

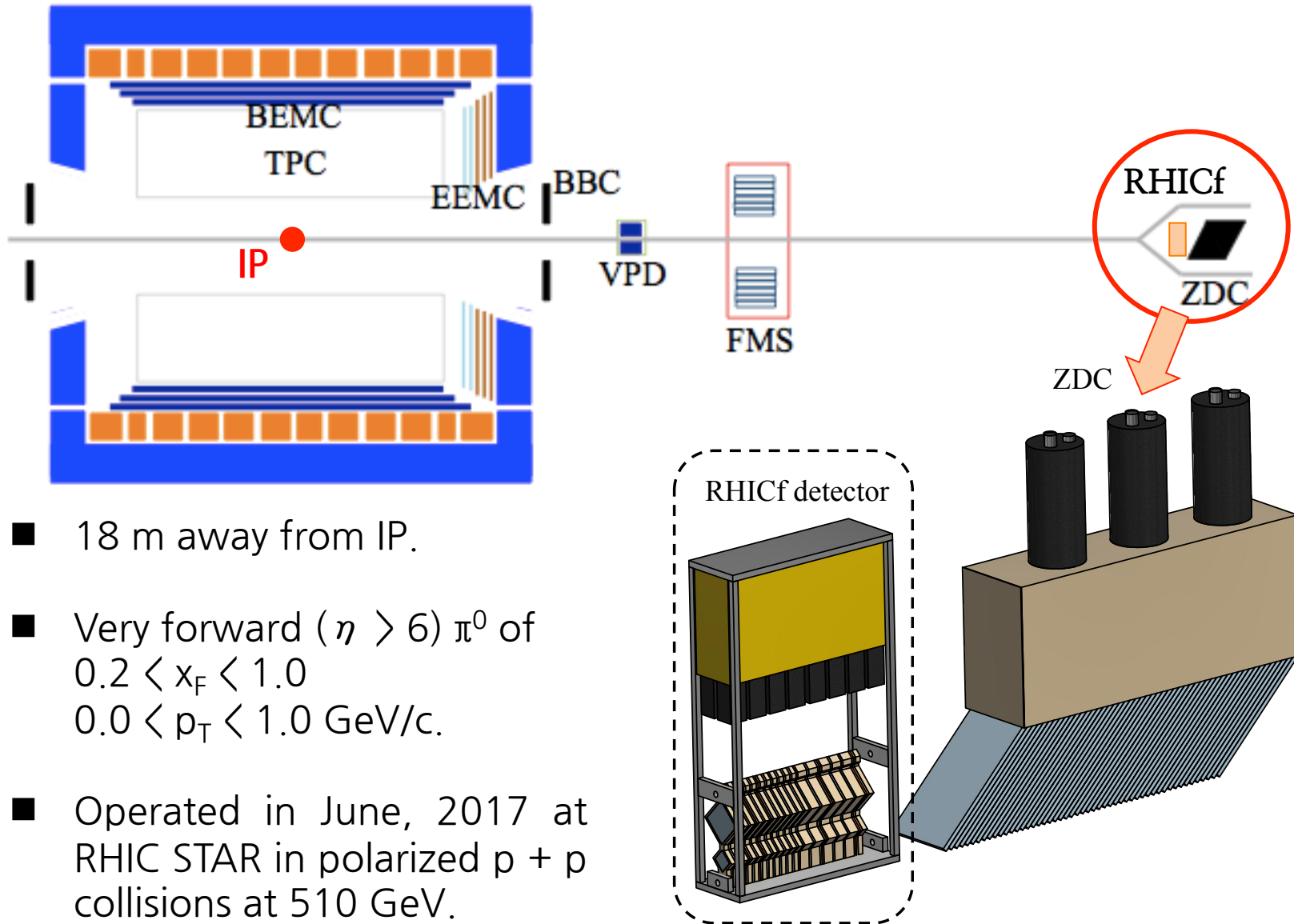
# Status and plan for the RHICf-STAR combined analysis

