

Event Mixup

(About DST)

20240710

INTTMT

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Contents

I found that the results of the mixup fraction for the same run were different when using the event base root file and when using the DST file.

- Each file has a different number of events. (Cause unknown)
Event base :493340
DST file :1164620
- One Felix(intt3) was found to be strange in the DST that including all Felix (DST_beam_intt-00043278_special.root).

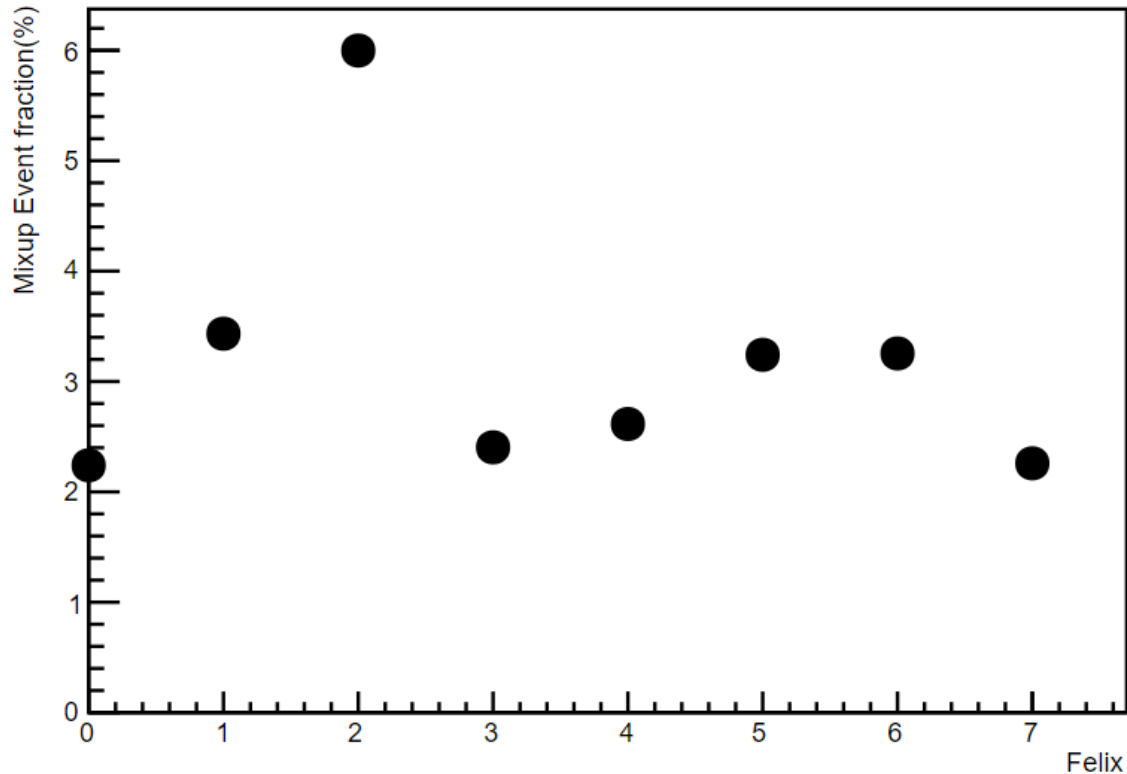
Run43278

$$\text{Mixup event fraction}[\%] = (\text{Mixup Event}) / (\text{Entries}) \times 100$$

