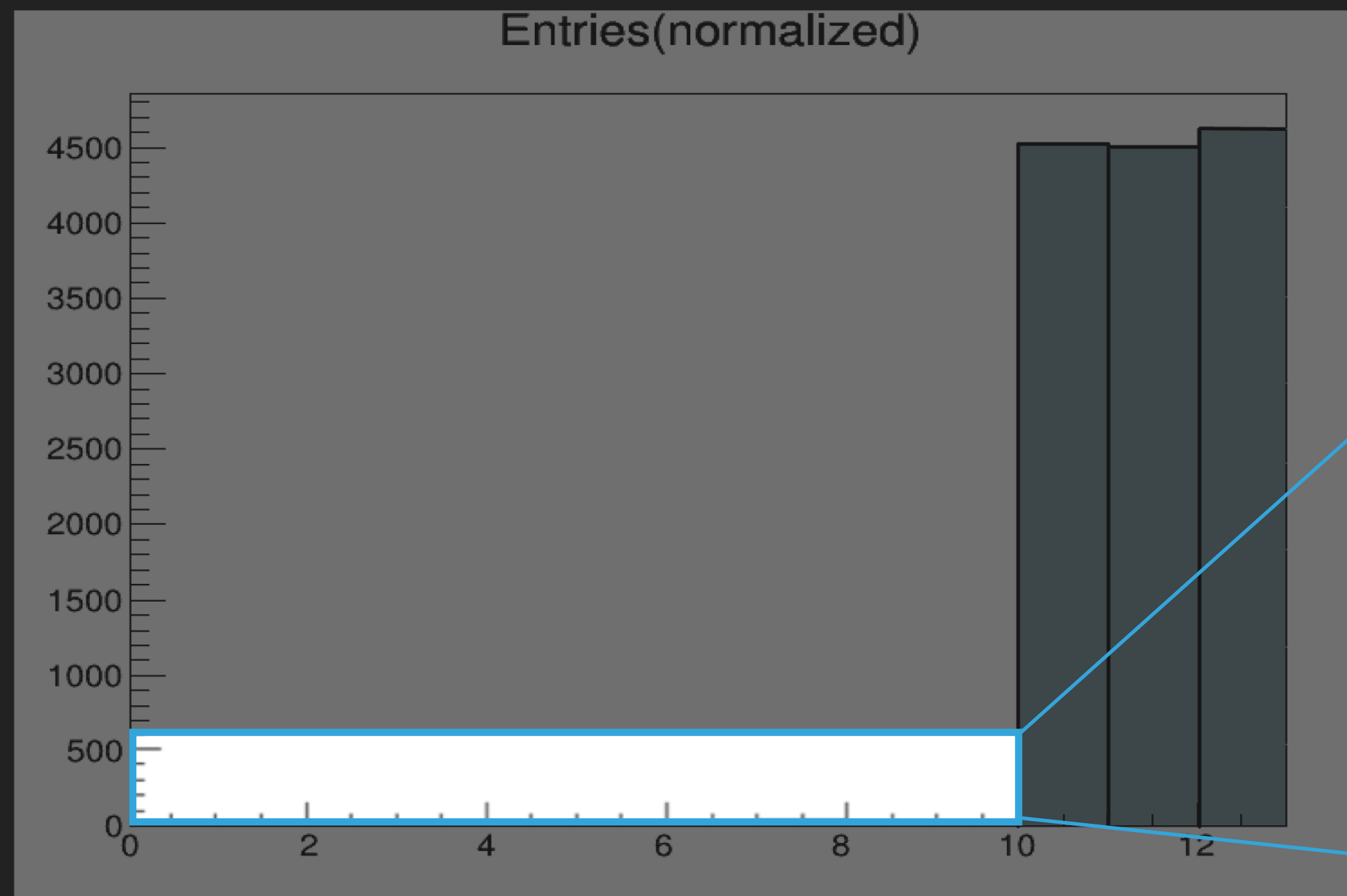
With clone hits



The plot shows amount of noise/beam per Event.

1. THE AMOUNT OF NOISE WITHOUT CLONE HITS

With clone hits



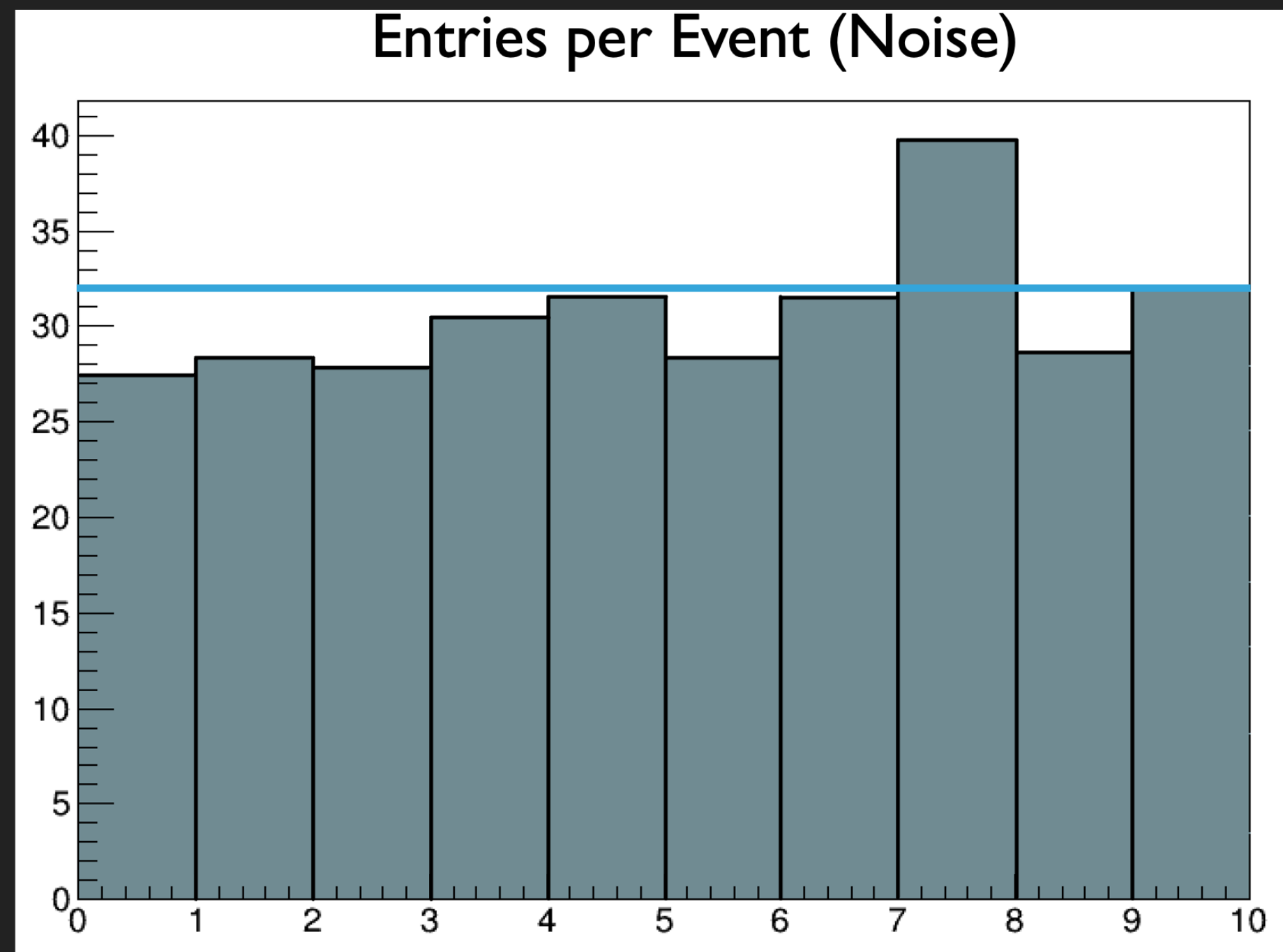
The plot shows amount of noise/beam per Event.
The amount of noise is less than **1%** of Beam data

