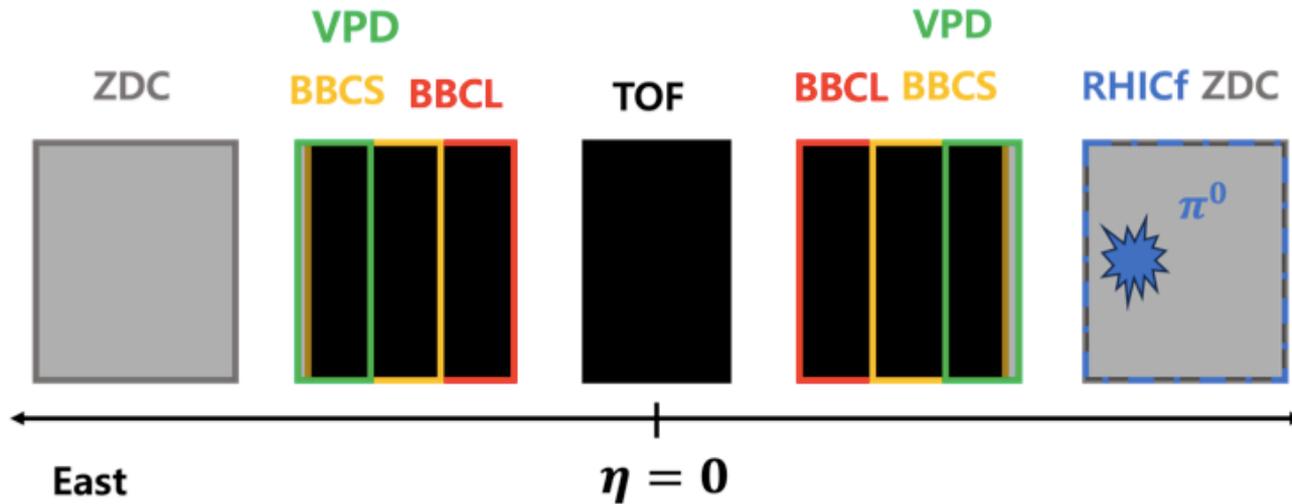


Status and future plan of the RHICf analysis

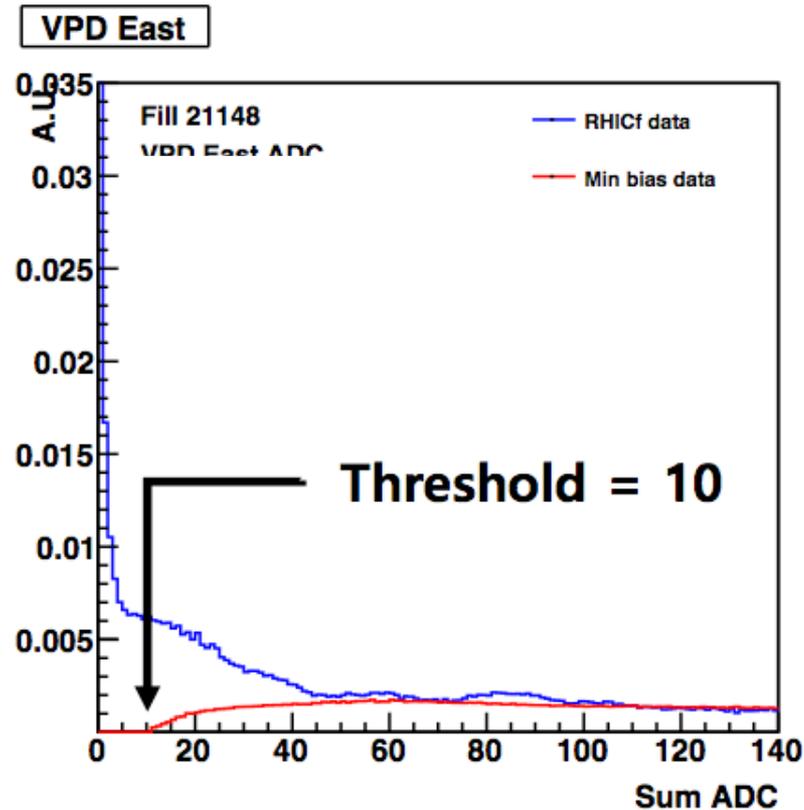
March 26
Minho Kim

Motivation



- We want to better understand the origin of the very forward π^0 asymmetry by studying a correlation between RHICf and STAR detectors.
- Signals on the STAR detectors reflect specific event types.

