

# Performance plots to be released

- Correlation
- Event display
- MIP

Genki Nukazuka (RIKEN)

# Dataset

	Collision System	Collision Energy $\sqrt{s}$ (GeV)	Mode	Run	# events
Dataset 1	p+p	200	Triggered	50377	1M
Dataset 2	p+p	200	Streaming	50889	1M

**Table 1:** List of datasets used in the correlation study.

- triggered hits w/o clone, hot channels excluded
- streaming hits w/o clone, hot channels excluded
- triggered clusters w/o clone, hot channels excluded
- streaming clusters w/o clone, hot channels excluded
- streaming clusters w/o clone, hot channels excluded, tracklet association

# Analysis note

It's fine to describe some topics in a single analysis note to save time. What about organizing as follows:

Title: Performance plots of INTT for p-p collisions in Run 24

1. Introduction
2. Event mix-up
  - 2.1. Data
  - 2.2. Analysis
  - 2.3. Plot
3. Correlation study of detector parameters
  - 3.1. Data
  - 3.2. Analysis
  - 3.3. Plots
4. Event display ← NEW
  - 4.1. Data
  - 4.2. Analysis
  - 4.3. Plots
5. MIP peak search
  - 5.1. Data
  - 5.2. Analysis
  - 5.3. Plots
6. Timing tuning and performance evaluation
  - 6.1. Data
  - 6.2. Analysis
  - 6.3. Plots

These will be merged.

1	SPHENIX   Report	tag: sPH-INTT-2024-001 version: 0.1 DOI: unspecified date: August 28, 2024
2	Performance plots of INTT for p-p collisions in Run 24	
3	Mai Kano (NWU), Genki Nukazuka (RIKEN), Hinako Tsujibata (NWU), and ???	

Who are the co-authors?

# Correlation plots

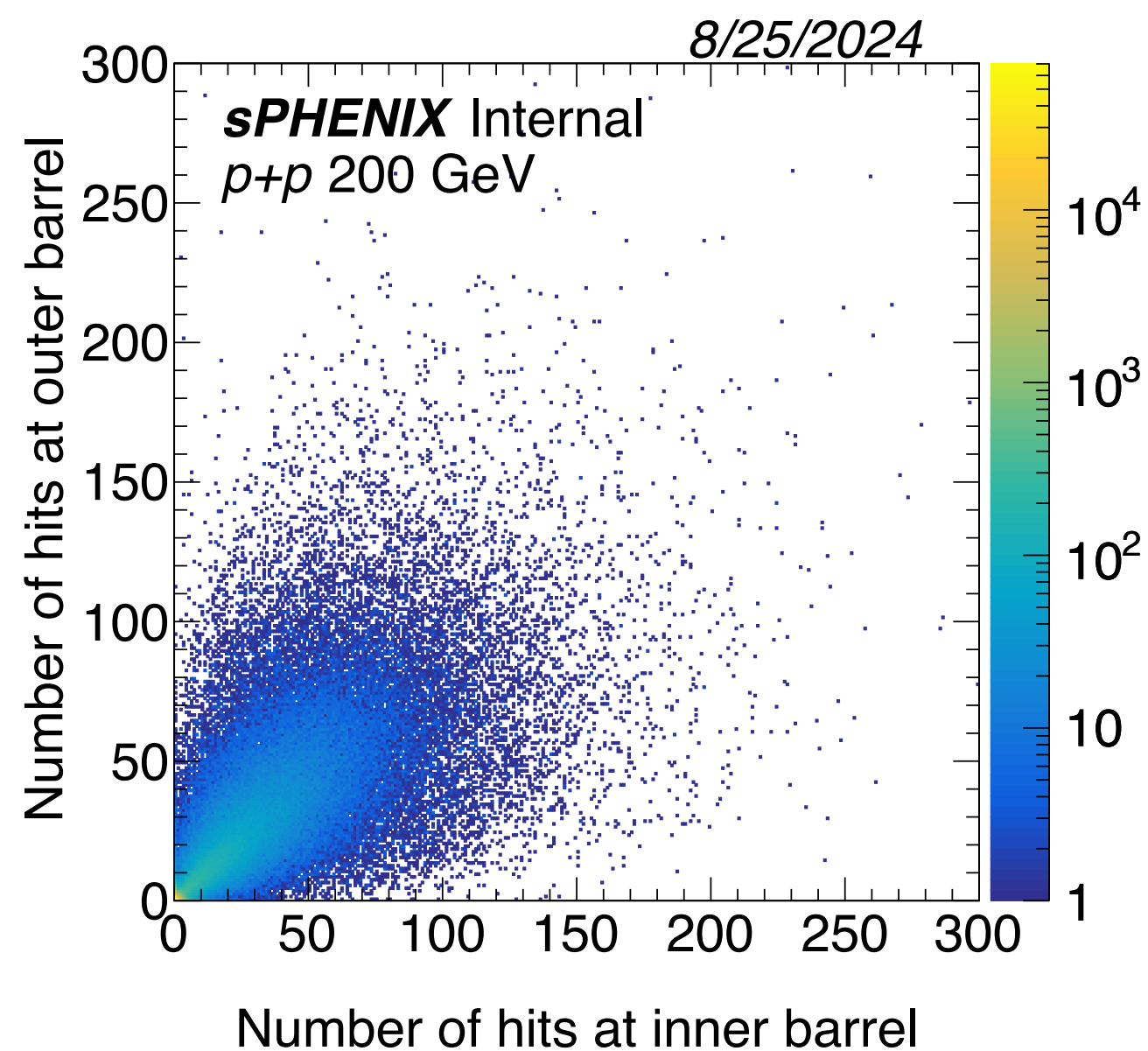
	Condition	Run 50377, Triggered only	Run 50889, Streaming
#INTT hit	Clone hit rejection Hot channel rejection		 <p>Only FPHX BCO 63 used</p>
#INTT cluster	Clone hit rejection Hot channel rejection Tracklet association		 <p>Only FPHX BCO 63 used</p>
#INTT cluster	Clone hit rejection Hot channel rejection Tracklet association		 <p>Only FPHX BCO 63 used</p>

I use the official production DSTs if available. This means that the analysis is done using Gl1-base.