$30.591 \pm 3.65 / 1 \text{ bco}$

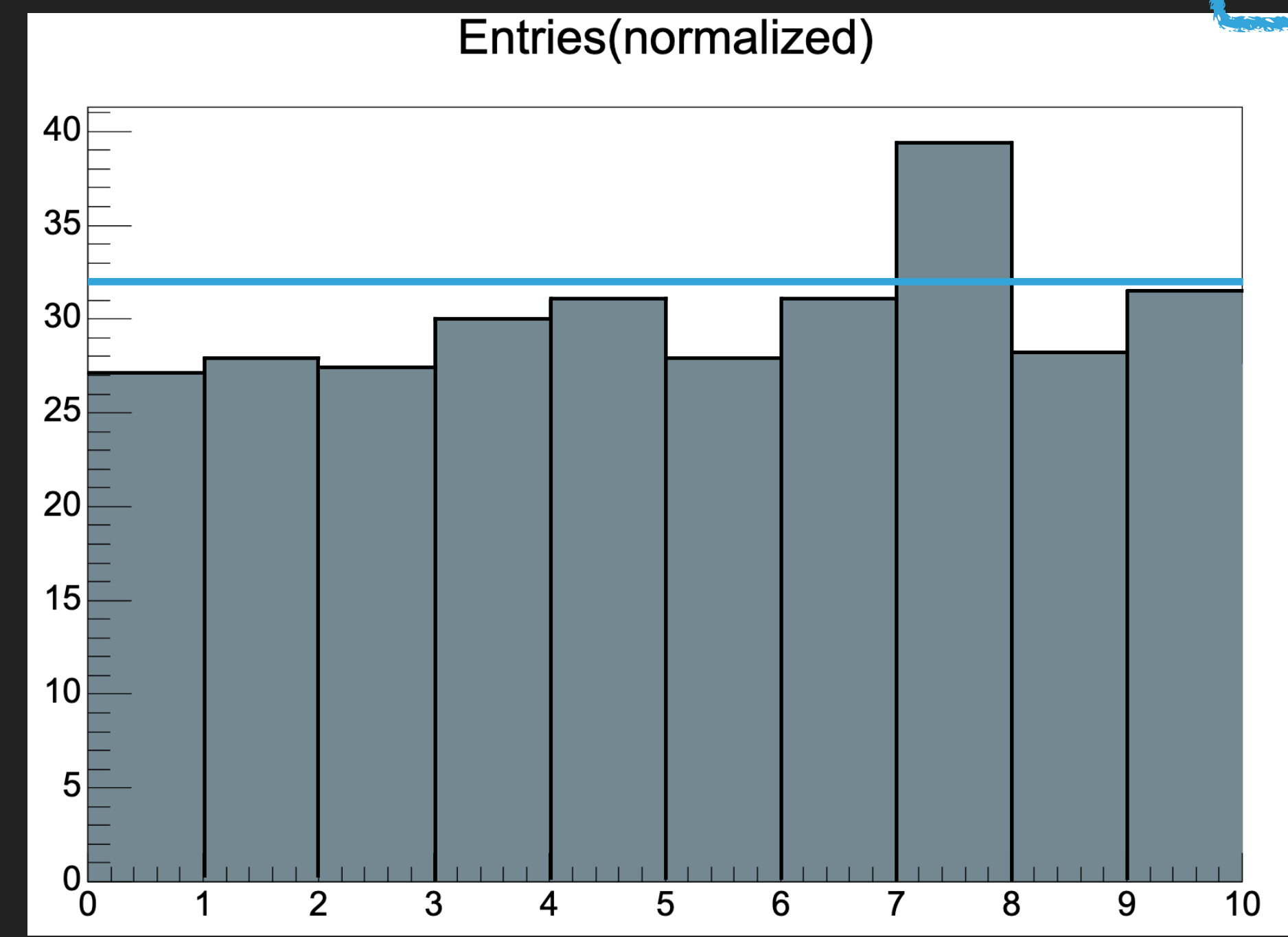
1. THE AMOUNT OF NOISE WITHOUT CLONE HITS