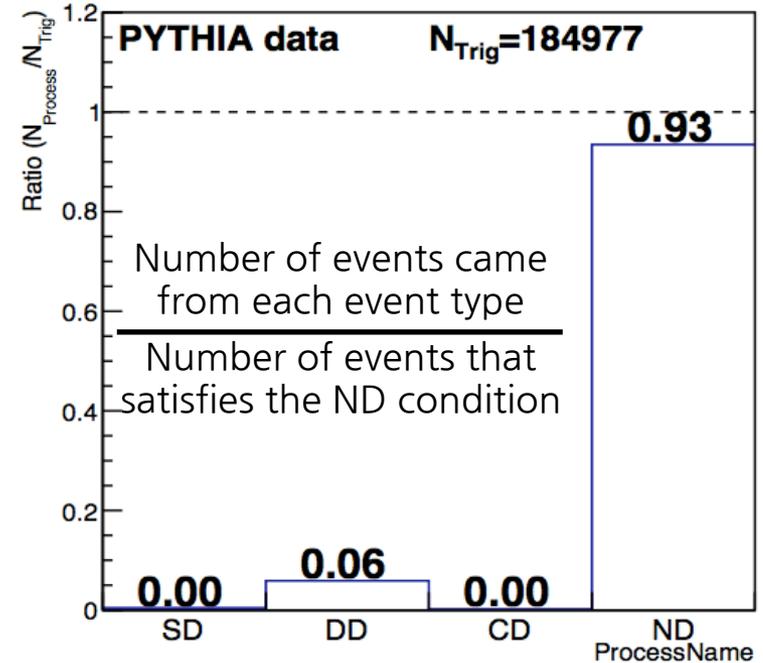
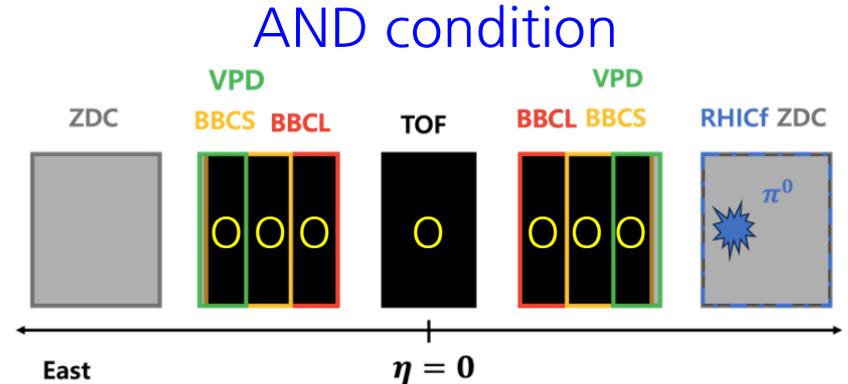
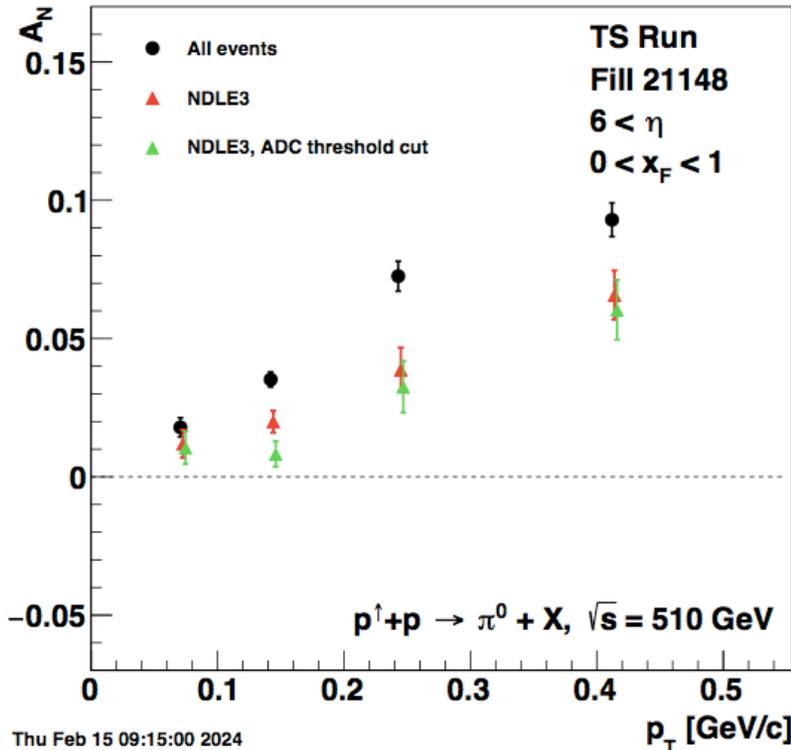
How we define the signal



- We can set a threshold to define the signal by comparing ADC distributions of RHICf triggered and MB events.