The official DST for the streaming data is not ready yet. I decoded raw files by myself for the moment.

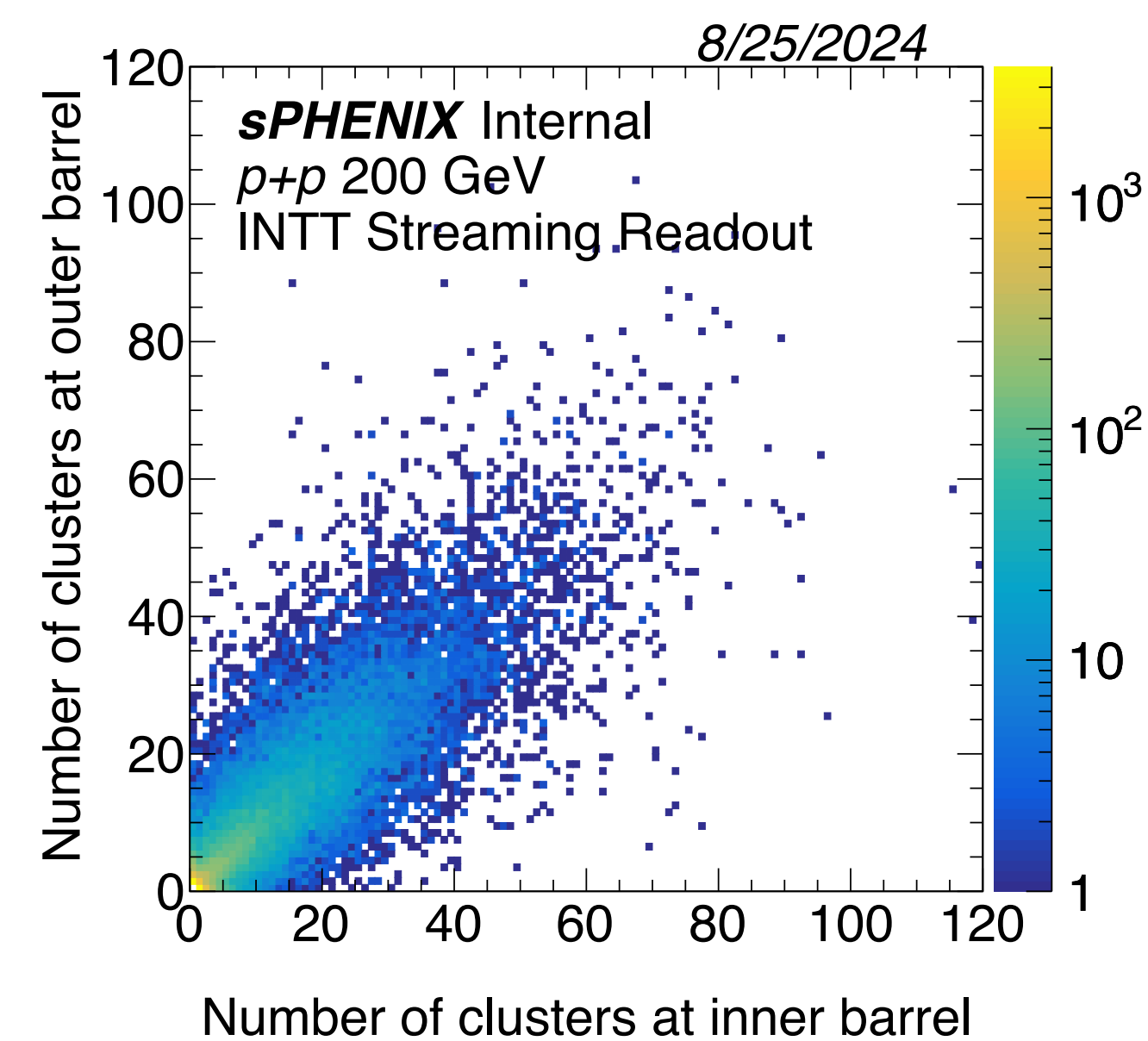
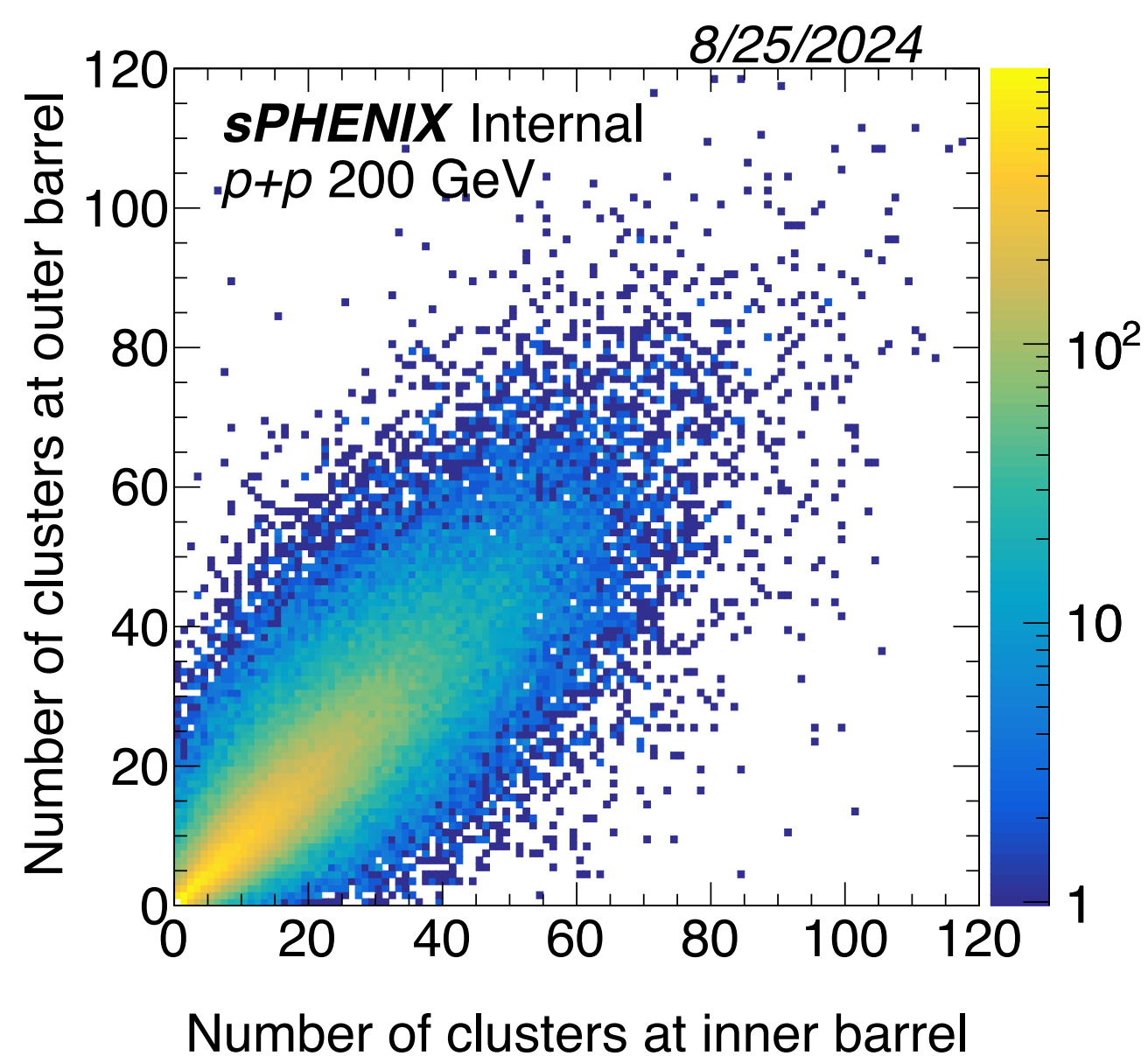
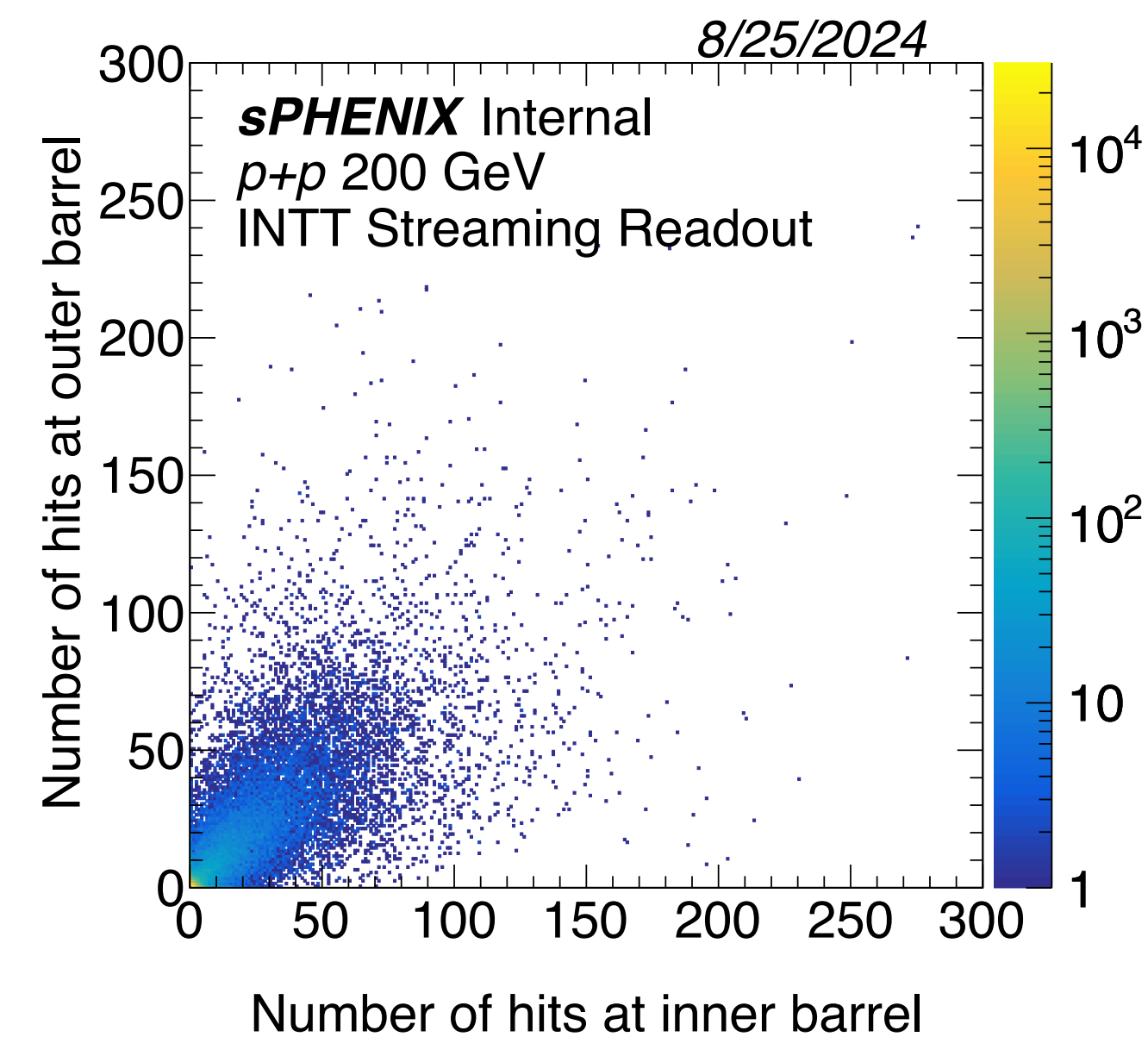
# Correlation plots