Fraction are different for all Felix the same Run results

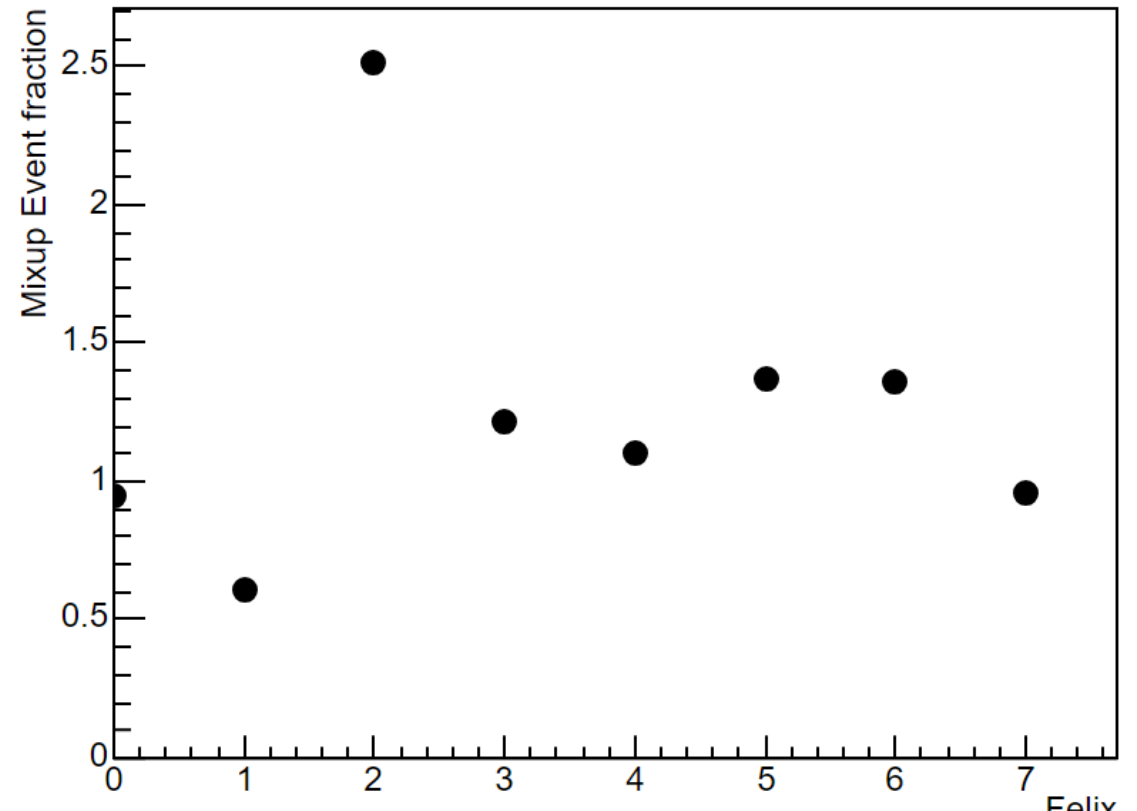
Event base file event#493340

Mixup event fraction



DST file event#1164620

Mixup event fraction Run43278



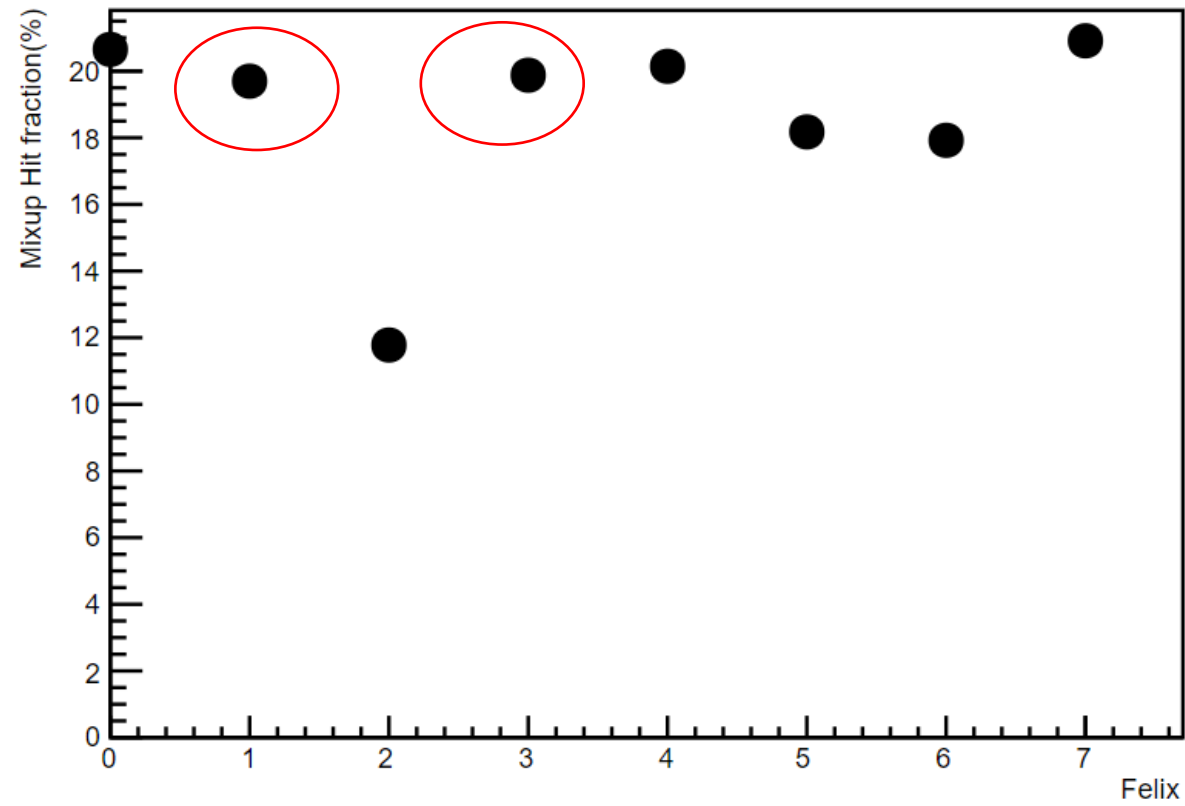
Run43278

Mixup hit fraction[%] = (Mixup hit) / (Previous event hit + Mixup hit) × 100
Average (Mixup hit fraction) / (Mixup Event)

