

Status Report

20241122

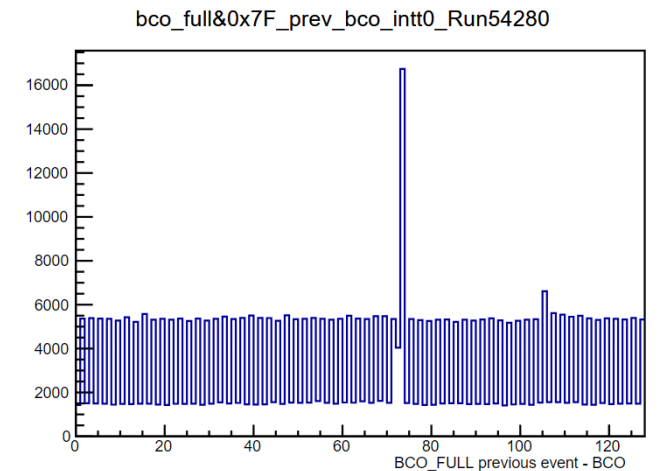
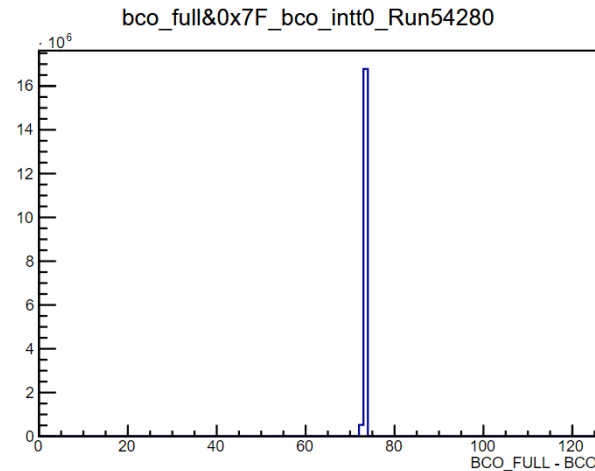
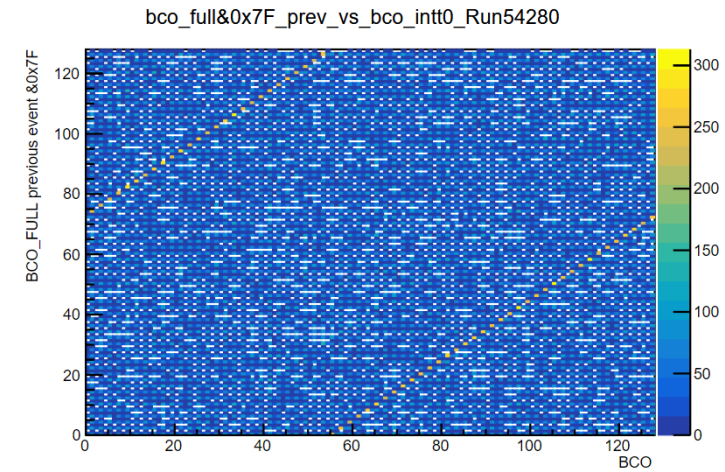
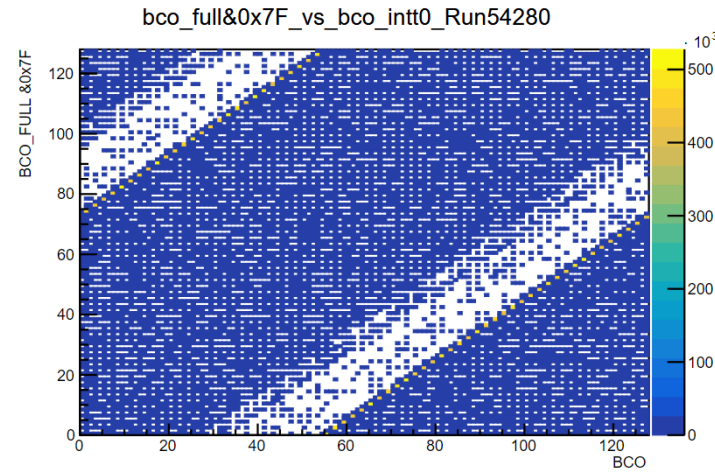
INTT Analysis Workshop at KU

NWU M2 Mai Kano

- Analysis topic
Event Mixup
- Current knowledge/status of this topic
Event Mixup is the leakage of hits from one previous event to the next.
Correlate to Mixup Hits and Hit Multiplicity in Au-Au.
Correlate to Mixup Event fraction and collision rate in p-p.
- Goal for the workshop
 1. Reexamine the calculation of the Mixup Event fraction.
 2. Find unified understanding of Event Mixup between p+p and Au+Au.
 3. Check the Event Mixup in streaming readout data.
- Milestones to reach to your goal
 1. **Check difference between inner and outer layer about Event Mixup. ← New!**
 2. Make histogram for subtract Event of random hits from Mixup Event fraction.
 3. Make histogram of correlation between Mixup Hit fraction and INTT hit rate.
 4. Make plot that confirms that Event mixup is occurring with streaming readout data.