- ▶ Same pid
- ▶ Same module
- ▶ Same chip_id
- ▶ Same chan_id
- ▶ Same bco_full

With clone hits



Without clone hits



$30.591 \pm 3.65 / 1 \text{ bco}$

-1.58%

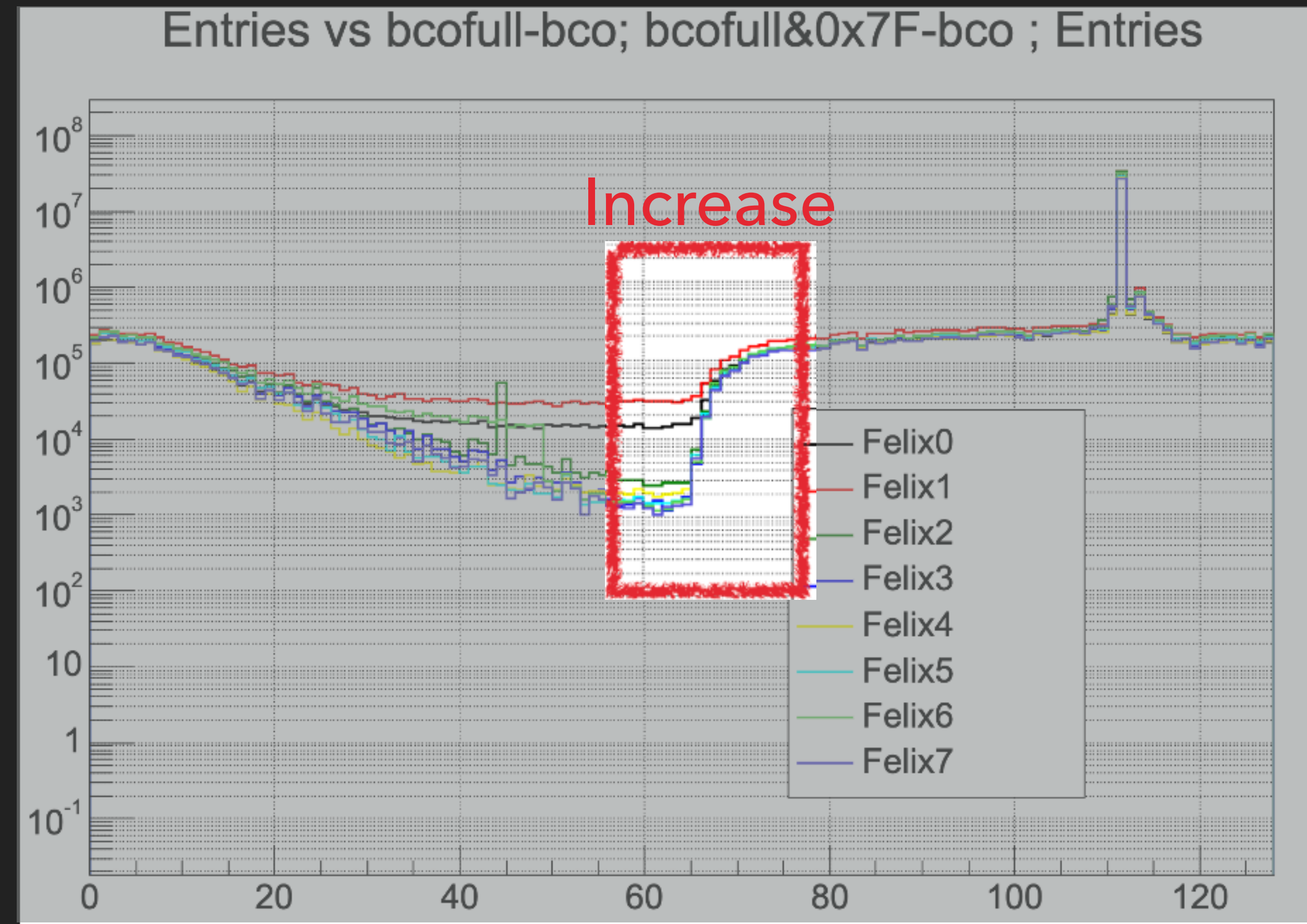