Fraction are different for some Felix(intt1,3) the same Run results

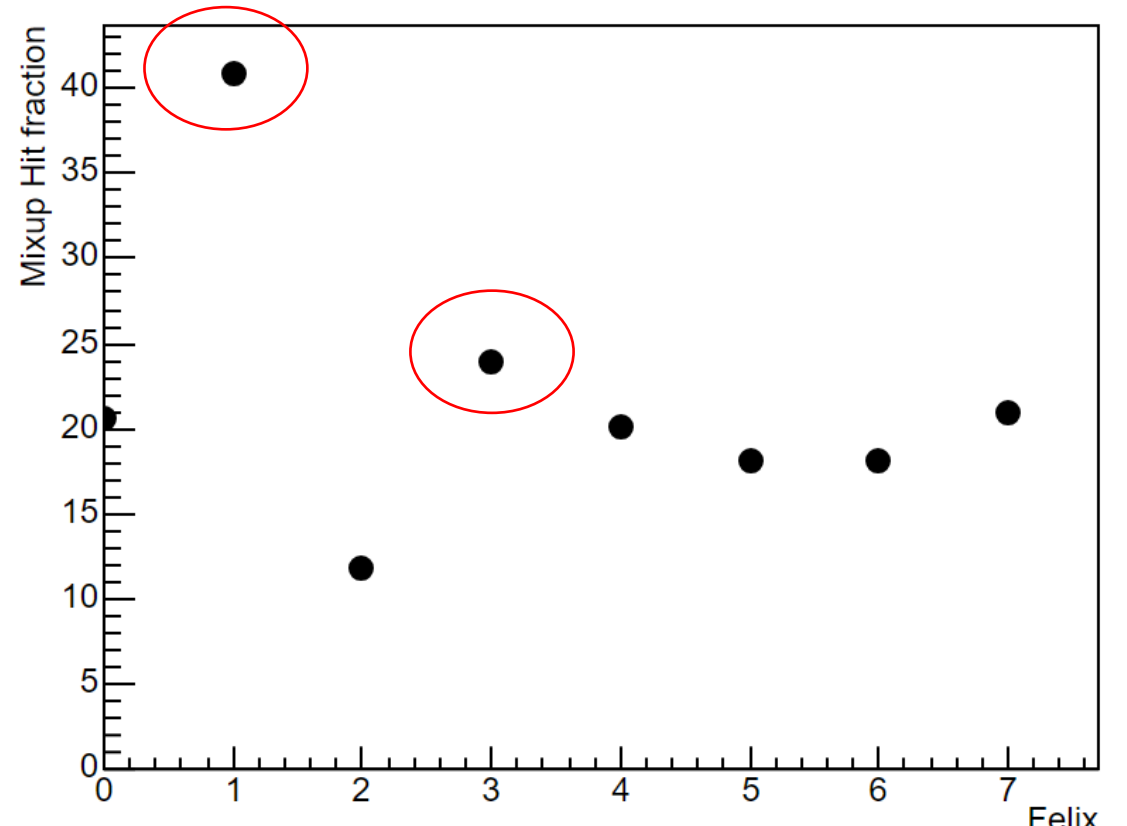
Event base file event#493340

Mixup Hit fraction



DST file event#1164620

Mixup Hit fraction Run43278



Run43278

Mixup event fraction[%] = (Mixup Event) / (Entries) × 100 event#500000