From Cheng-Wei Analysis

- I checked Event Mixup status of Run that Cheng-Wei found missing cluster at inner layer. (Run54280)
- That Run have Event Mixup.
- Next I will check inner and outer separately.



Event Mixup fraction (inttt0)

Au-Au vs Collision rate

p-p vs Collision rate

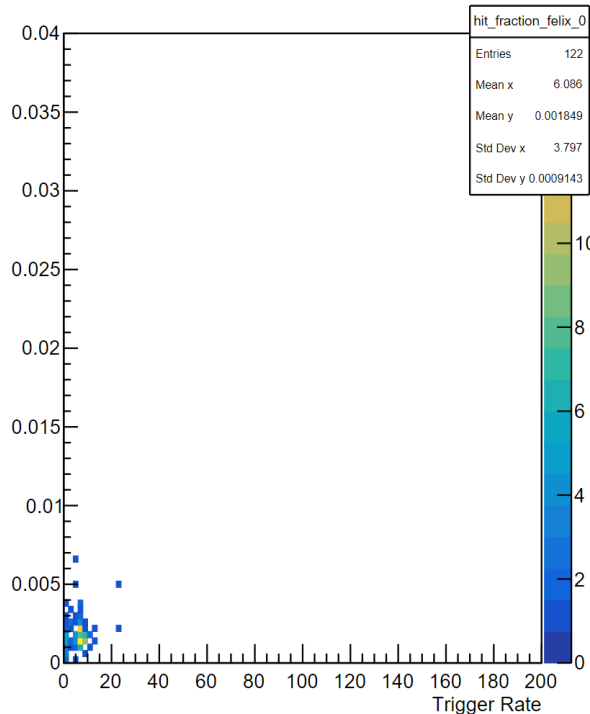
Hit fraction

Event fraction

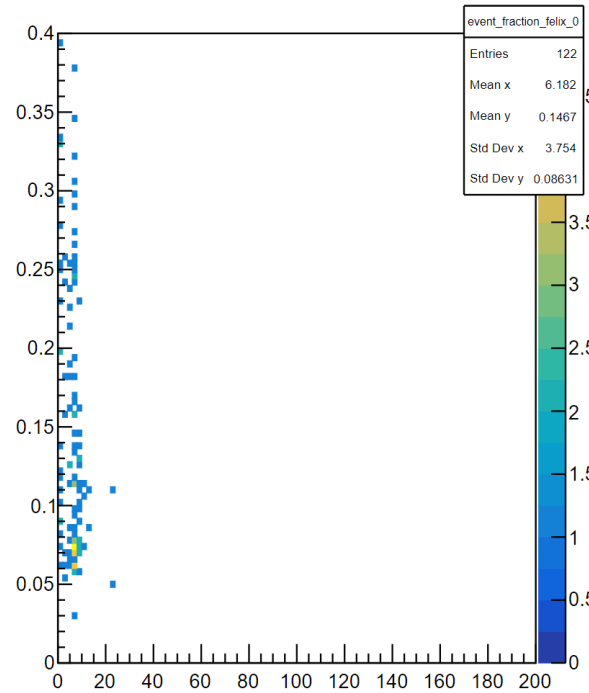
Hit fraction

Event fraction

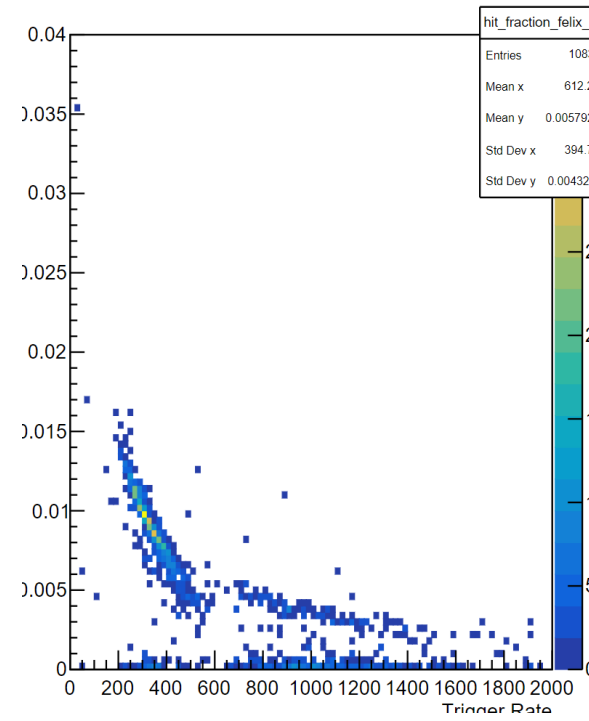
Hit Fraction vs Trigger Rate for Felix 0