**Run 50377,  
Triggered only**



**Run 50889,  
Streaming**

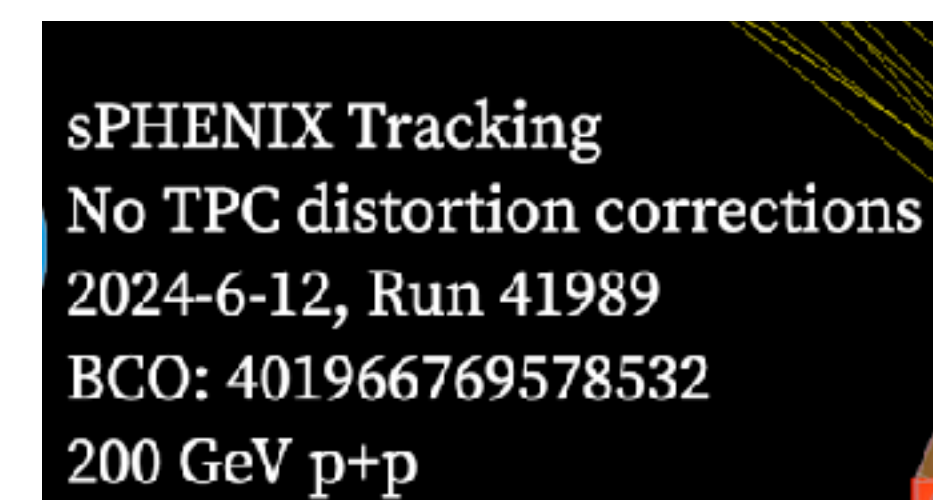
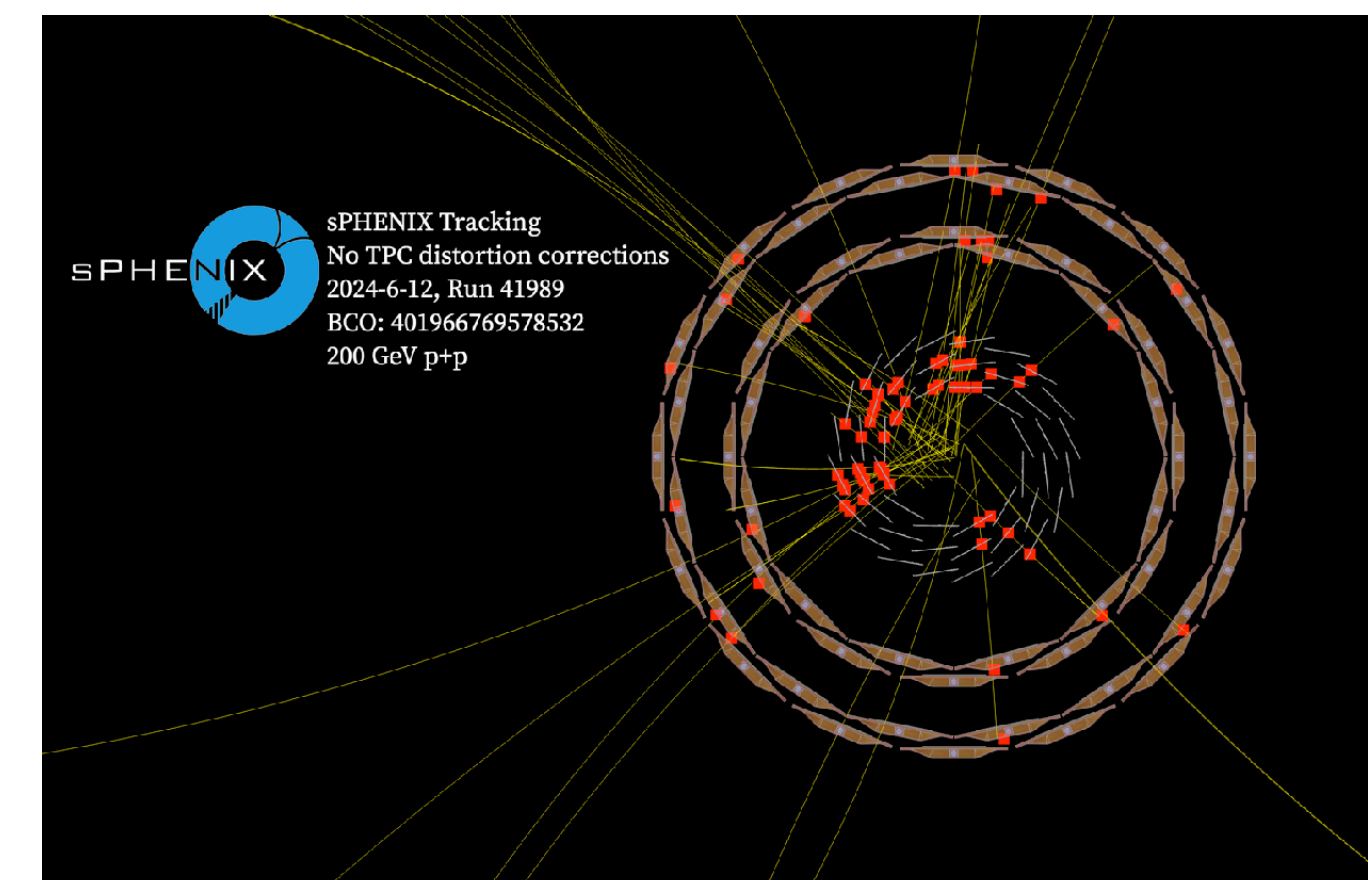