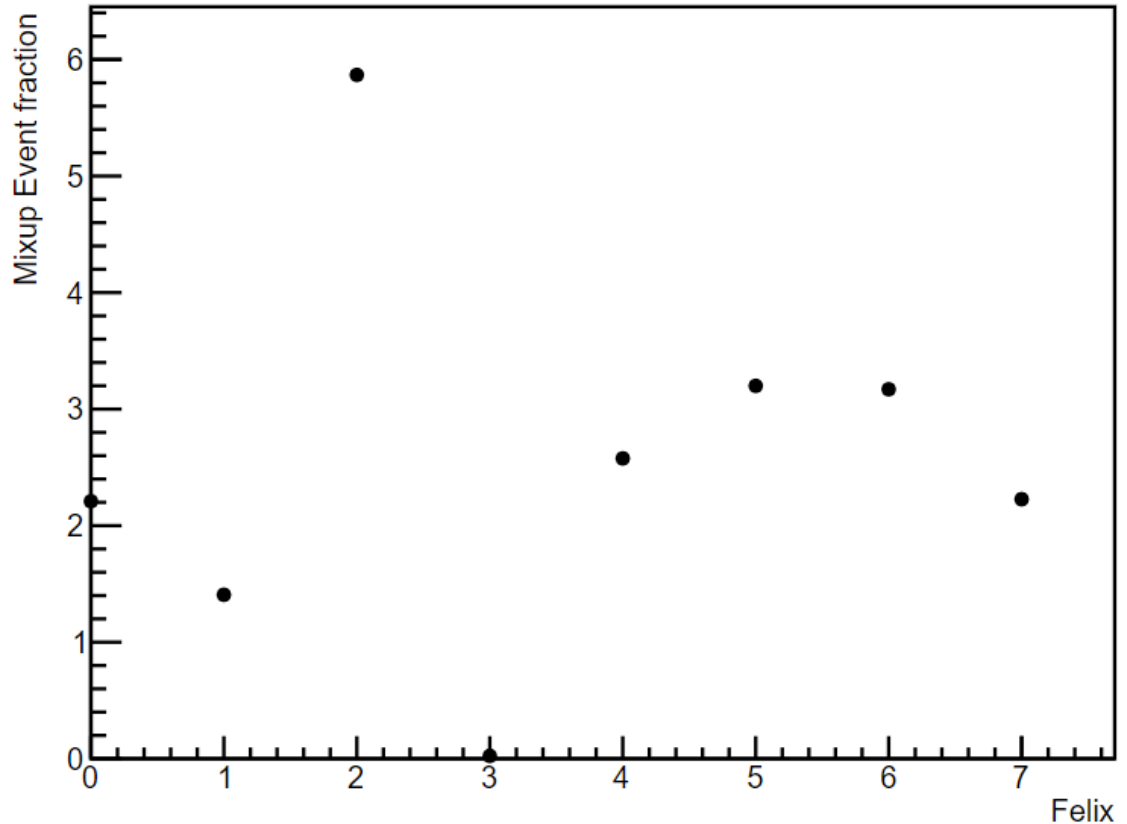
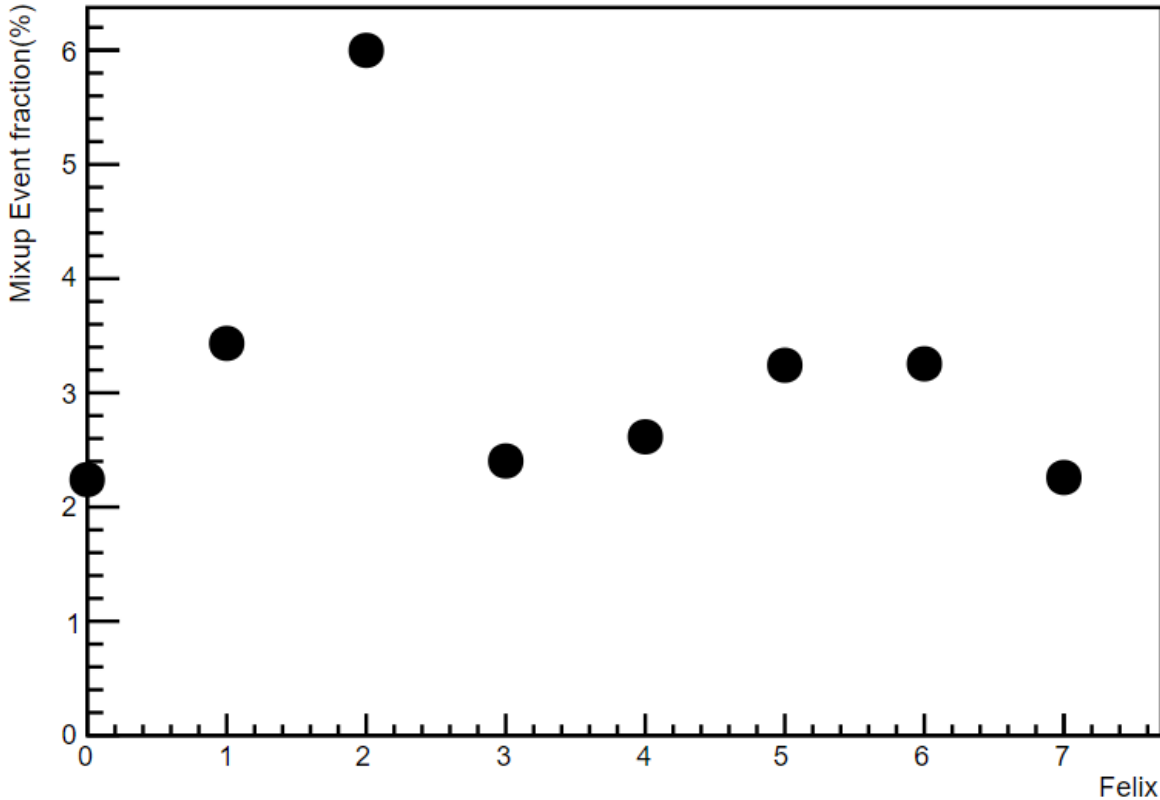
The results with the first 500K events reading DST to match the number of events that event base file has. The resultant fractions were the same for all Felix except for intt1,3.