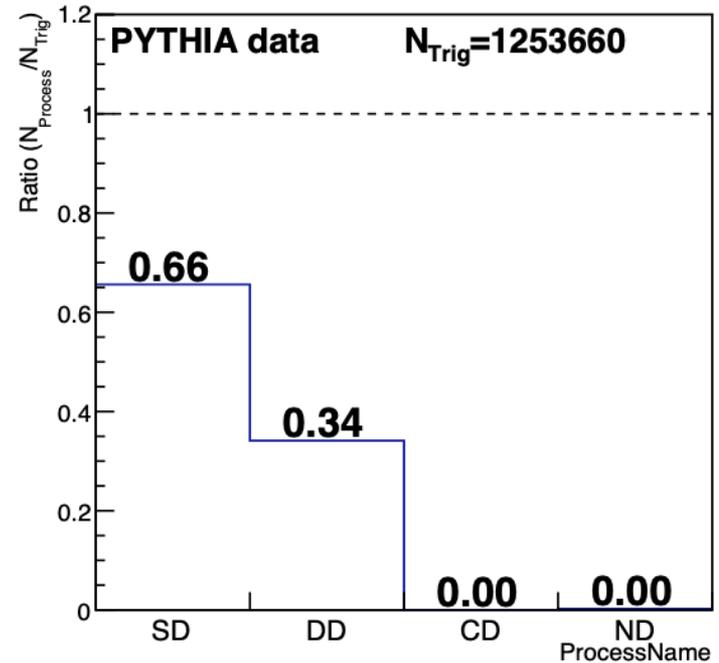
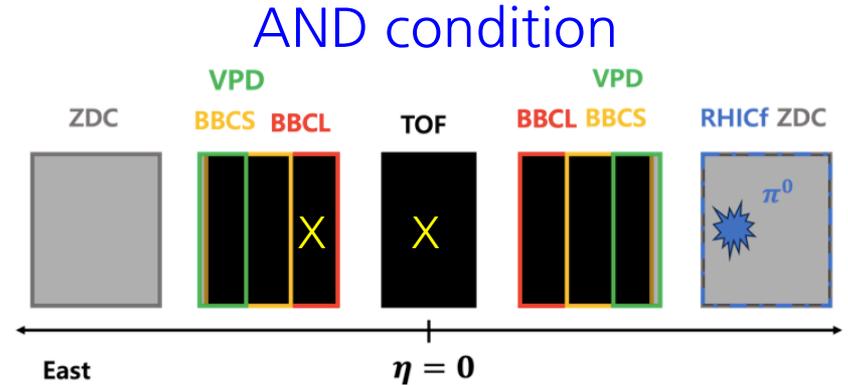
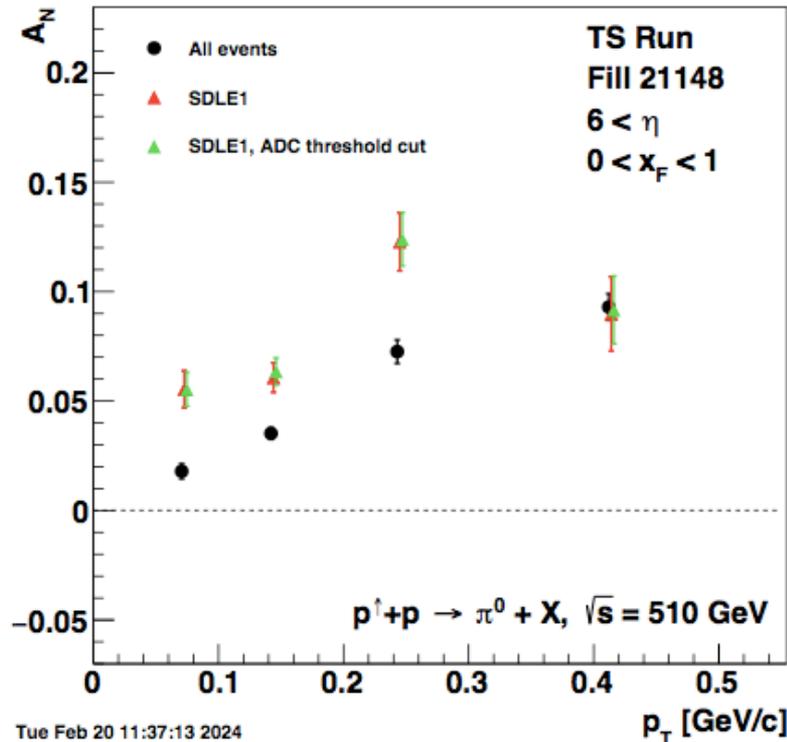
Non-diffractive condition

- The A_N s are suppressed on the non-diffractive condition.
- The non-diffractive event doesn't seem to be the origin of the RHICf π^0 asymmetry.