$30.107 \pm 3.65 / 1 \text{ bco}$

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



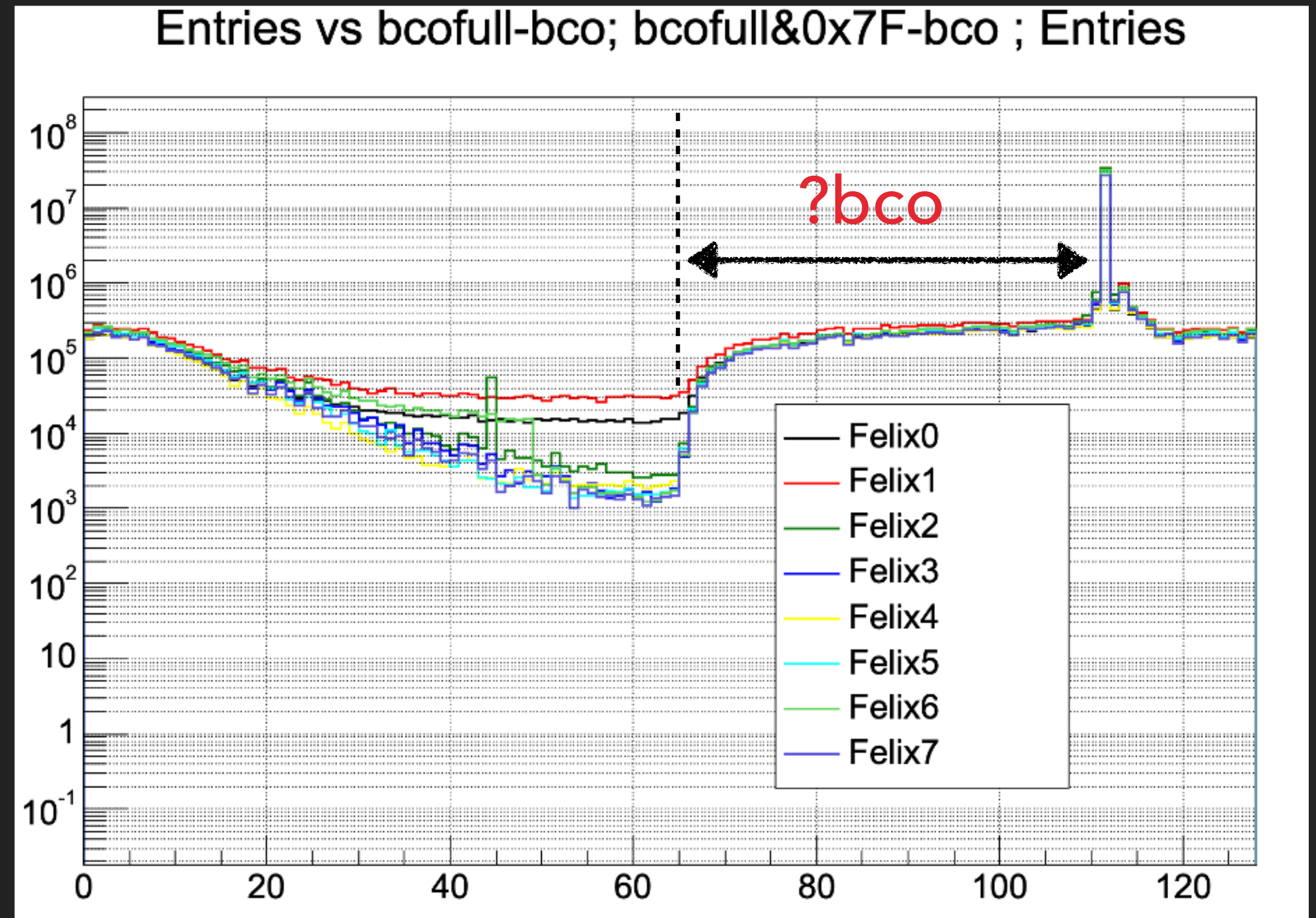
Mystery

- ▶ The sharp increase of background



I Did