Event base file

DST file

Mixup event fraction

Mixup event fraction Run43278



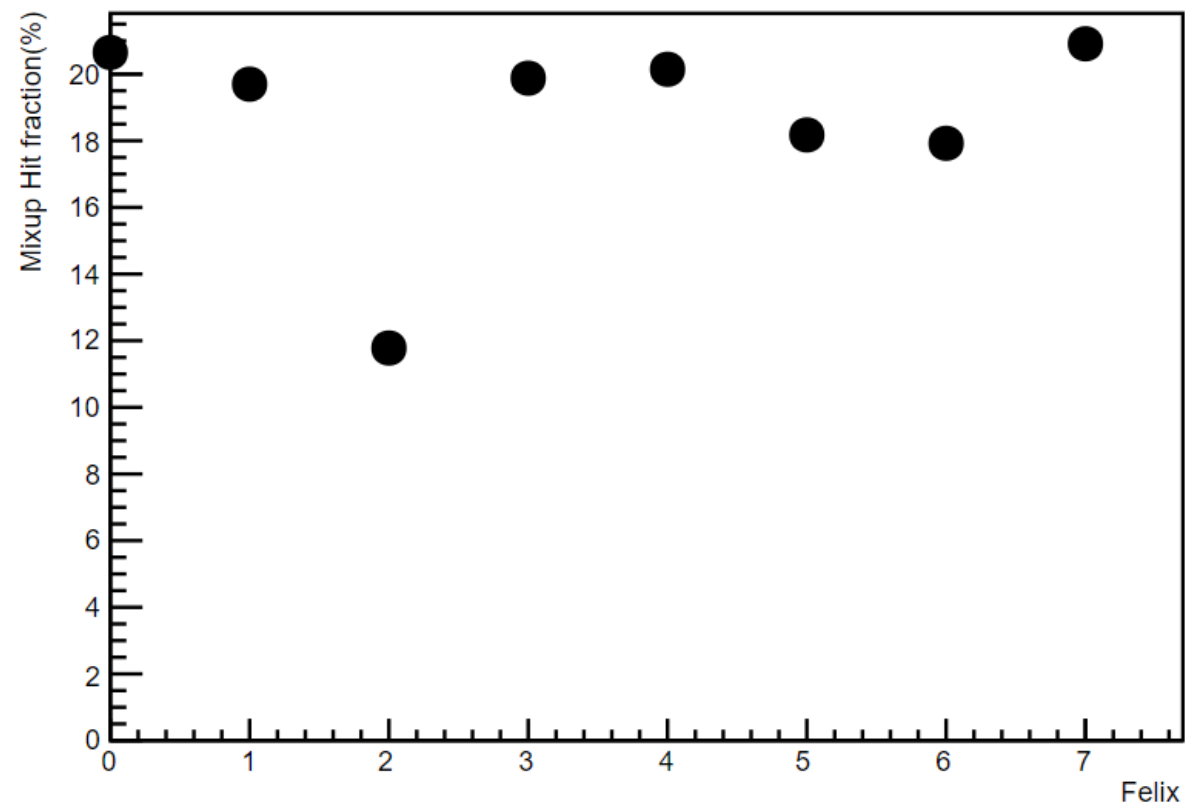
Run43278

Mixup hit fraction[%] = (Mixup hit) / (Previous event hit + Mixup hit) × 100
Average (Mixup hit fraction) / (Mixup Event) event#500000

The results with the first 500K events reading DST to match the number of events that event base file has. The resultant fractions were the same for all Felix except for intt1,3.