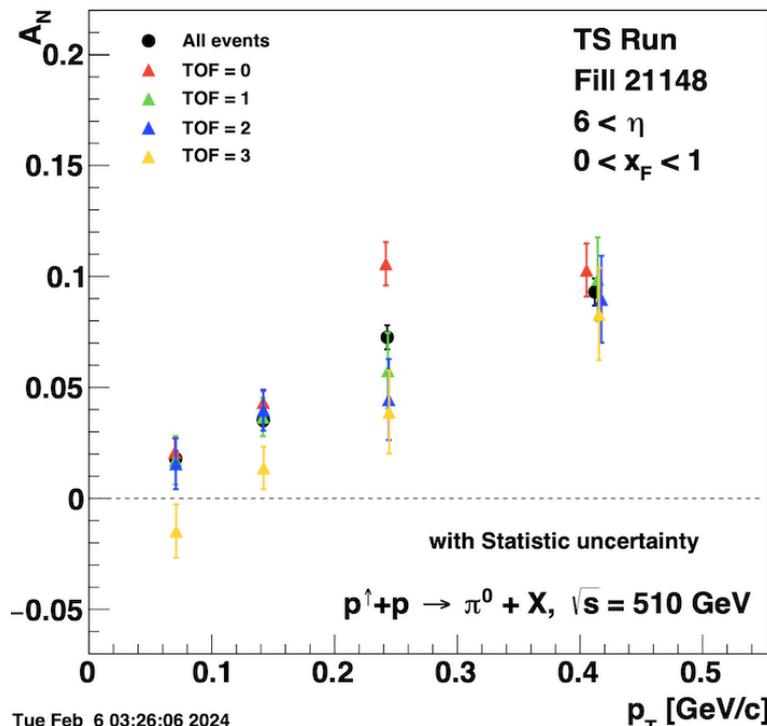
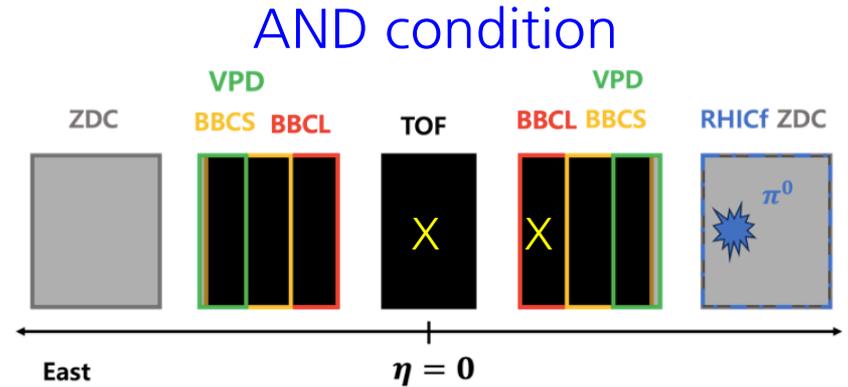
Single-diffractive condition

- The A_N s are enhanced on the single-diffractive condition.
- The single-diffractive event seems to be related to the origin of the RHICf π^0 asymmetry.

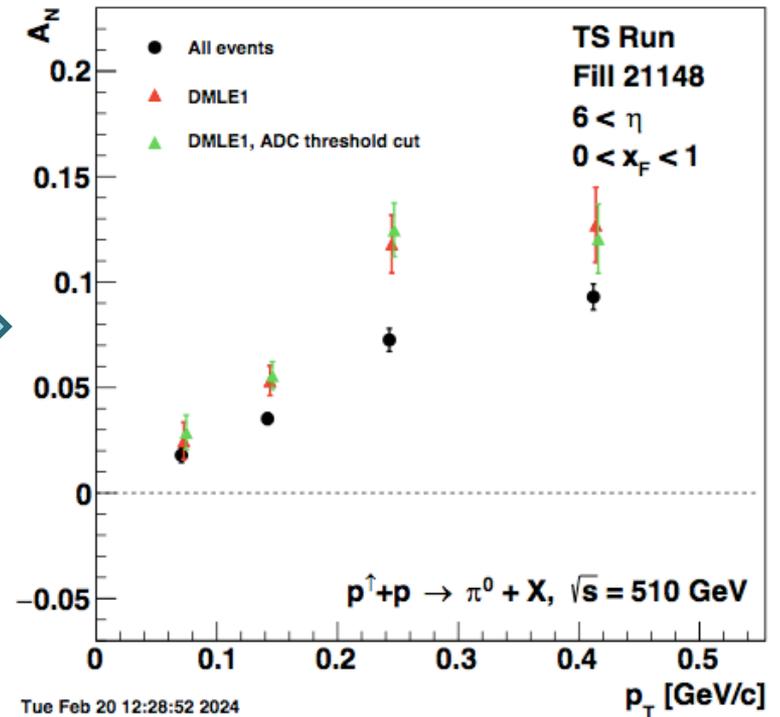


Diffractive mass dependence

- The A_N s are enhanced on the low mass diffractive condition.
- The RHICf π^0 has larger A_N when the particle is less generated.