- ▶ Check the time between peak and sharp increase
- Run by Run

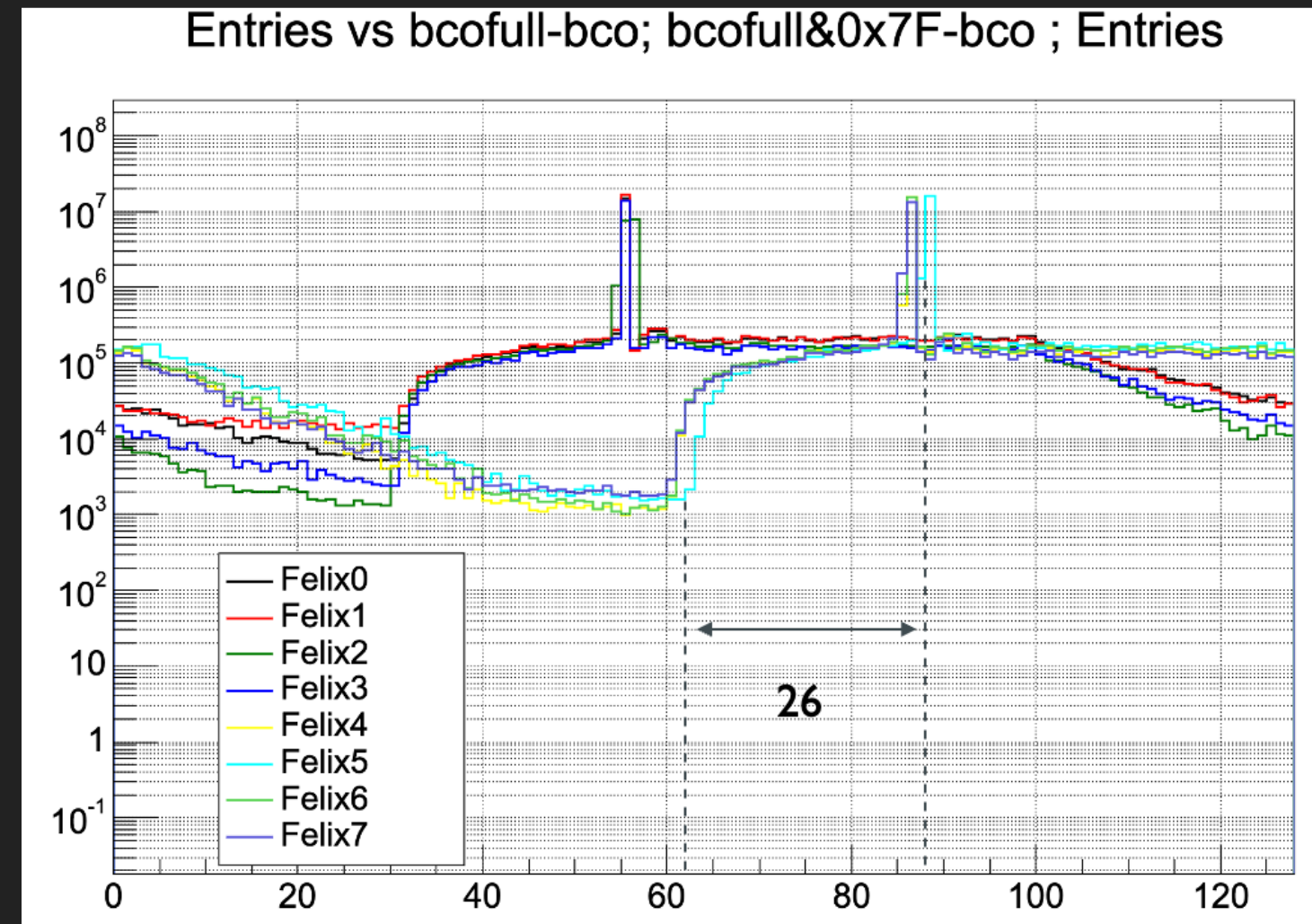


2. MYSTERY OF BCOFULL-BCO PLOT

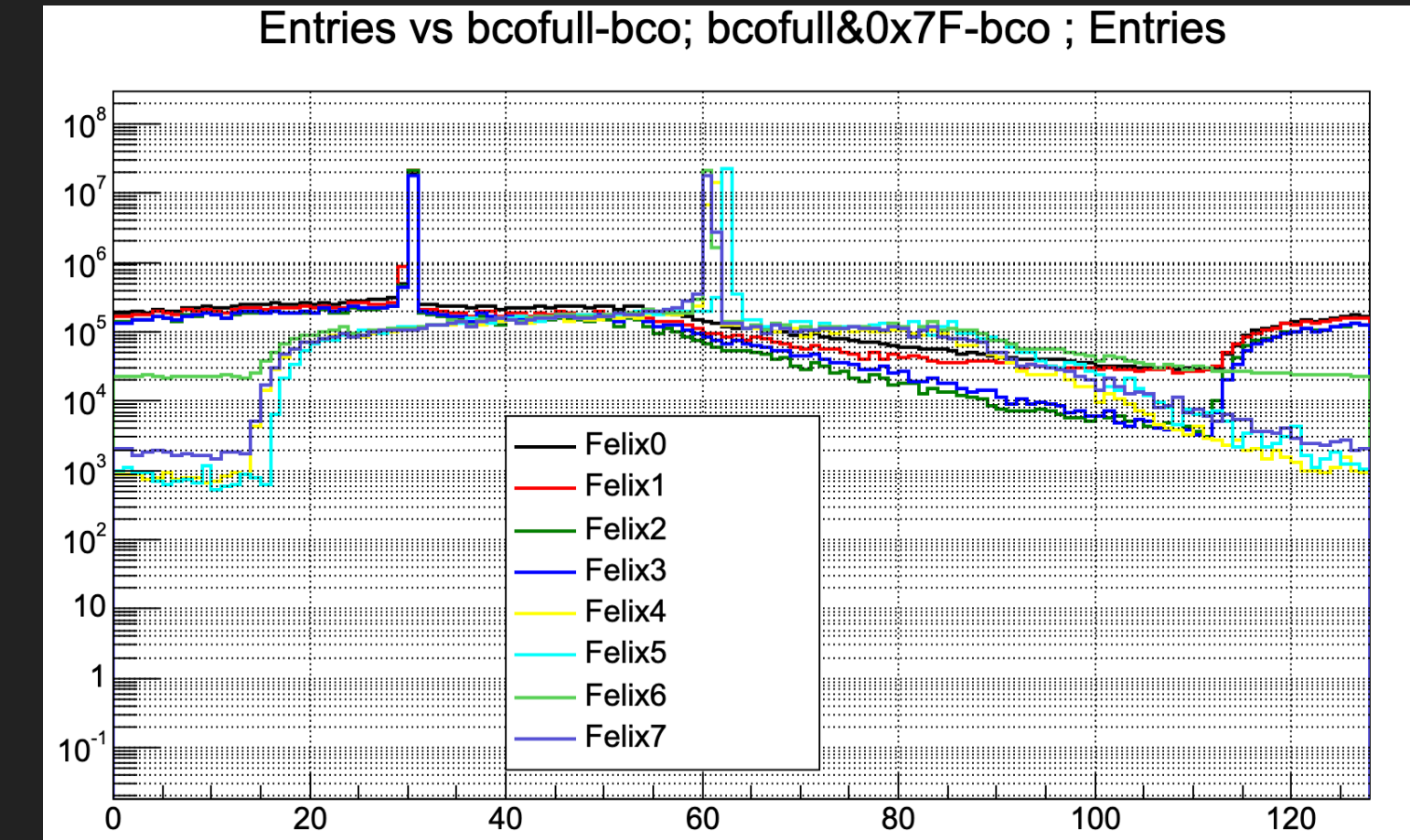
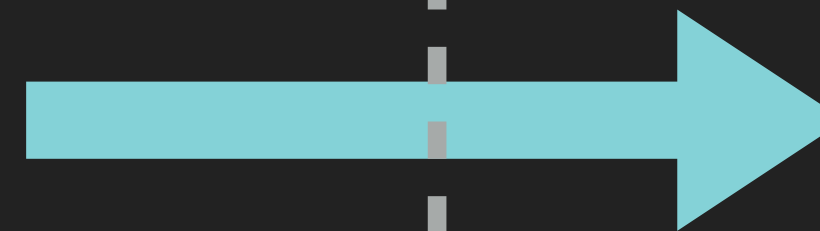
7/20