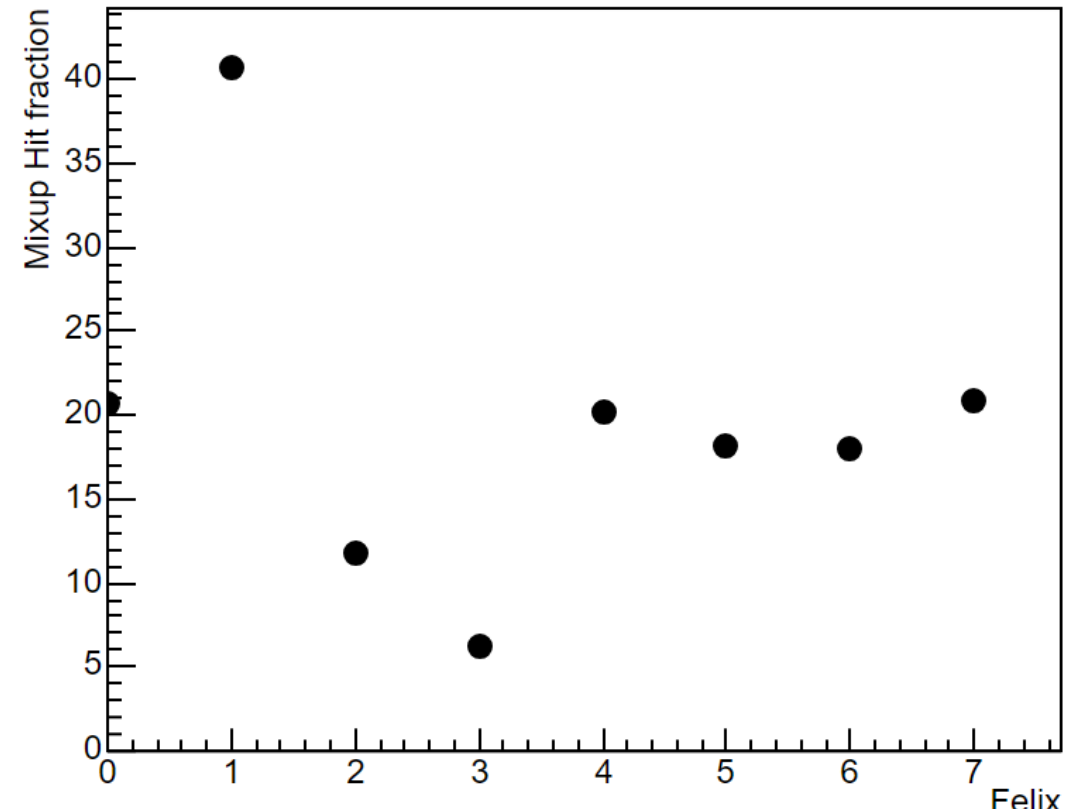
Event base file

Mixup Hit fraction

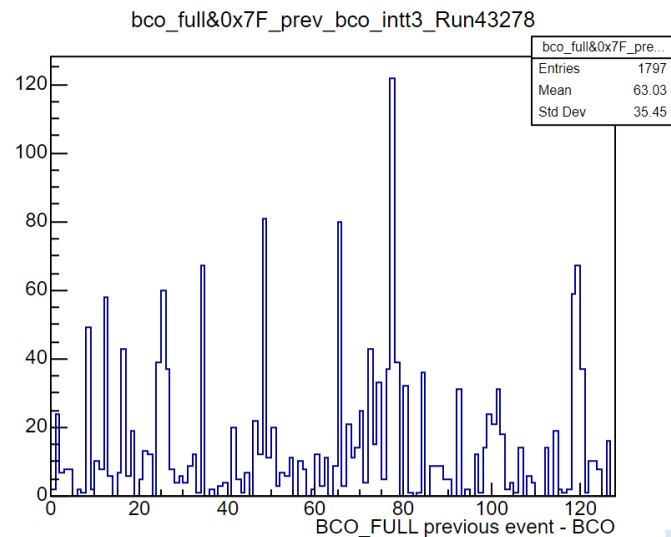
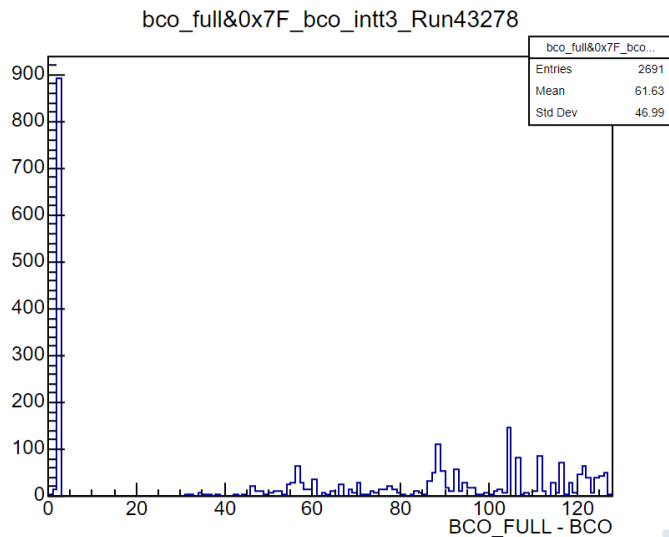
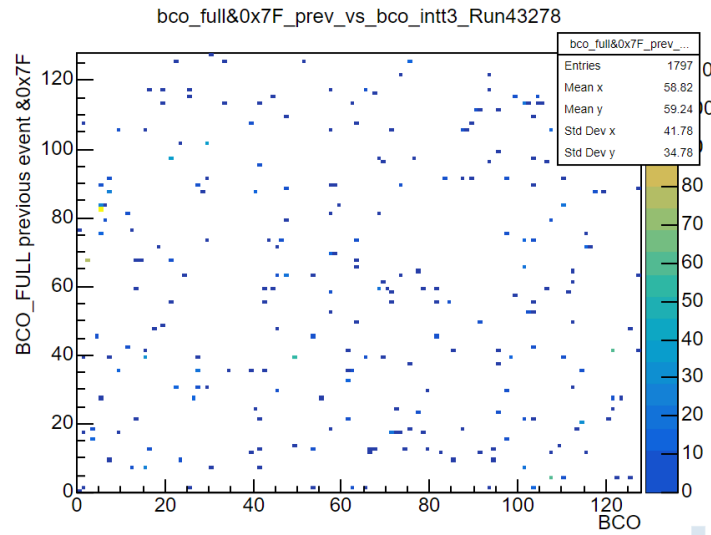
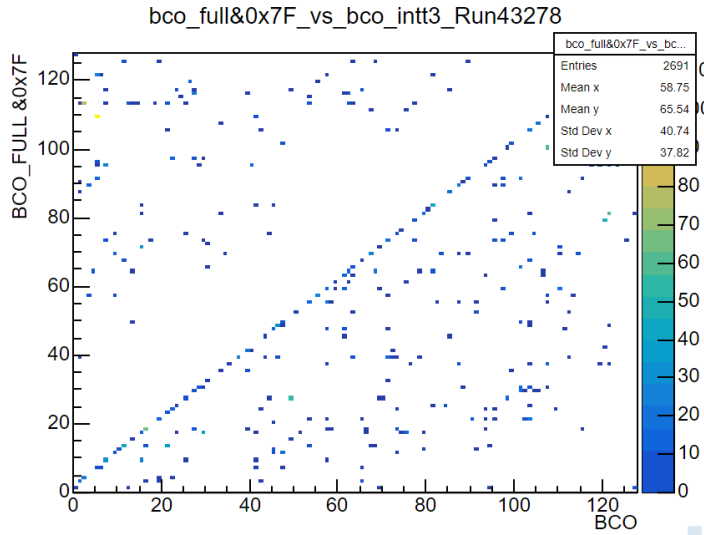