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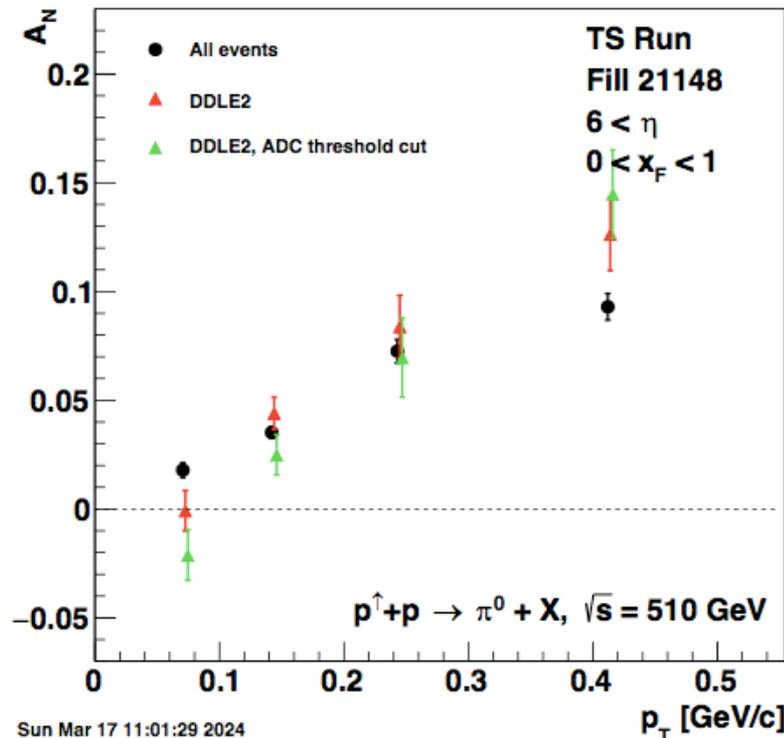
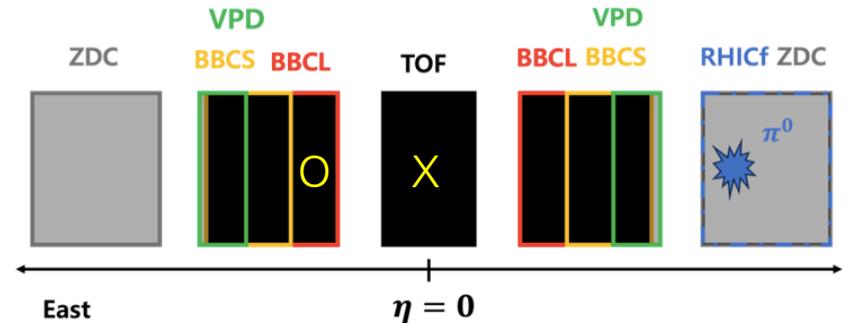


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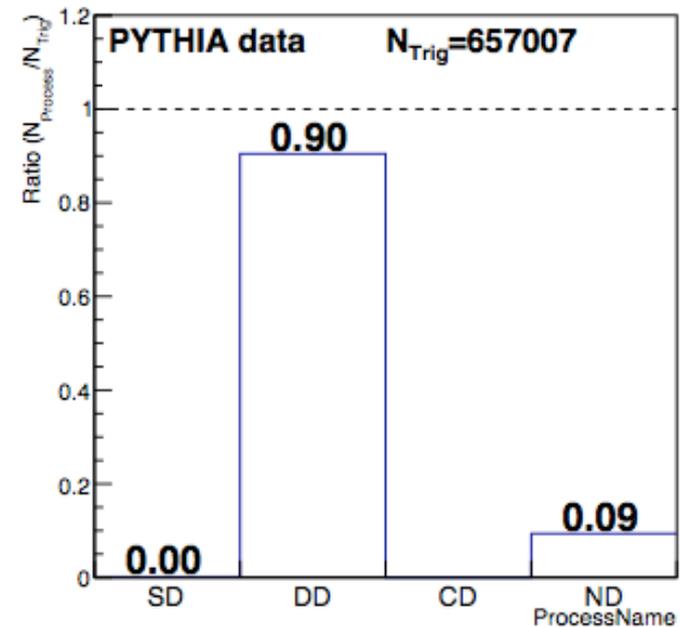
Double-diffractive condition

- The finite A_N s are conserved on the double-diffractive condition.
- The RHICf π^0 asymmetry doesn't come from a specific event process? We are still working on it.