STAR Cold QCD PWG meeting

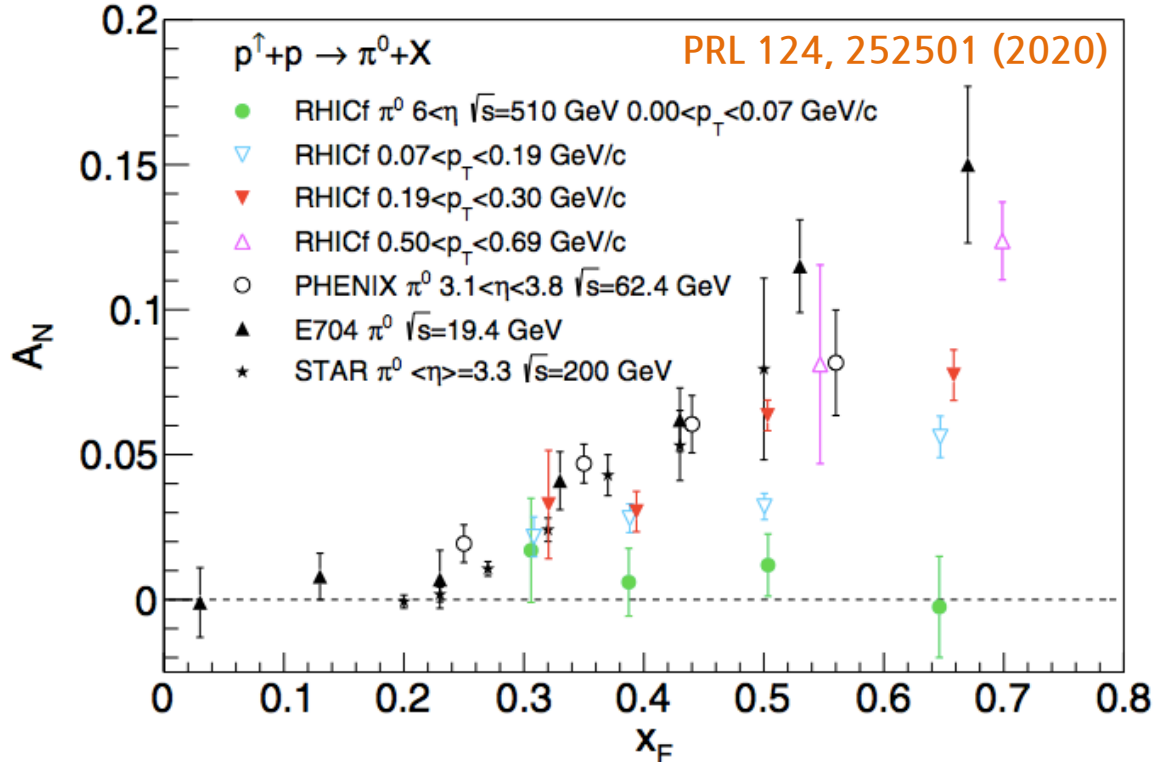
26 Jan 2022  
Minho Kim

# RHIC forward (RHICf) experiment

## STAR experiment



# Motivation

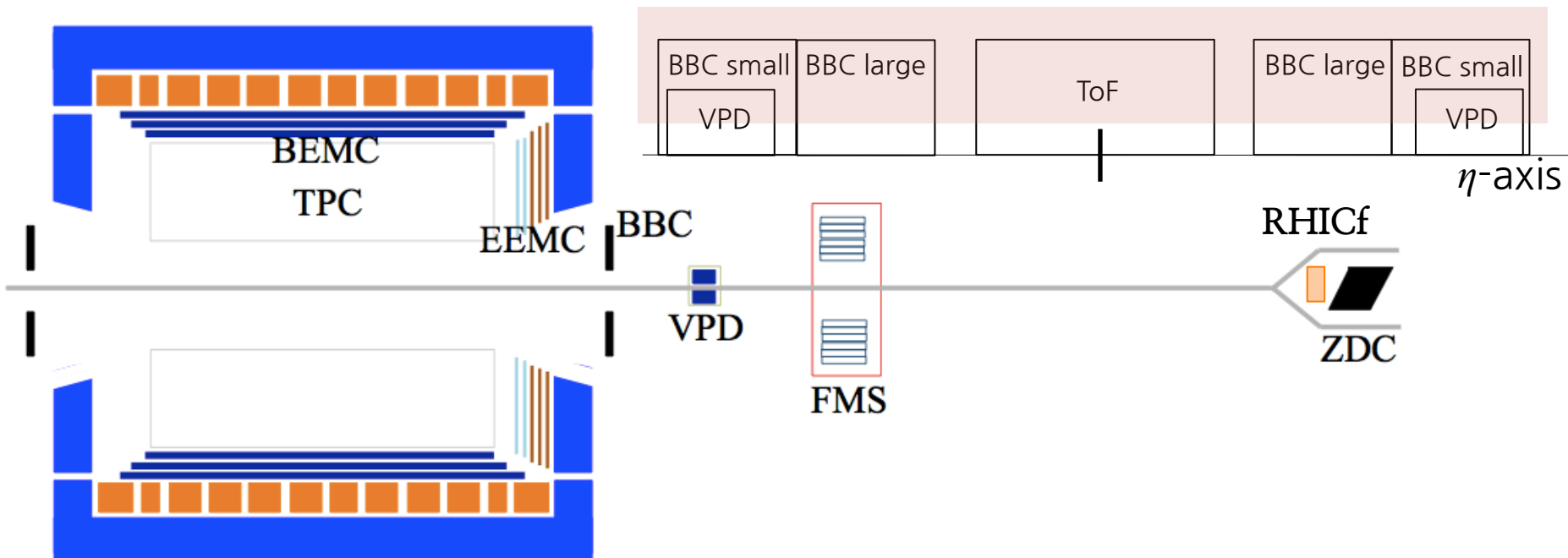


- At very low  $p_T < 0.07$  GeV/c, the asymmetries are consistent with zero.
- As  $p_T$  increases, the asymmetries increase approximately reproducing that of the forward  $\pi^0$ .
- What makes the non-zero asymmetry of the very forward  $\pi^0$ ?