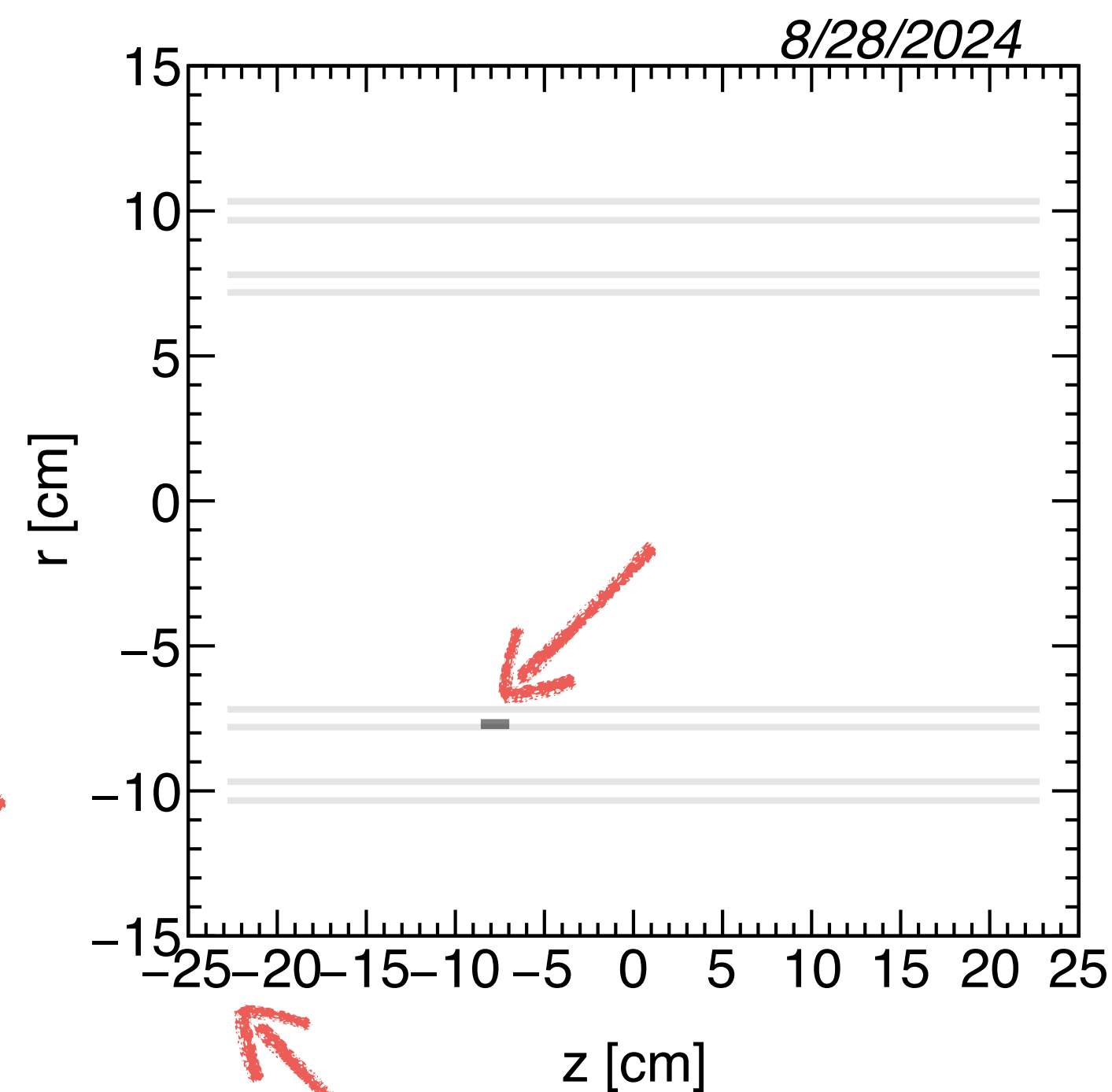
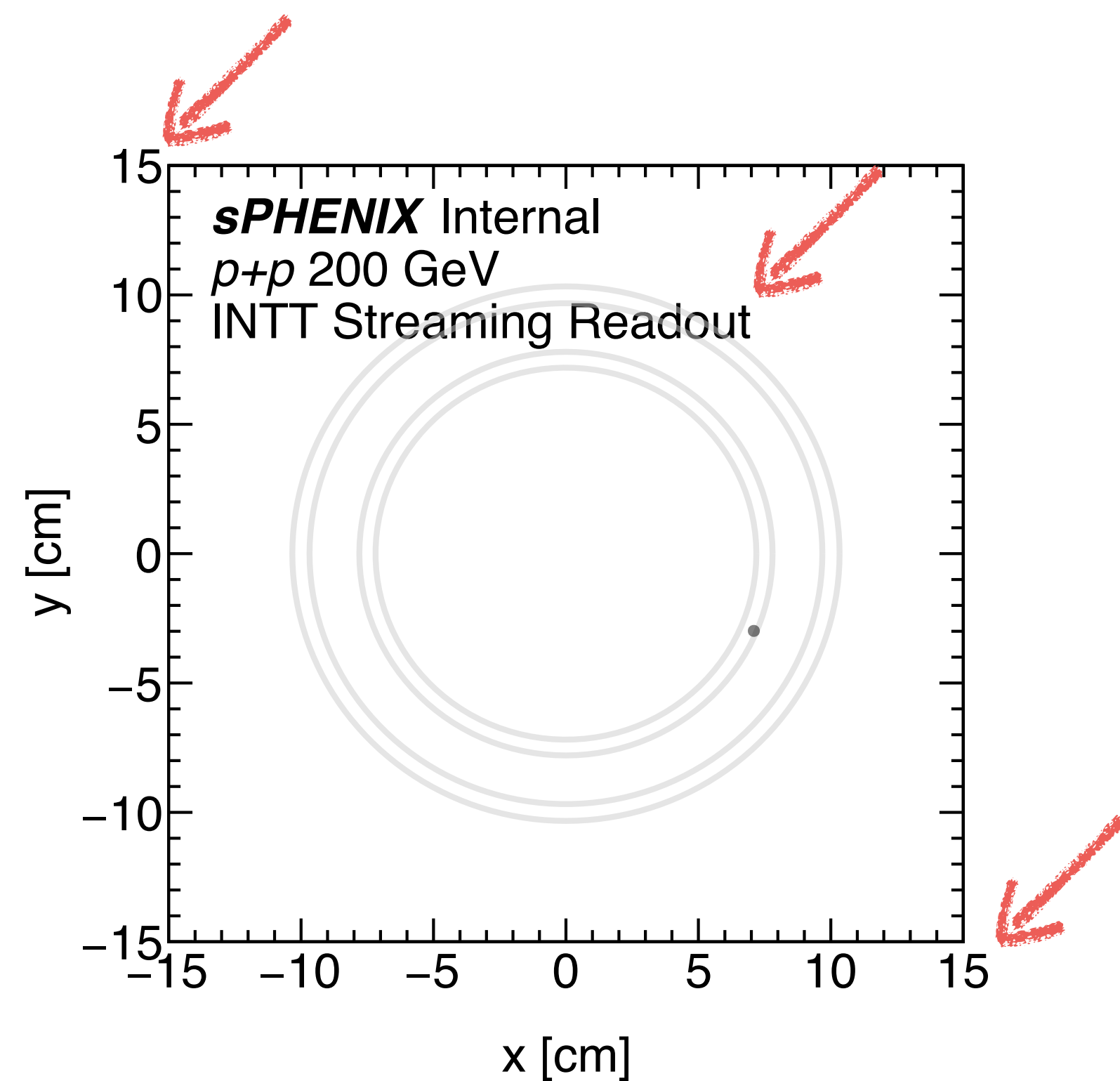
**Only FPHX  
BCO 63 used**