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

7/21

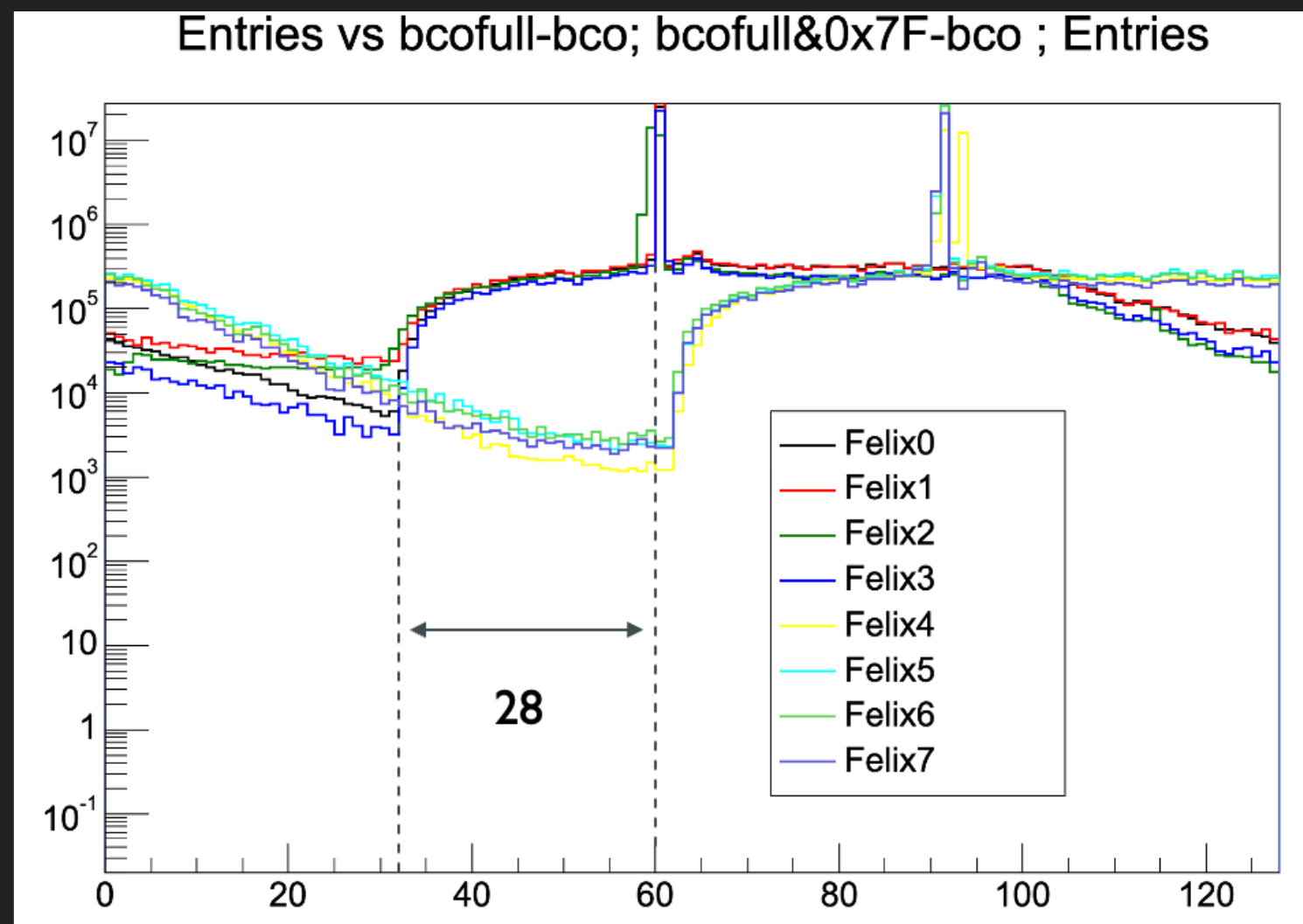


- LI Delay = 0
- Open time = 35
- n_collision = 127
- Modebits = 79

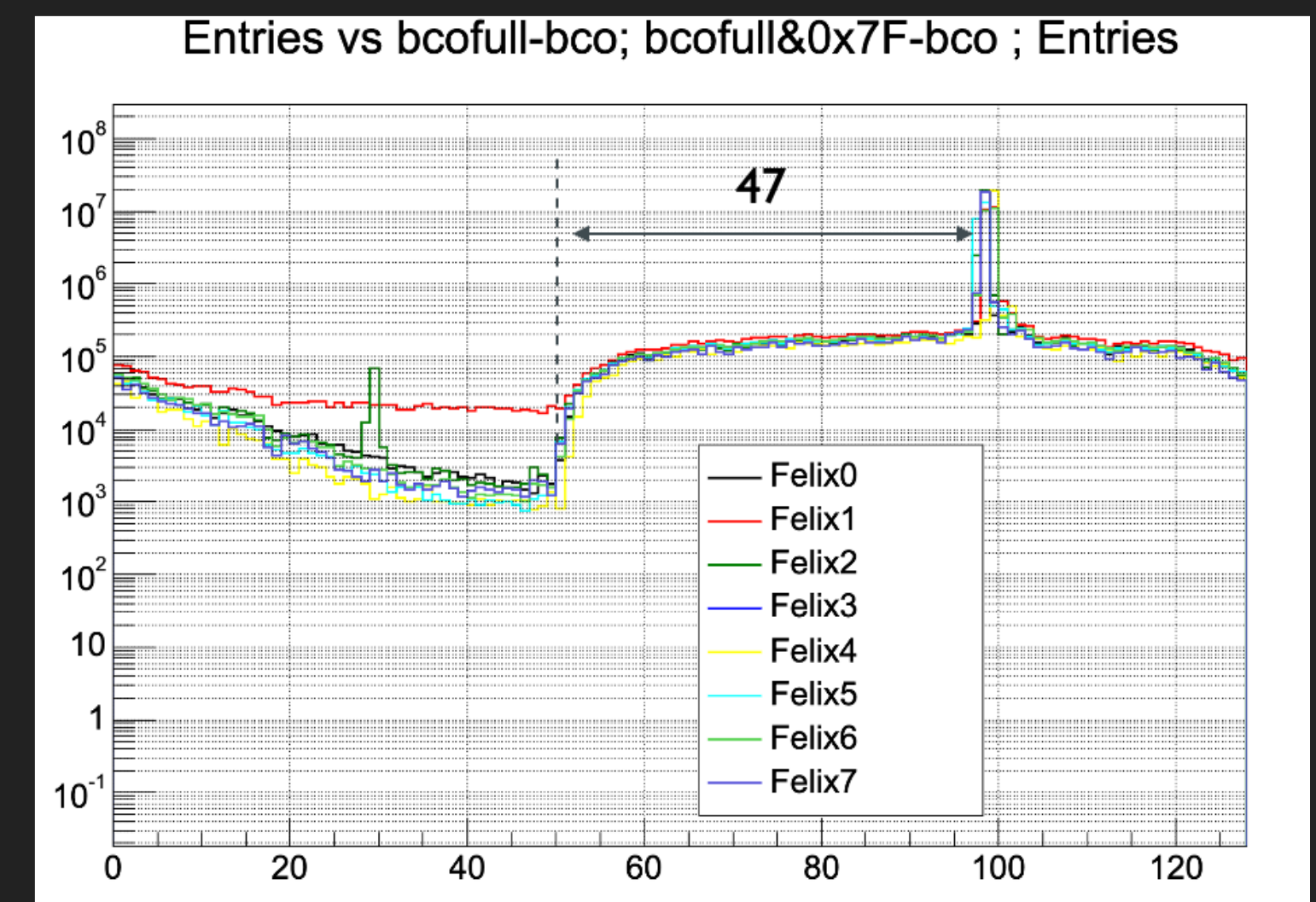


- LI Delay = 21
- Open time = 35
- n_collision = 127
- Modebits = 79

7/31

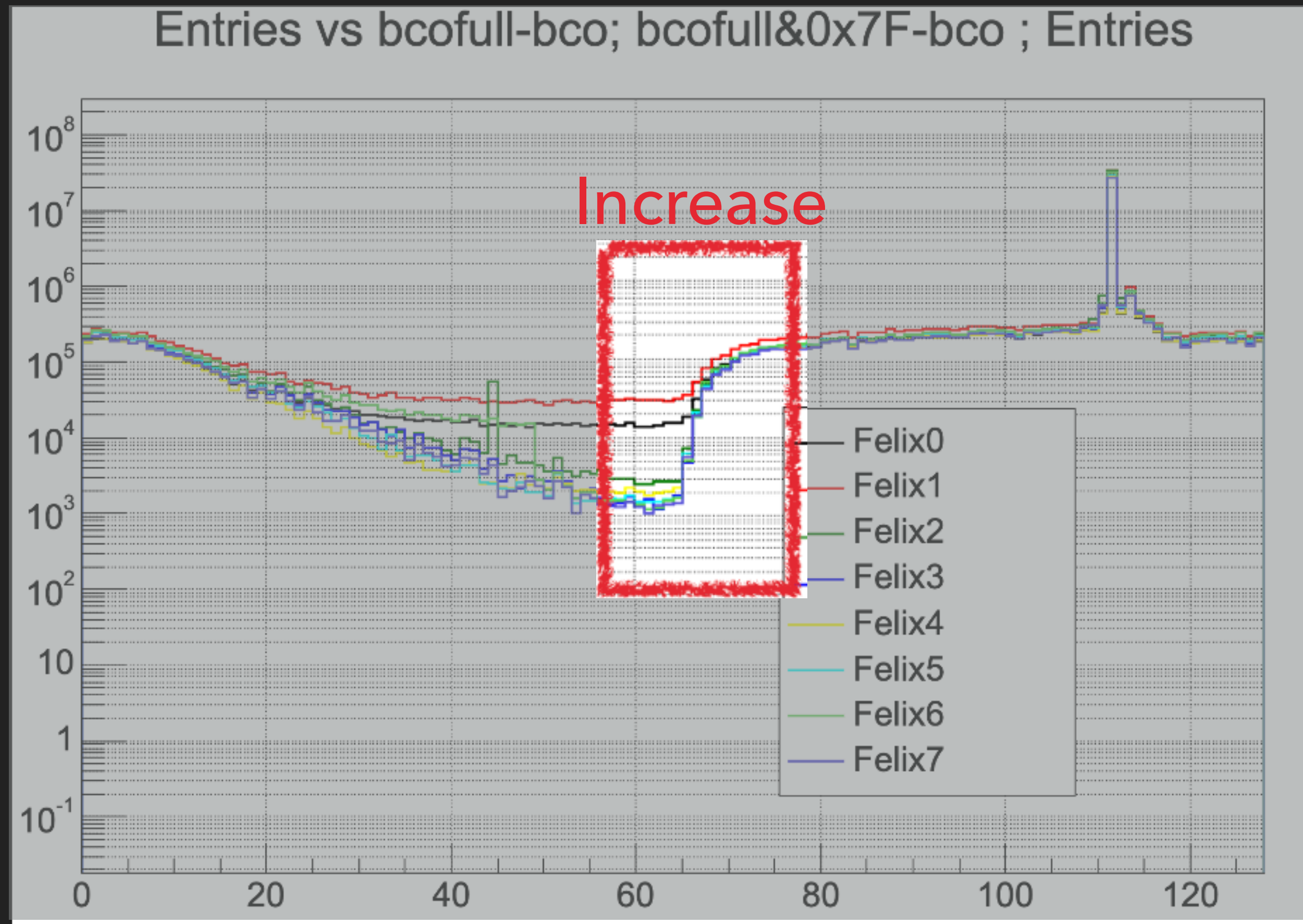


