

# Future of Hadron Structure

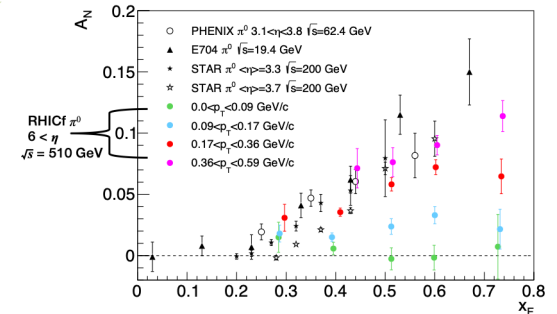
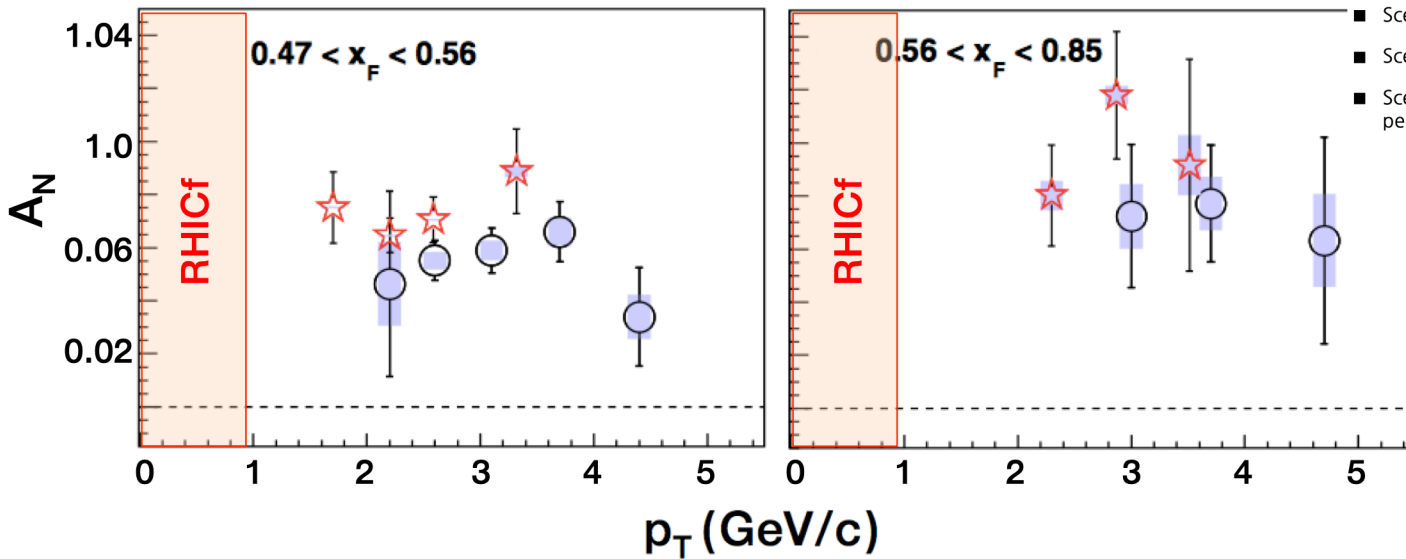
RIKEN