AND condition



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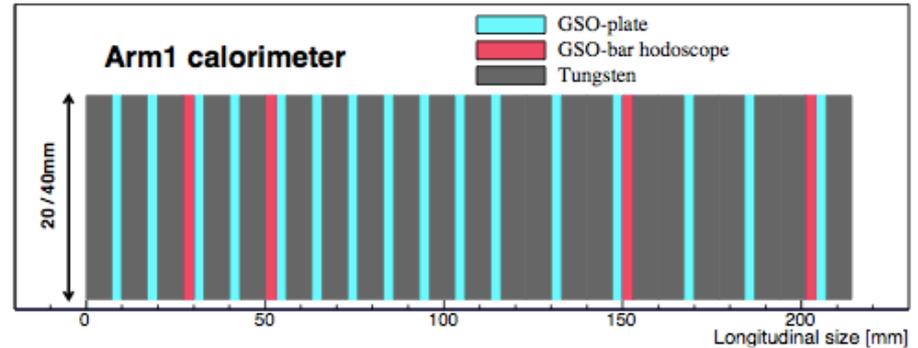
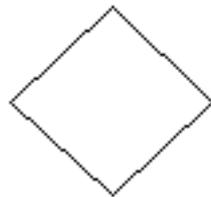
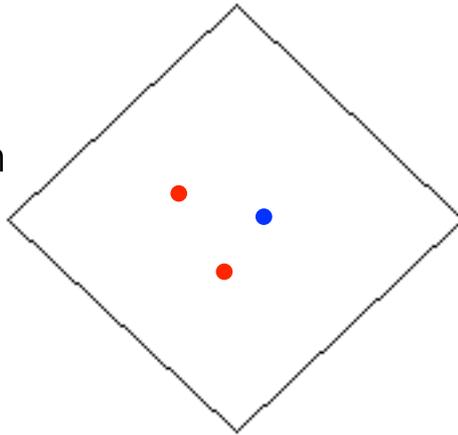


Plan

- We'll present our intermediate results at STAR cold QCD meeting. We also need to understand the STAR detector condition in more detail.
- The π^0 combined analysis will be the topic of Seunghwan's Ph.D. thesis. Therefore, Seunghwan is a main analyzer of the π^0 asymmetry.
- When Seunghwan is analyzing data, I can work on Λ .

Feasibility of the Λ measurement

- Photon
- Neutron



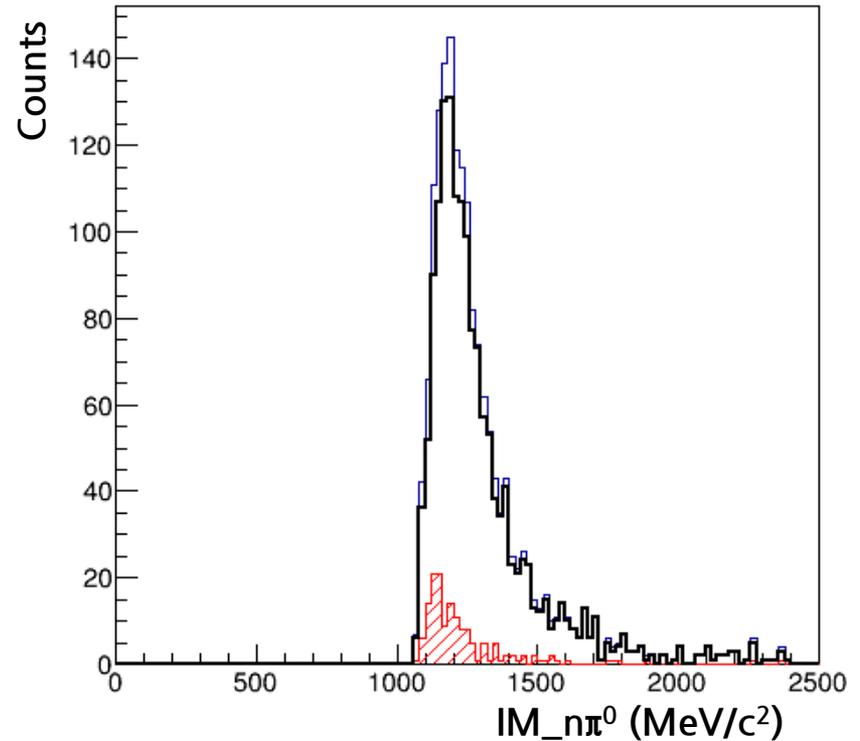
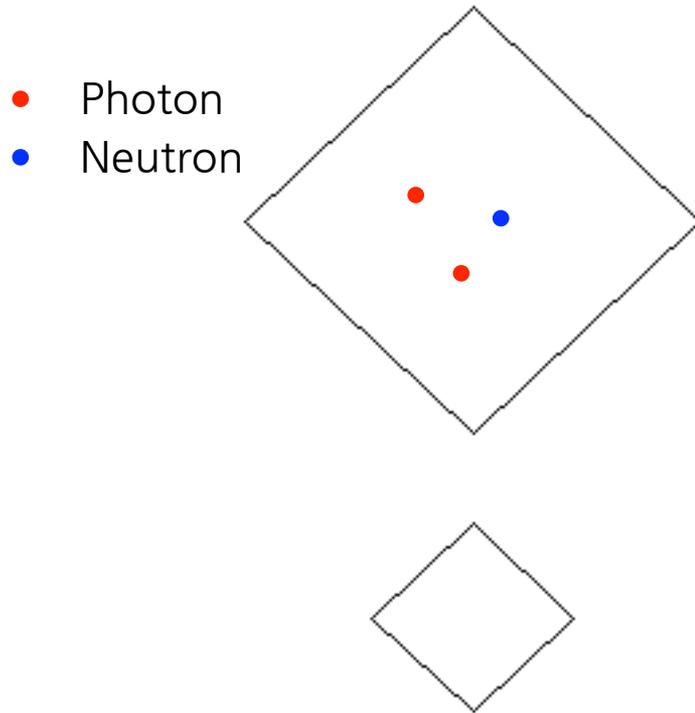
Photon (< 70 GeV)
reconstruction