DST file

Mixup Hit fraction Run43278

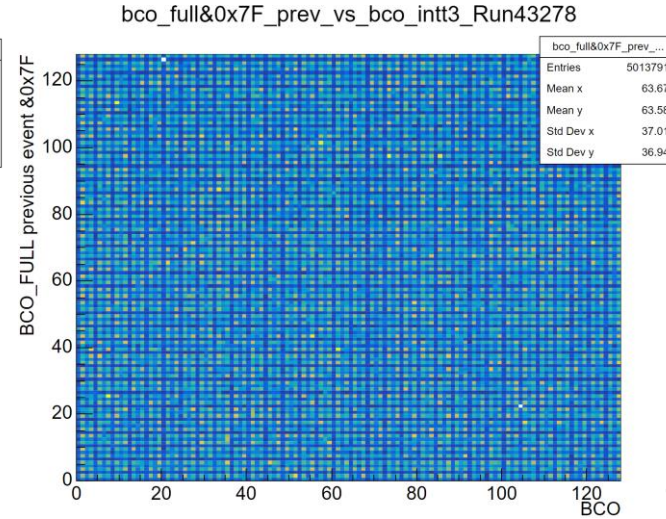
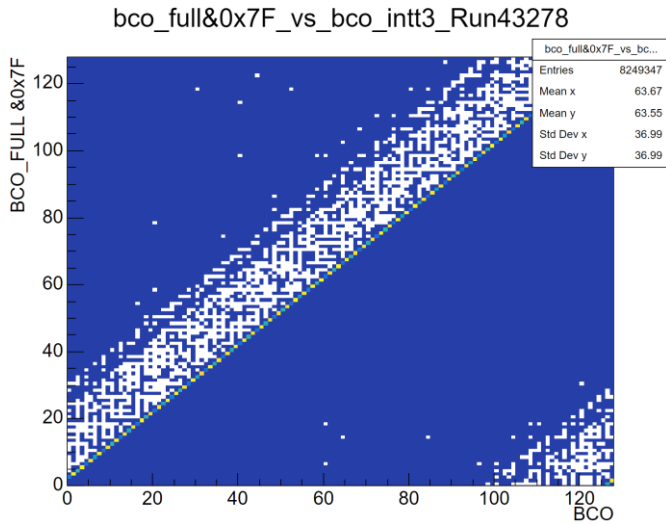


DST including all Felix intt3 event#500K

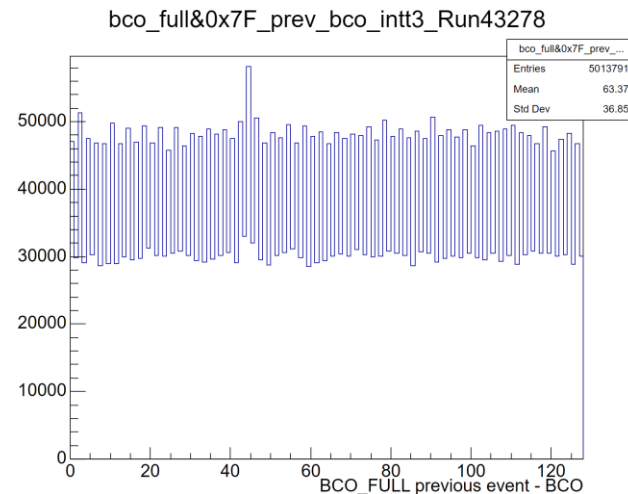
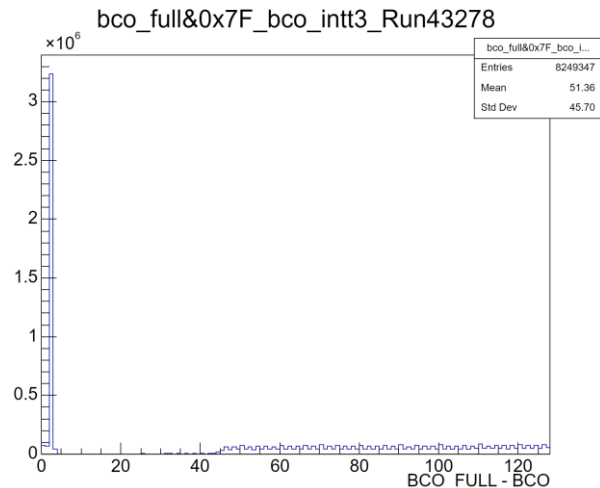


When intt3 was examined when only the first 500K of DSTs including all Felix were seen, the left figure shows that there were almost no entries.