- LI Delay = 25
- Open time = 35
- n_collision = 127
- Modebits = 79



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

2. MYSTERY OF BCOFULL-BCO PLOT



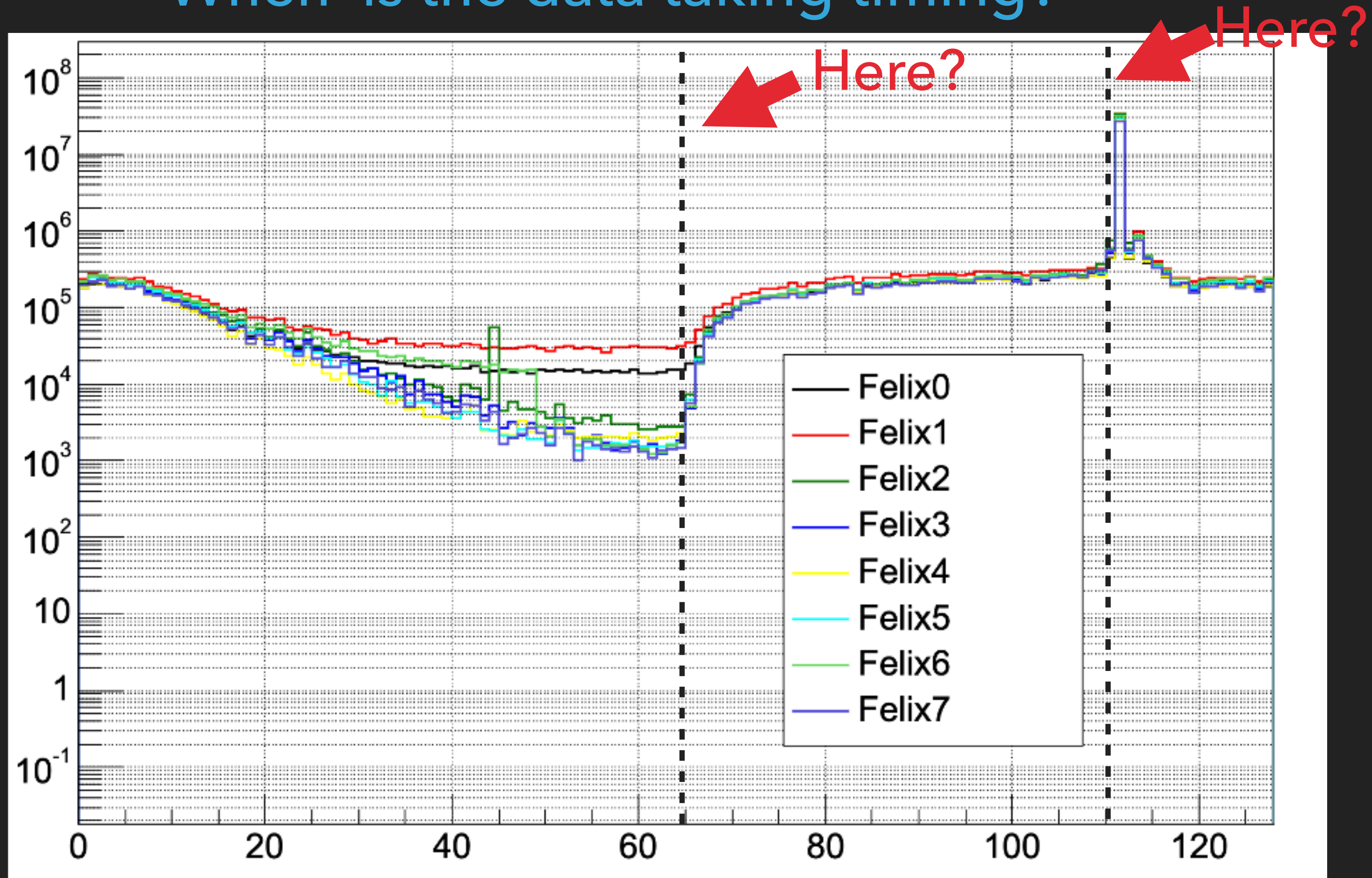
The increase timing is
after peak or before peak?



The key is
when the data taking timing is.