# Event displays

A nice event display of a streaming run is good to be released. If I use the same algorithm as Hinako's, discussion is not necessary to ask for preliminary as it was already discussed.

Formatting is still ongoing...



If we learn what to write,

- Beam condition: p+p, 200 GeV
- Date of analysis
- BCO
- INTT Streaming Readout need to be written

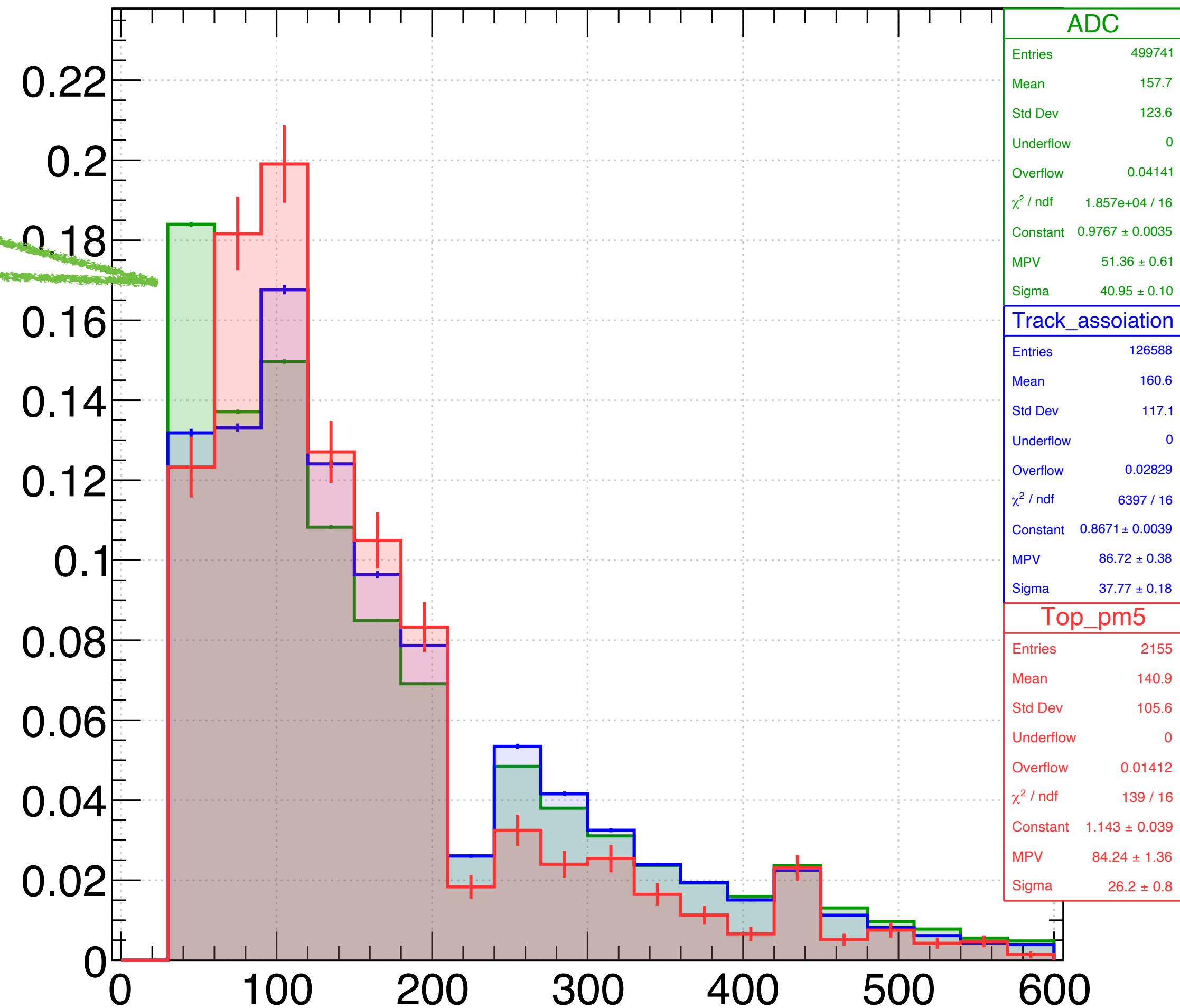


# MIP

Some more effort is necessary in the analysis.