Itaru Nakagawa

# Sensitive Region for CGC in pA

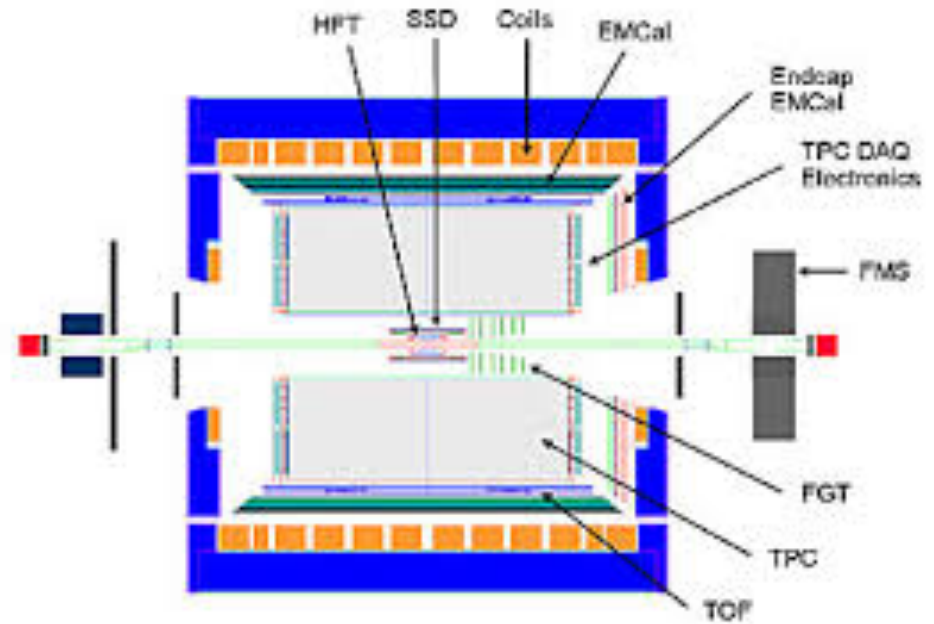
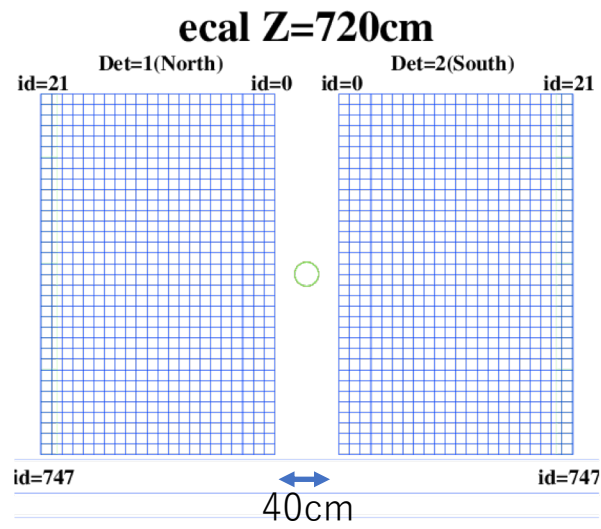


$\sqrt{s} = 200 \text{ GeV}$  ○  $p \uparrow + p \rightarrow \text{Cluster} + X$  (PHENIX)  
 ☆  $p \uparrow + p \rightarrow \pi^0 + X$  (STAR) *Phys. Rev. D90 (2014) 0120*



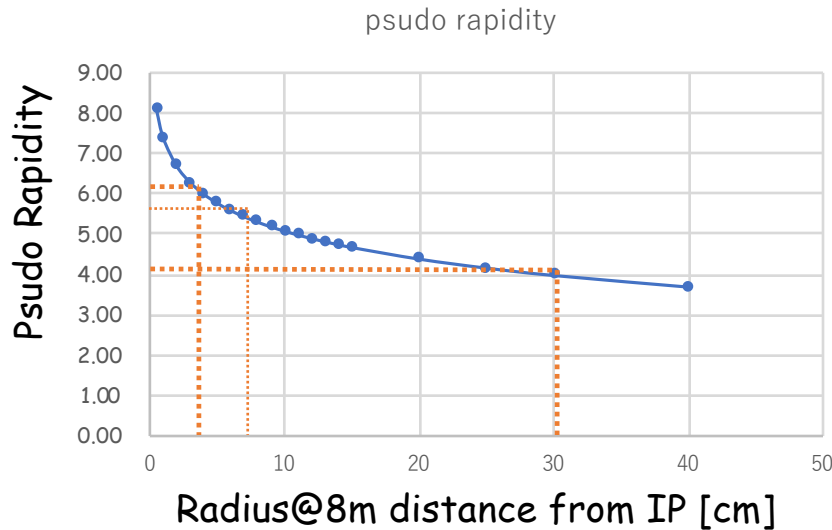
- Scenario 1: There is perturbative contribution even in lower  $p_T$  area.
- Scenario 2: The origin of  $x_F$  scaling is non-perturbative process.
- Scenario 3: Higher (lower) momentum  $A_N$  is just mainly due to (non-) perturbative process respectively.