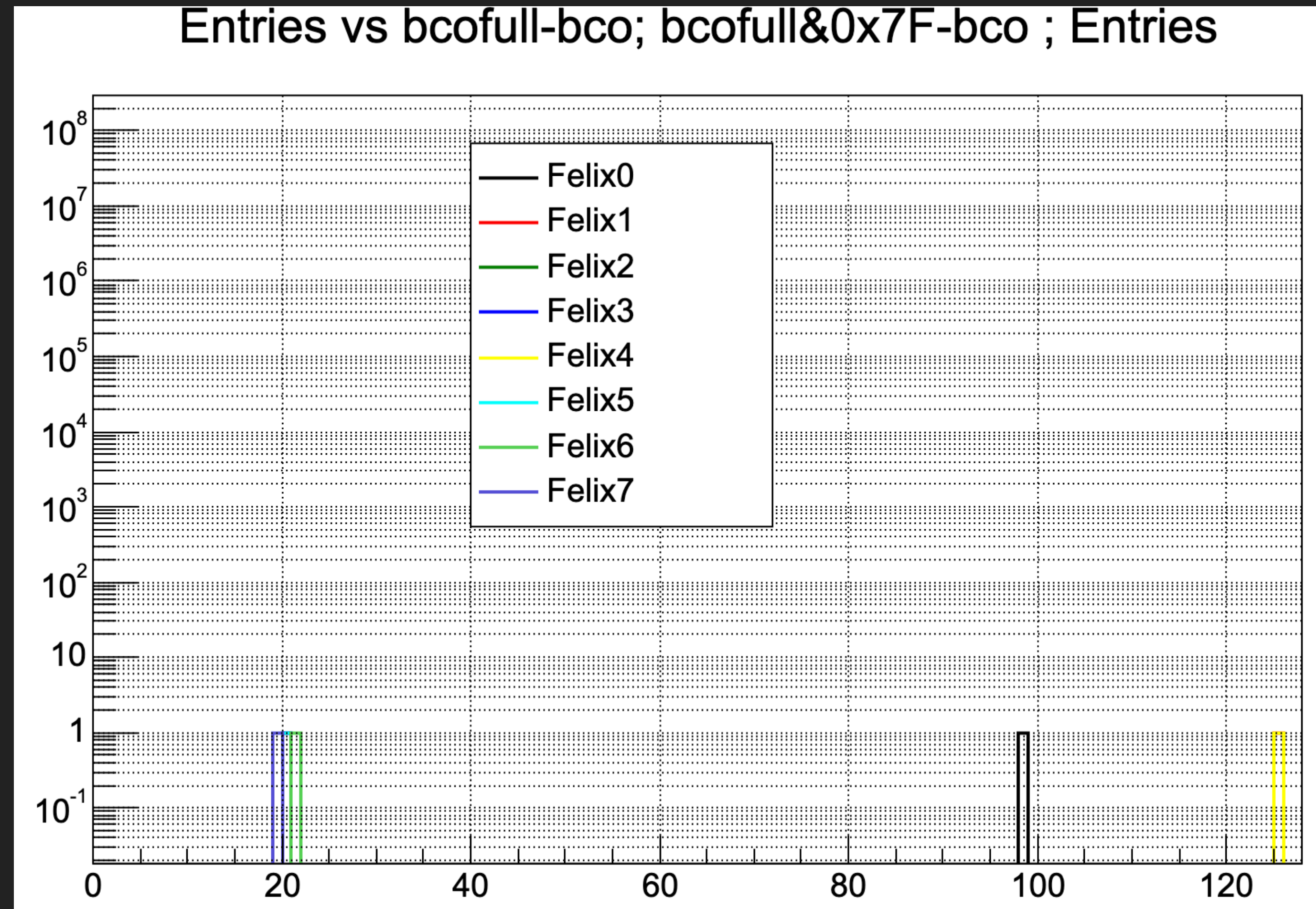
2. MYSTERY OF BCOFULL-BCO PLOT

When is the data taking timing?



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

Result (only 1 Run)



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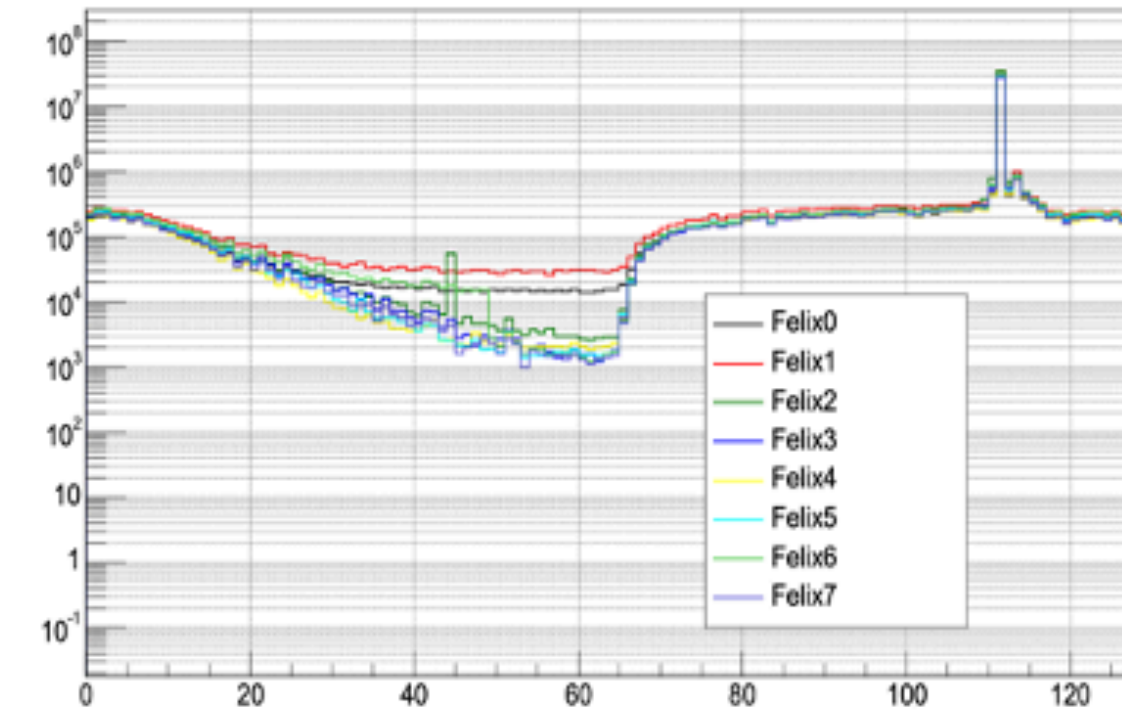
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Entries vs bcofull-bco; bcofull&0x7F-bco ; Entries



n_collision = 127

date	beam	machine	commissioning	the beam	active file set	run type	region ID/IDP	web	beam count (current)	L3 Beam ID
2005	2304	5		SP4D Beam with local mode				1000	10	21
2005	2305	5						1000	10	21
2005	2307	5						1000	10	21
2005	2308	5						1000	10	21
2005	2309	5						1000	10	21
2005	2310	5						1000	10	21
2005	2311	5						1000	10	21
2005	2312	5						1000	10	21
2005	2313	5						1000	10	21
2005	2314	5						1000	10	21
2005	2315	5						1000	10	21
2005	2316	5						1000	10	21
2005	2317	5						1000	10	21
2005	2318	5						1000	10	21
2005	2319	5						1000	10	21
2005	2320	5						1000	10	21
2005	2321	5						1000	10	21
2005	2322	5						1000	10	21
2005	2323	5						1000	10	21
2005	2470	2		GEM Receiver is updated	MSD-2_089-7	beam	ON	1.00	10	21
2005	2471	2			MSD-2_089-7	beam	ON	1.00	10	21
2005	2472	2			MSD-2_089-7	beam	ON	1.00	10	21
2005	2473	2			MSD-2_089-7	beam	ON	1.00	10	21
2005	2474	2			MSD-2_089-7	beam	ON	1.00	10	21
2005	2475	2			MSD-2_089-7	beam	ON	1.00	10	21
2005	2476	2			MSD-2_089-7	beam	ON	1.00	10	21
2005	2477	2			MSD-2_089-7	beam	ON	1.00	10	21
2005	2040	8					ON	50	10	21
2005	2041	8					ON	50	10	21
2005	2042	8					ON	50	10	21
2005	2043	8					ON	50	10	21
2005	2044	8					ON	50	10	21
2005	2045	8					ON	50	10	21
2005	2046	8					ON	50	10	21
2005	2047	8					ON	50	10	21
2005	2048	8					ON	50	10	21
2005	2049	8					ON	50	10	21
2005	2050	8					ON	50	10	21
2005	2051	8					ON	50	10	21
2005	2052	8					ON	50	10	21
2005	2053	8					ON	50	10	21
2005	2054	8					ON	50	10	21
2005	2055	8					ON	50	10	21
2005	2056	8					ON	50	10	21
2005	2057	8					ON	50	10	21
2005	2058	8					ON	50	10	21
2005	2059	8					ON	50	10	21
2005	2060	8					ON	50	10	21
2005	2061	8					ON	50	10	21
2005	2062	8					ON	50	10	21

New