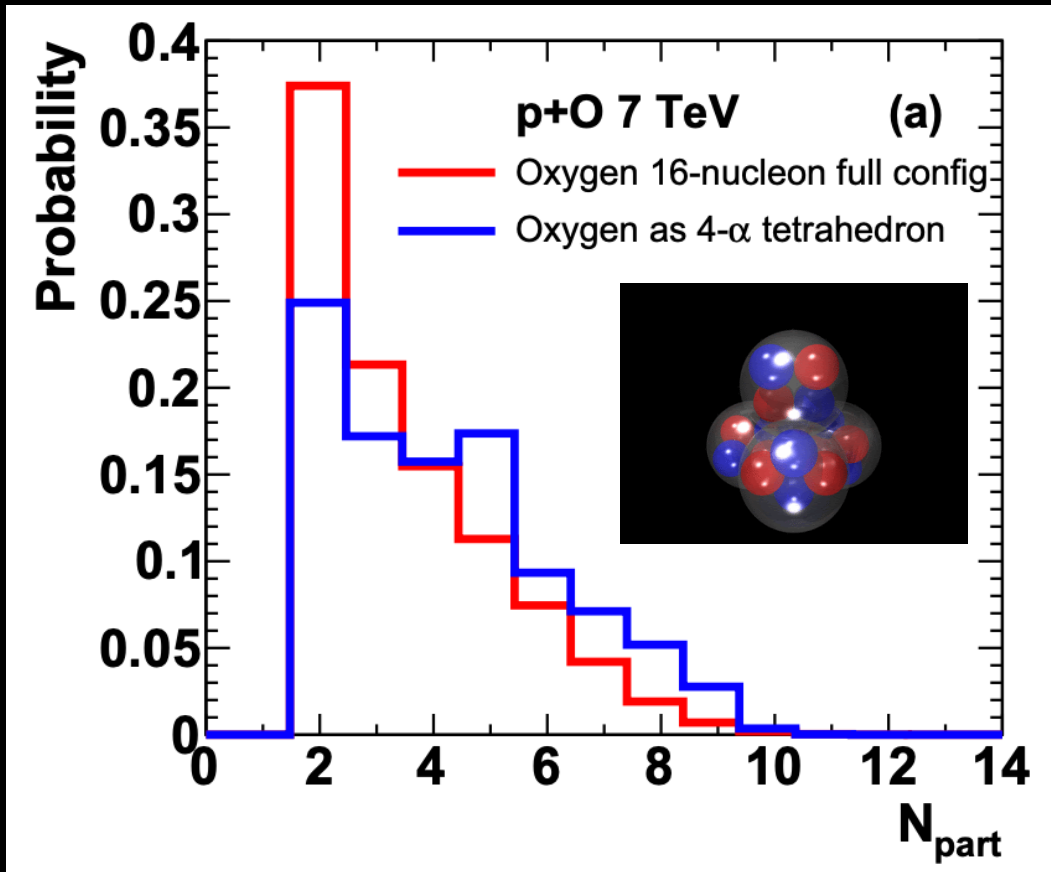


Requested to Provide 2 Slides on:  
LHC Run3/4 and sPHENIX at RHIC



Sanghoon Lim *et al.*, <https://arxiv.org/abs/1812.08096>

Not so interested in determining Oxygen structure

Toy models of 4- $\alpha$  are not to be taken seriously

Really want small system (like in pPb) but over a slightly larger area and less model dependent

Can that give better control to understand time scale for jet quenching, etc.

True statement

The field has always learned valuable lessons by changing geometry and doing so at different energies

# 3-year sPHENIX run plan

Year	Species	$\sqrt{s_{NN}}$ [GeV]	Cryo Weeks	Physics Weeks	Rec. Lum. $ z  < 10$ cm	Samp. Lum. $ z  < 10$ cm
2023	Au+Au	200	24 (28)	9 (13)	3.7 (5.7) nb <sup>-1</sup>	4.5 (6.9) nb <sup>-1</sup>
2024	$p^\uparrow p^\uparrow$	200	24 (28)	12 (16)	0.3 (0.4) pb <sup>-1</sup> [5 kHz] 4.5 (6.2) pb <sup>-1</sup> [10%-str]	45 (62) pb <sup>-1</sup>
2024	$p^\uparrow$ +Au	200	-	5	0.003 pb <sup>-1</sup> [5 kHz] 0.01 pb <sup>-1</sup> [10%-str]	0.11 pb <sup>-1</sup>
2025	Au+Au	200	24 (28)	20.5 (24.5)	13 (15) nb <sup>-1</sup>	21 (25) nb <sup>-1</sup>

**p+Au – heavy flavor  $v_n$**   
**p+Au – high  $p_T$  jet  $v_2$  (w/sEPD)**  
**p+Au – check  $v_2, v_3$  with PHENIX + STAR kinematics (w/ sEPD)**  
**No small A+A during this time!**

# Potential opportunity



Year	Species	$\sqrt{s_{NN}}$ [GeV]	Cryo Weeks	Physics Weeks	Rec. Lum. $ z  < 10$ cm	Samp. Lum. $ z  < 10$ cm
2026	$p^\uparrow p^\uparrow$	200	28	15.5	1.0 pb <sup>-1</sup> [10 kHz] 80 pb <sup>-1</sup> [100%-str]	80 pb <sup>-1</sup>
-	O+O	200	-	2	18 nb <sup>-1</sup> 37 nb <sup>-1</sup> [100%-str]	37 nb <sup>-1</sup>
-	Ar+Ar	200	-	2	6 nb <sup>-1</sup> 12 nb <sup>-1</sup> [100%-str]	12 nb <sup>-1</sup>
2027	Au+Au	200	28	24.5	30 nb <sup>-1</sup> [100%-str/DeMux]	30 nb <sup>-1</sup>

**O+O and Ar+Ar geometries at RHIC**  
**Statistical for high  $p_T$  studies including  $v_2$**