Neutron reconstruction
(+ ZDC)

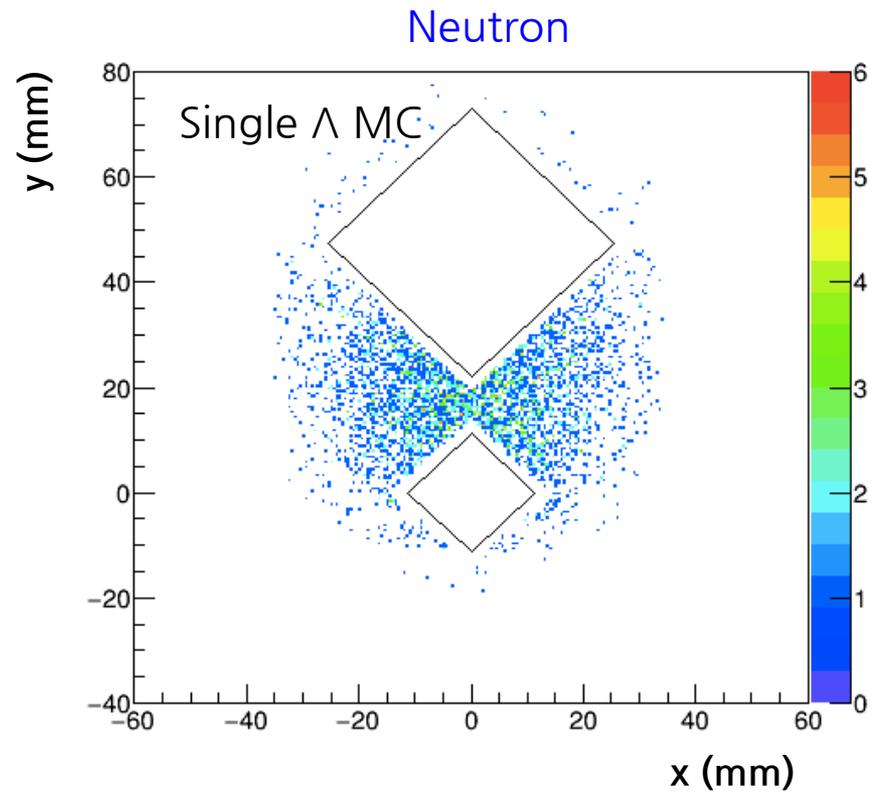
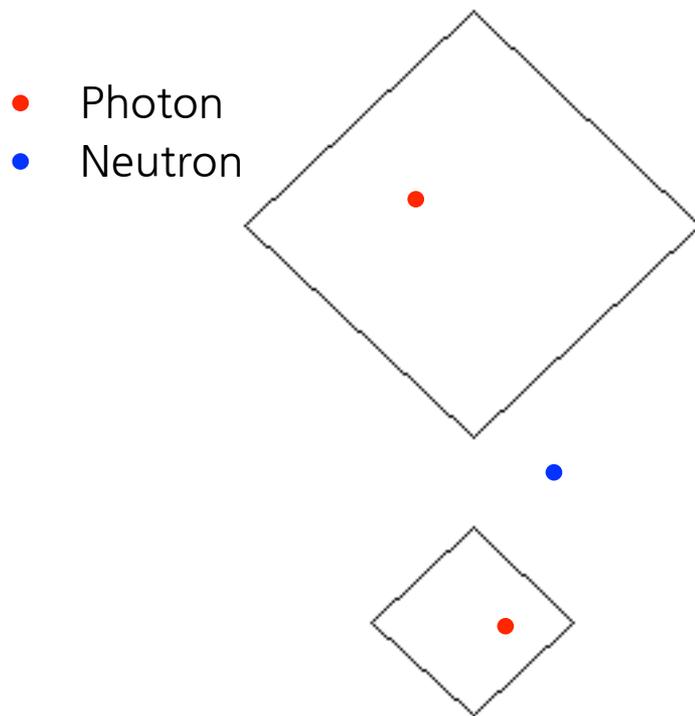
- Type-II Λ is defined as the two decayed photons and one neutron hit the same tower.
- The Type-II Λ can be reconstructed by selecting the events where the hadronic and electromagnetic showers are separated.