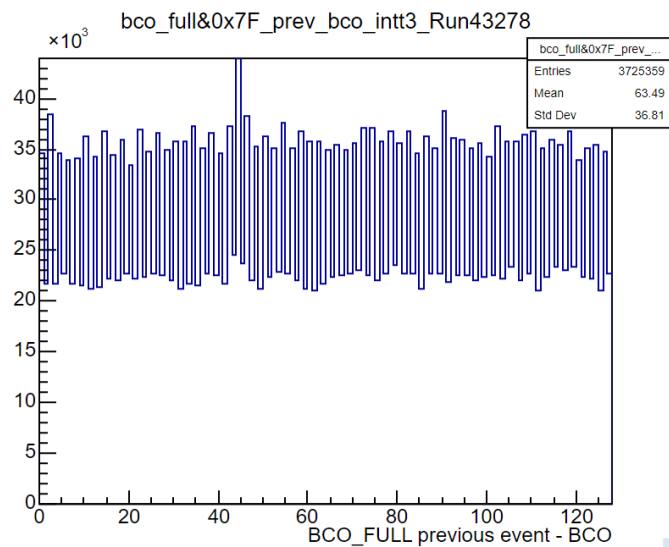
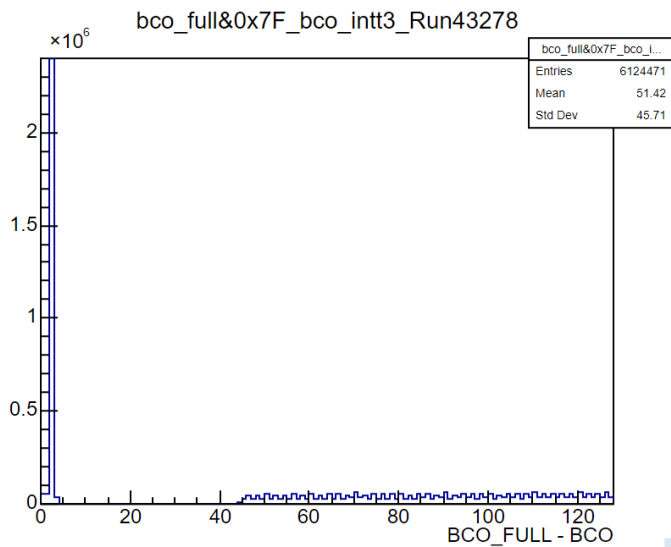
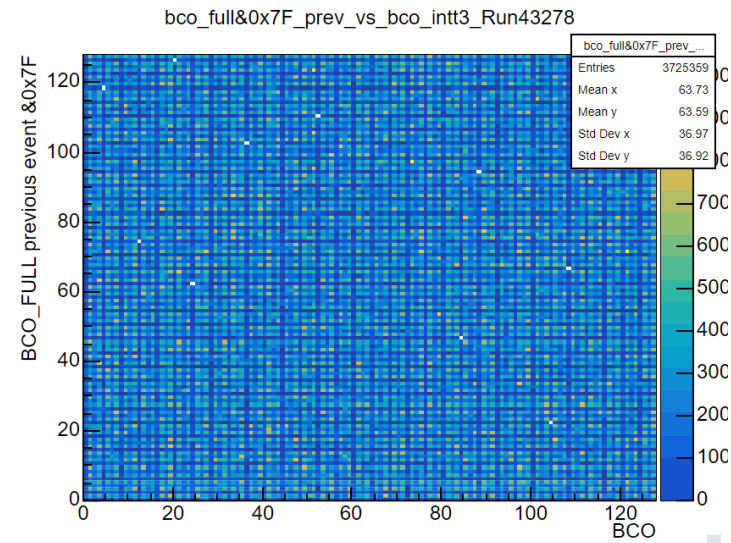
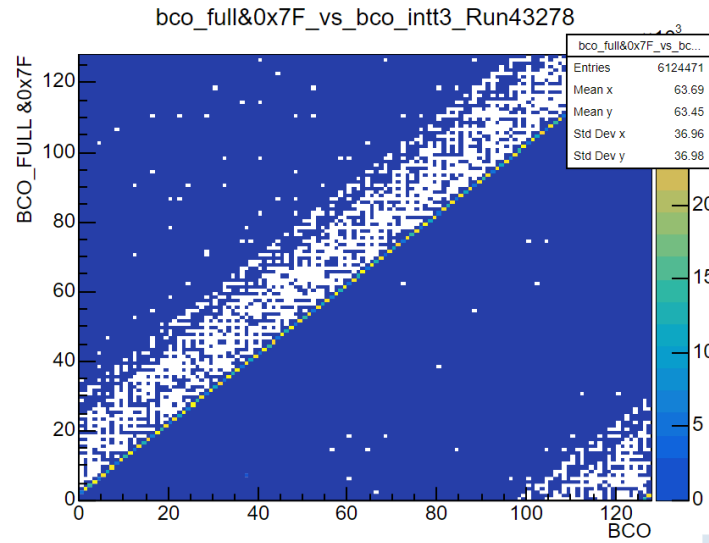
DST including all Felix intt3 After 500K



In the same DST, all Felix except for intt3 had no entry after 500K, and only intt3 had an entry as shown in the left figure.



DST of each felix intt3 event#500K



I made a DST for each Felix and when I checked intt3 for the first 500K events, it have entry. This makes me think that the problem is at the point of making DST including all Felix. →I plan to analyze using this DST per Felix.