Significant suppression of single clusters with DAC0, i.e. noise  
This is the value of tracklet reconstruction for detector performance study.

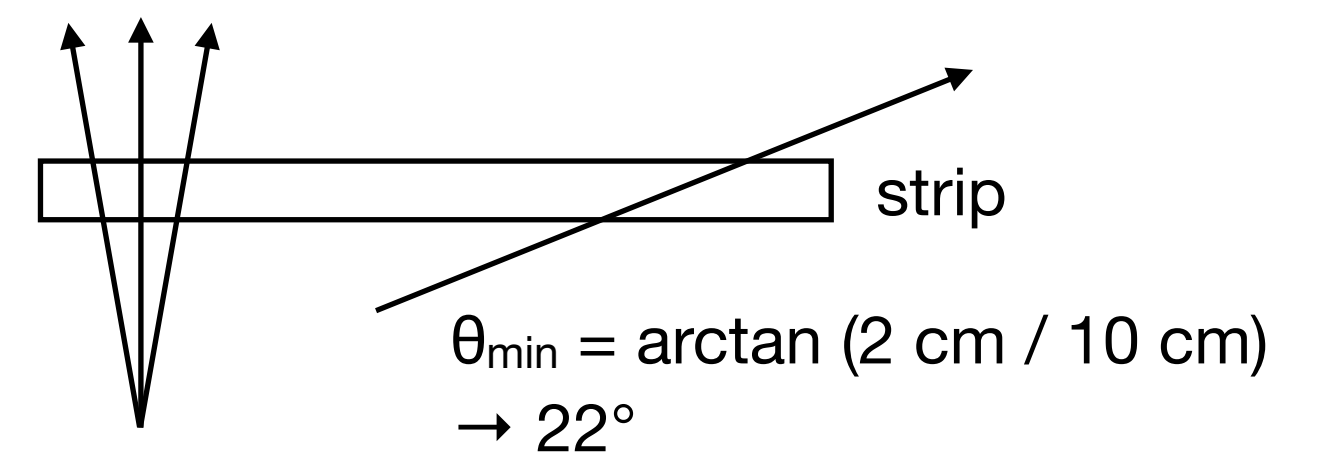
## DAC distribution



← Raw ADC distribution of INTT clusters

← INTT clusters associated with INTT tracklets

← INTT clusters associated with INTT tracklets, which has  $80^\circ < |\theta| < 90^\circ$  are used





# MIP

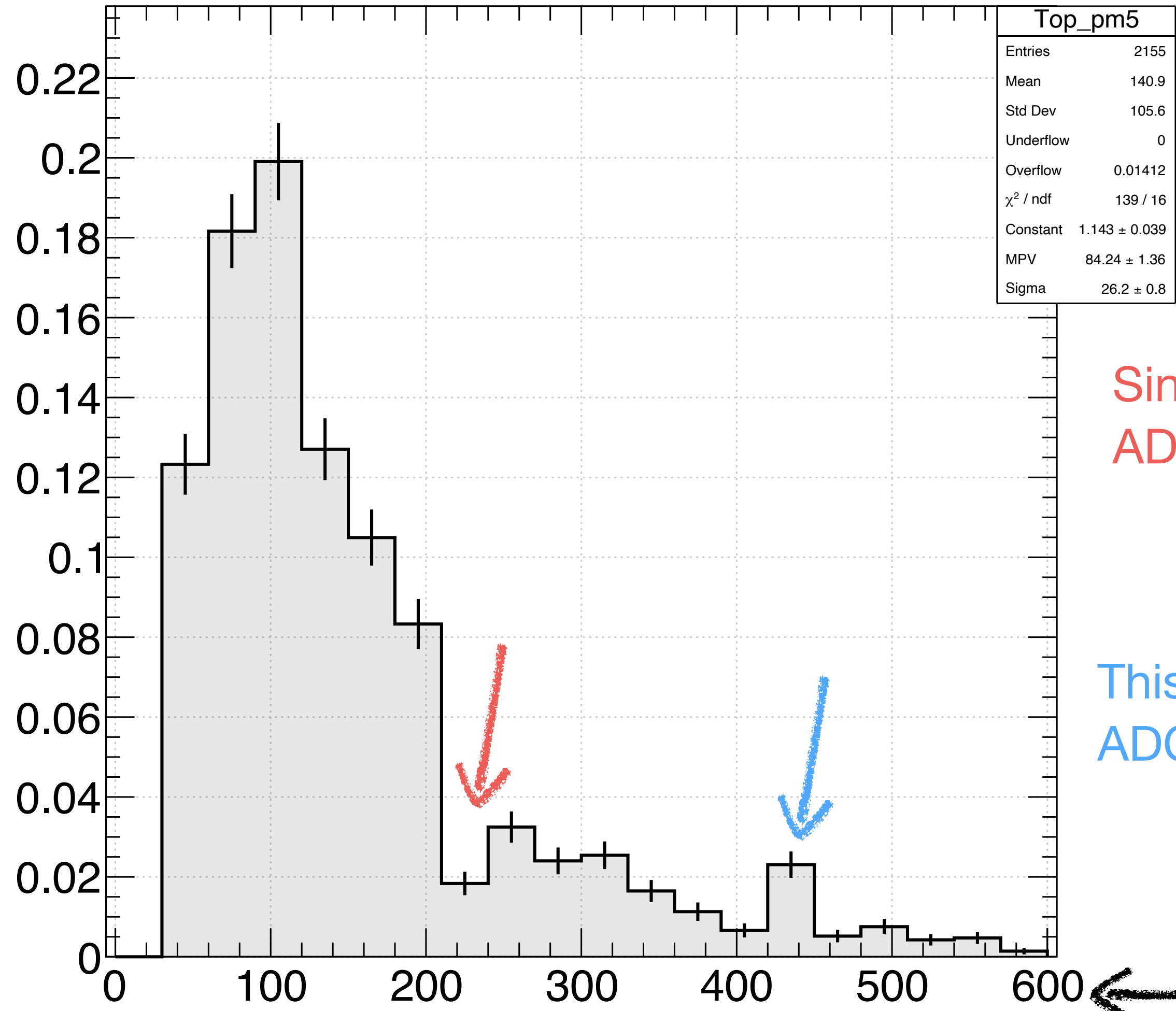
No sPHENIX format has been applied yet.