Type-II Λ reconstruction



- Requirement of the shower separation condition seriously suppresses the statistics of the Type-II Λ .
- The true Λ events can be hardly identified because of one order of larger background fraction.

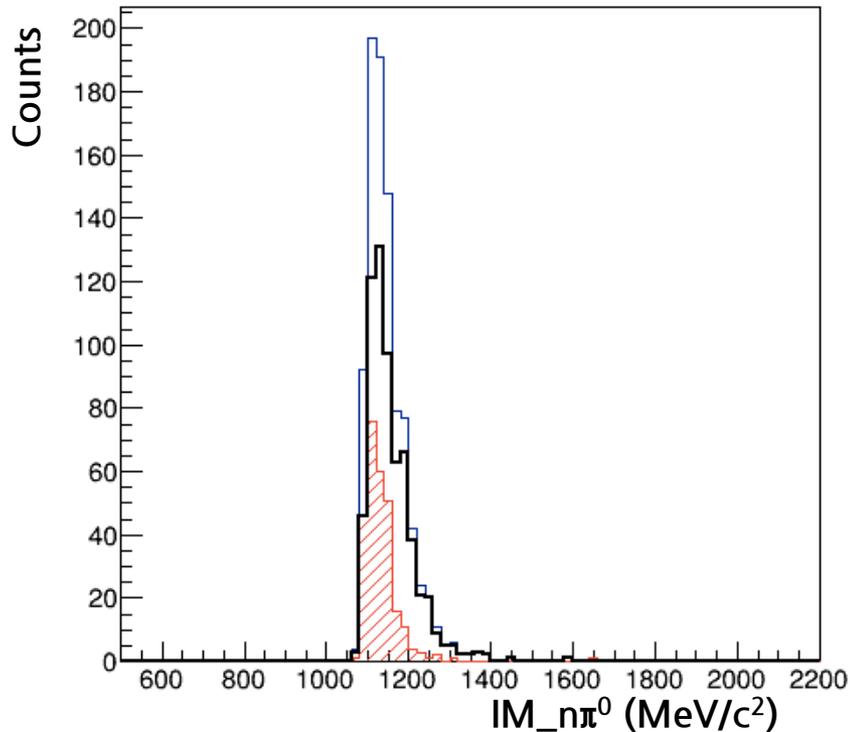
Type-I Λ reconstruction



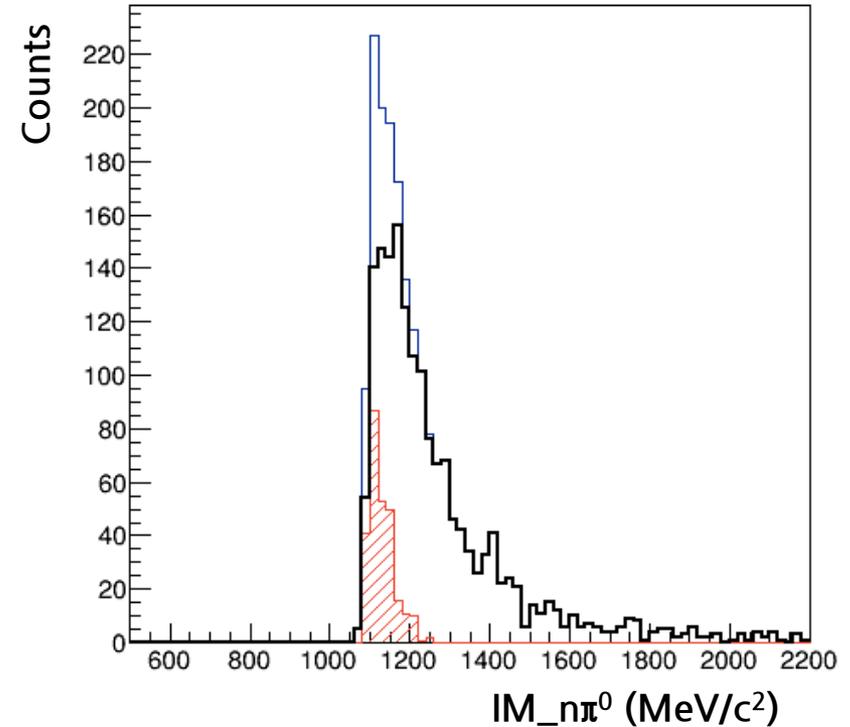
- Type-I Λ is defined as the two decayed photons hit each tower and the one neutron hits the ZDC.
- We can apply for a geometrical constraint to suppress the background.

Type-I Λ reconstruction

With energy constraints



Without energy constraints



- The background fraction of Type-I Λ is much lower than the one of Type-II Λ . However, we need a good strategy to estimate the signal and background fractions.