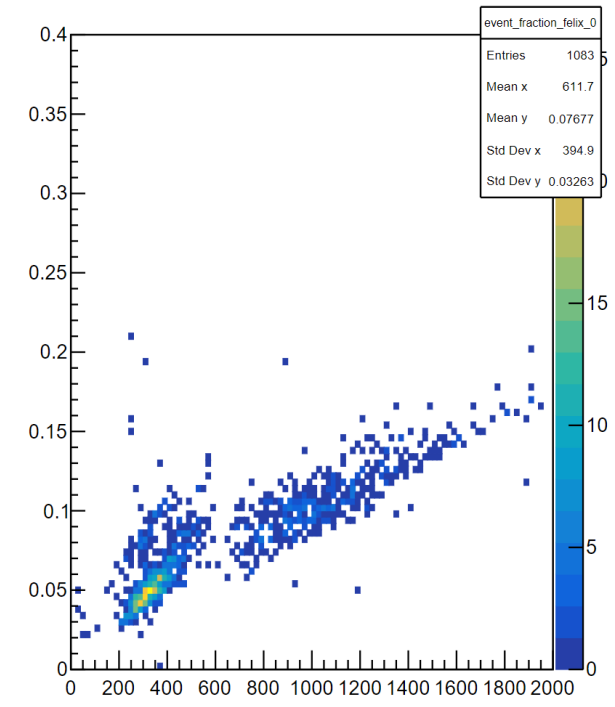
Event Fraction vs Trigger Rate for Felix 0



Hit Fraction vs Trigger Rate for Felix 0



Event Fraction vs Trigger Rate for Felix 0



- Au and p plots were re-created using all of this year's physics data.
- For the event fraction, random hit subtracts are not yet available.
- In p, the slope of the correlation is different for collision rates below and above 600 (to be investigated).
- Since the collision rate and mixup fraction are different for Au and p, they don't make a single connected correlation. Also, not sure if there is a correlation for hit fraction.

Event Mixup fraction (intt5)