No need to show

## DAC distribution



No title...



No need to show



No need to normalize if we show only one histogram

Single-hit clusters with ADC=7 are cut. ADC=7 is the overflow bin.

This small peak is at DAC 420. 2-hit clusters with ADC=7 can be the main contribution.

No title...



# MIP

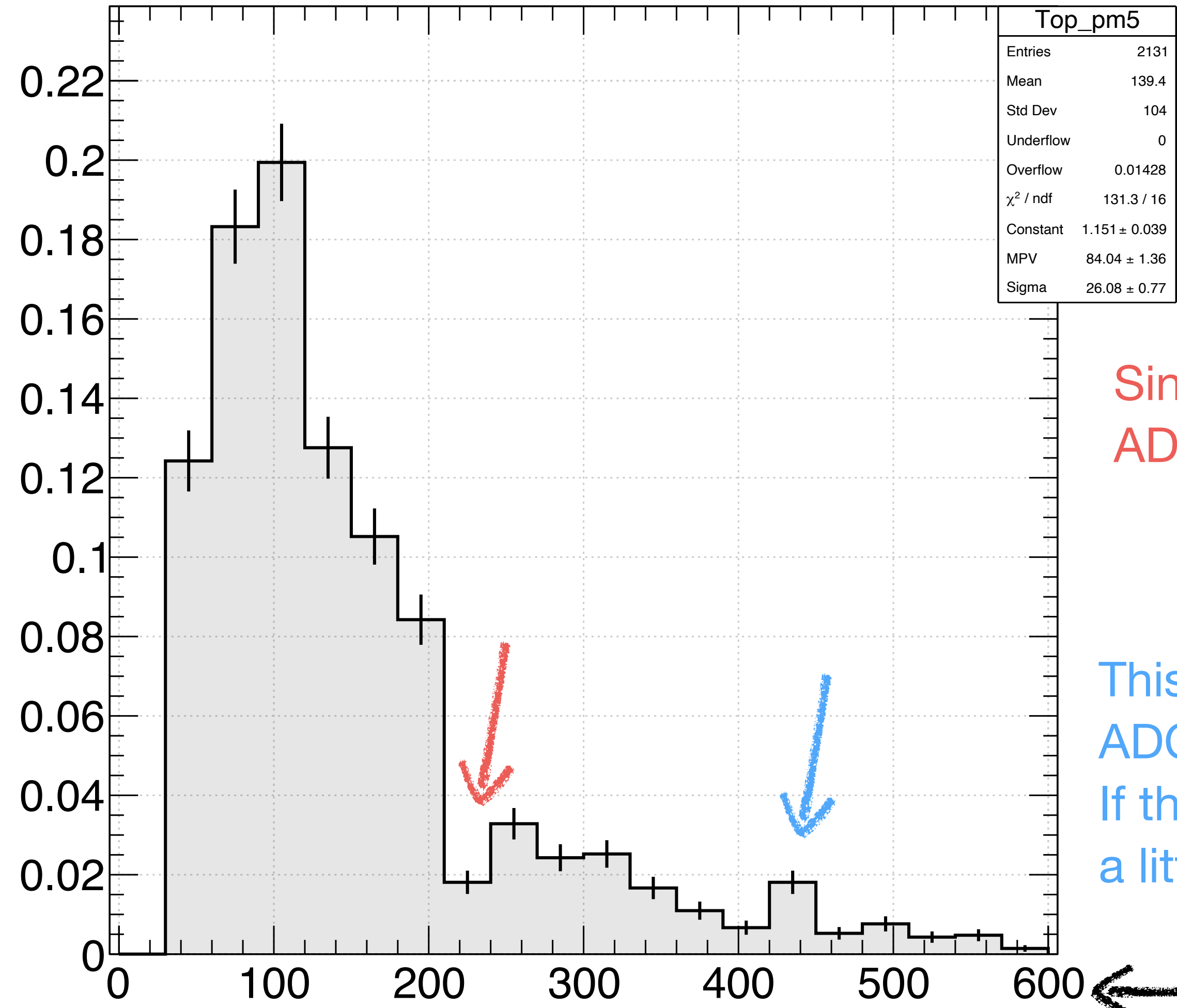
No sPHENIX format has been applied yet.

No need to show

## DAC distribution



No title...



No need to normalize if we show only one histogram

No need to show



Single-hit clusters with ADC=7 are cut. ADC=7 is the overflow bin.

This small peak is at DAC 420. 2-hit clusters with ADC=7 can be the main contribution. If those clusters are removed, the peak gets smaller a little bit.

No title...



Cluster cuts can be optimized.