# RHICf-STAR combined analysis

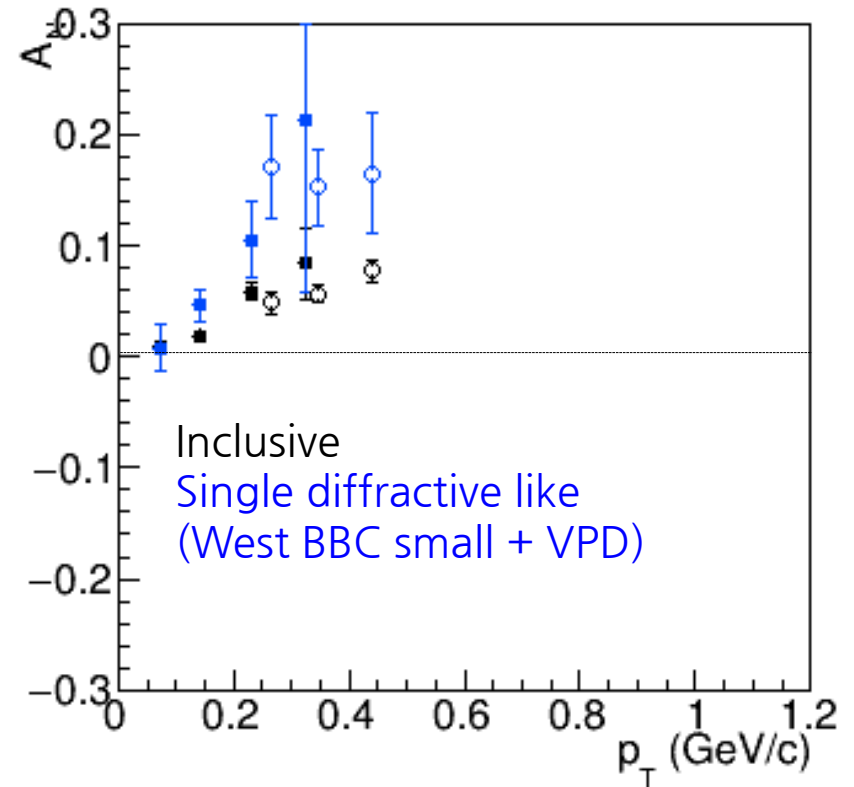
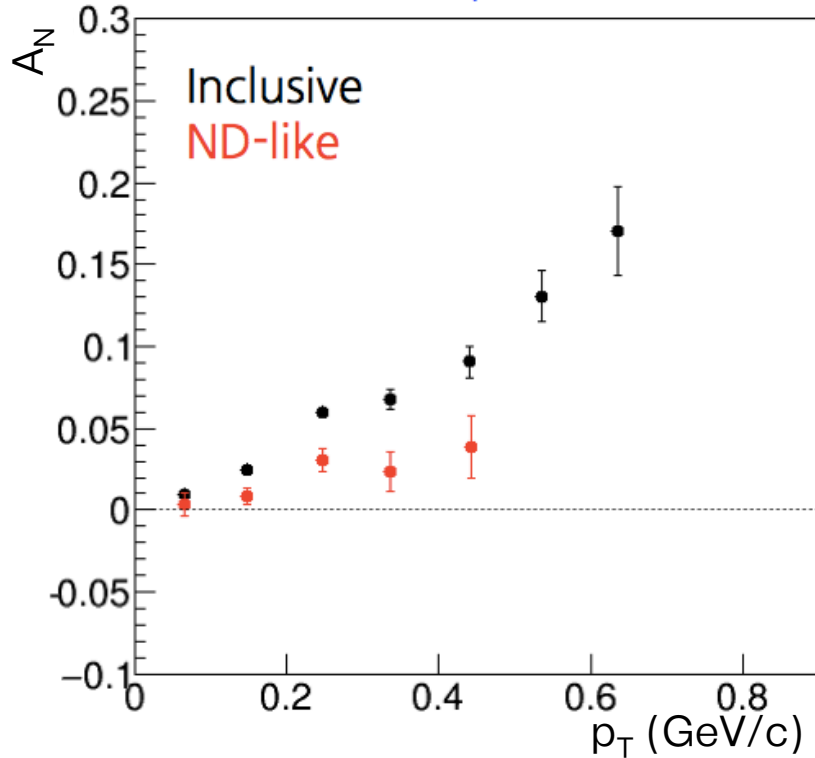
Central detectors

Non diffractive event



- Using STAR central detectors, BBC, and VPD, we can study the detector correlation (or event type dependence) for the very forward  $\pi^0$   $A_N$ .
- For example, there should be signals in the TOF, BBC, and VPD if a  $\pi^0$  comes non-diffractive event.