Au-Au vs Collision rate

p-p vs Collision rate

Hit fraction

Event fraction

Hit fraction

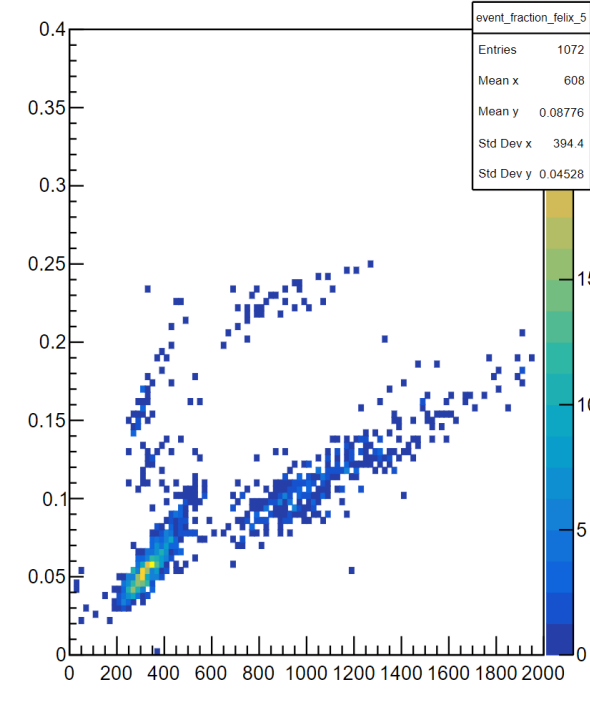
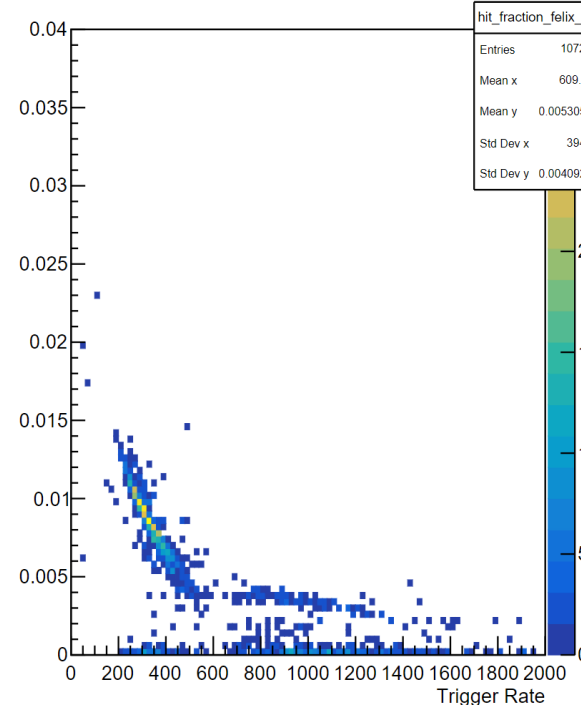
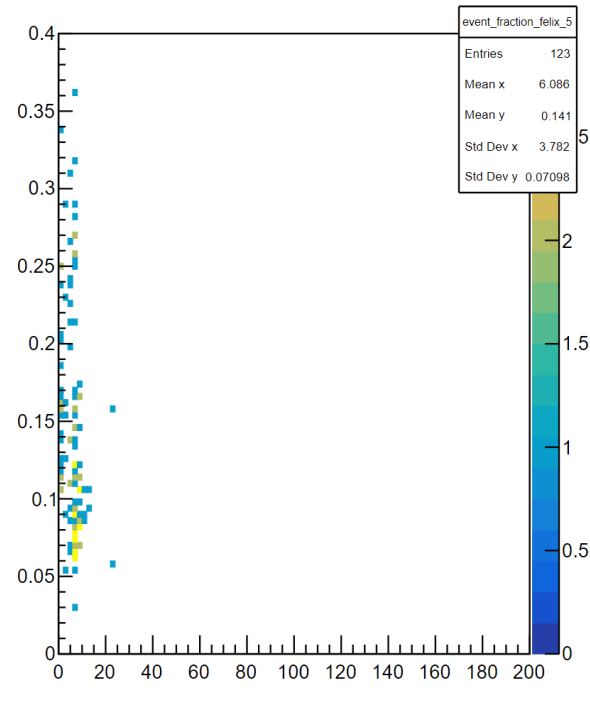
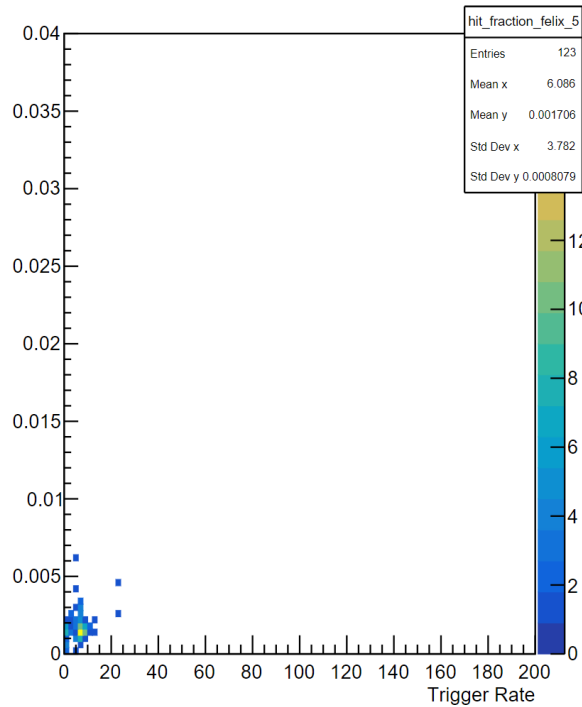
Event fraction

Hit Fraction vs Trigger Rate for Felix 5

Event Fraction vs Trigger Rate for Felix 5

Hit Fraction vs Trigger Rate for Felix 5

Event Fraction vs Trigger Rate for Felix 5



- While the other Felix's showed almost similar correlations, there were some runs that were out of correlation for intt5. I would like to investigate this issue in the future.

Next to do

- Check Event Mixup status inner and outer separately
- Make histogram for subtract Event of random hits from Mixup Event fraction(work in progress)
- Make histogram of correlation between Mixup Hit fraction and INTT hit rate(work in progress)
- Make plot that confirms that Event mixup is occurring with streaming readout data
- Make poster of streaming readout workshop at Dec.2