# STAR Forward Acceptance

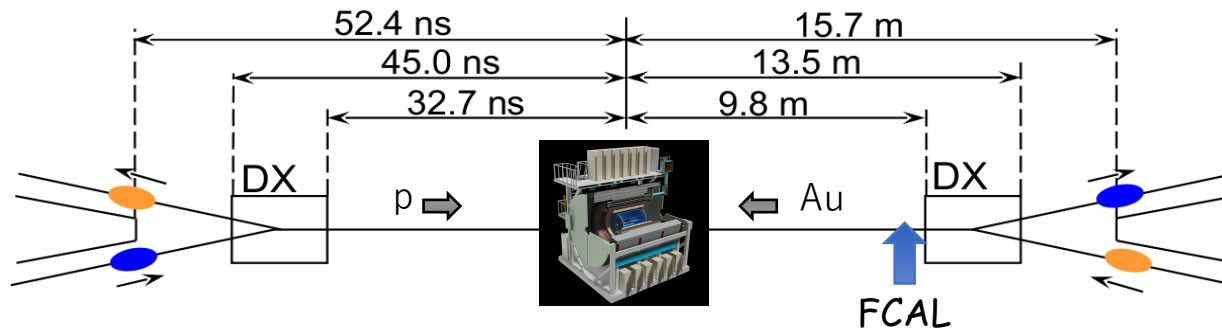
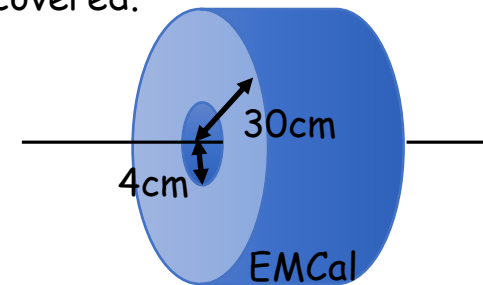


STAR Forward Upgrade

# Detector Location



- Rapidity of interest is  $4 < \eta < 6$ .
- The detector position just in front of DX magnet is optimal ( $z \sim 8$  m from IP).
- The radius  $4 < r < 30$  cm is to be covered.



# sPHENIX Running schedule

2022 p+p 200GeV? 500GeV?

	Year	Species	Energy [GeV]	Wks	Rec. L	Samp. L	Samp. L (all-z)
2023	Year-1	Au+Au	200	16.0	7 nb <sup>-1</sup>	8.7 nb <sup>-1</sup>	34 nb <sup>-1</sup>
2024	Year-2	<i>p+p</i>	200	11.5	—	48 pb <sup>-1</sup>	267 pb <sup>-1</sup>
		<i>p+Au</i>	200	11.5	—	0.33 pb <sup>-1</sup>	1.46 pb <sup>-1</sup>
2025	Year-3	Au+Au	200	23.5	14 nb <sup>-1</sup>	26 nb <sup>-1</sup>	88 nb <sup>-1</sup>
	Year-4	<i>p+p</i>	200	23.5	—	149 pb <sup>-1</sup>	783 pb <sup>-1</sup>
	Year-5	Au+Au	200	23.5	14 nb <sup>-1</sup>	48 nb <sup>-1</sup>	92 nb <sup>-1</sup>

Polarized Proton Beam

} If extended

# Future Schedule