# Intermediate results



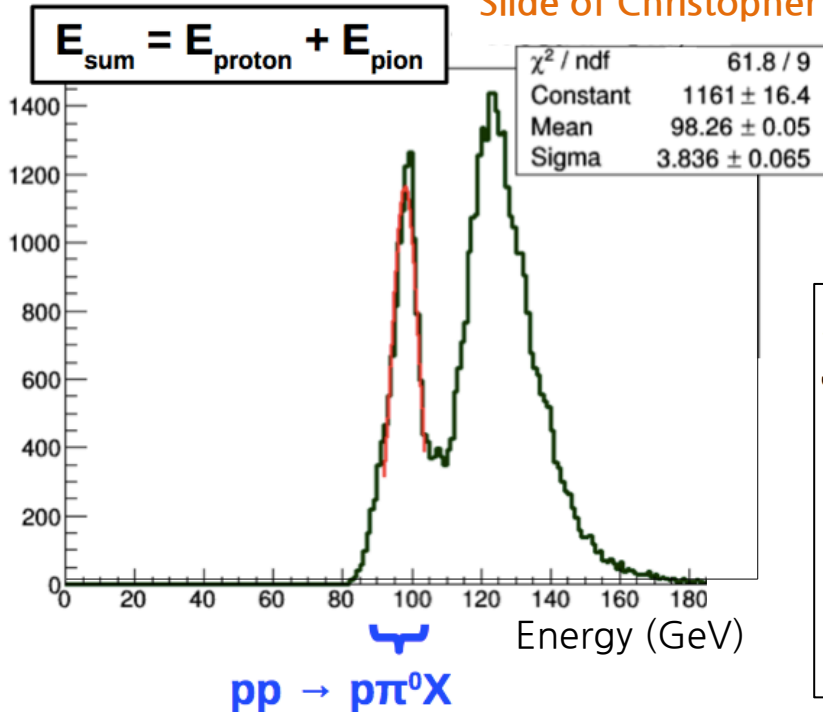
- We can see a clear detector correlation for the very forward  $\pi^0$   $A_N$ .
- The combined analysis is also necessary to design a trigger for a specific type of correlation.

# RHICf + RP analysis

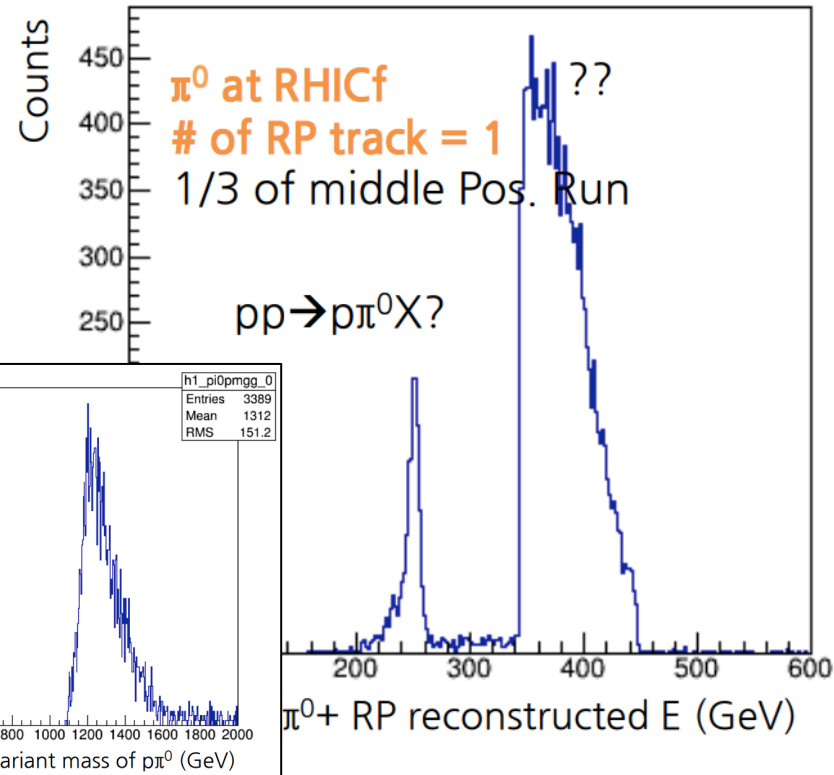
STAR at  $\sqrt{s} = 200$  GeV

Diffractive  $pp \rightarrow p\pi^0 X$

Slide of Christopher Dilks

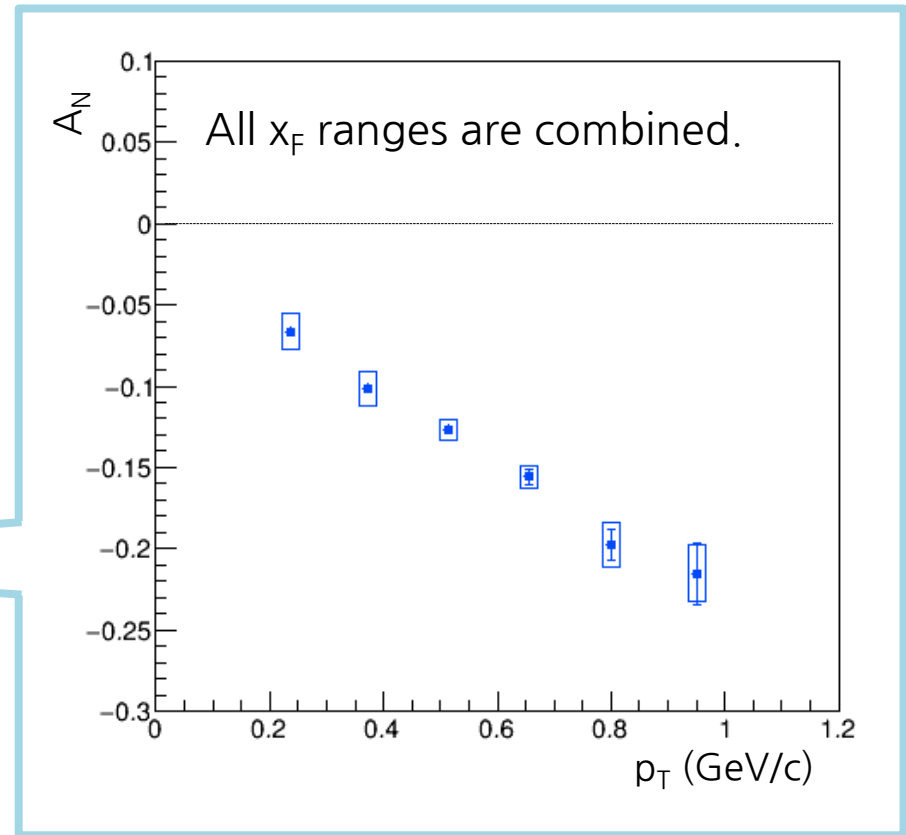
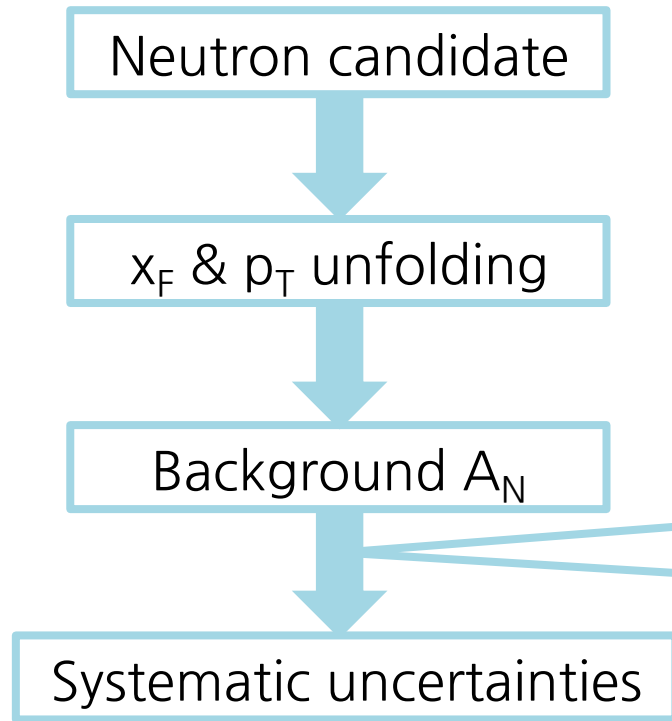


RHICf at  $\sqrt{s} = 510$  GeV



- We will extend the study for the  $p\pi^0$  final state which was previously studied at STAR.
- We expect higher statistics and resolution with the RHICf-II detector.

# RHICf neutron analysis



- Currently, we're finalizing the analysis for the neutron  $A_N$ .
- Right after it is done, we will resume the RHICf-STAR combined analysis in earnest in the first half year by at first adding the RHICf library at STAR.