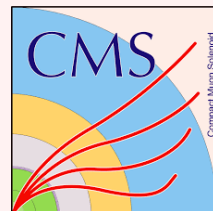


Recent Progress in Heavy-Ion Collisions

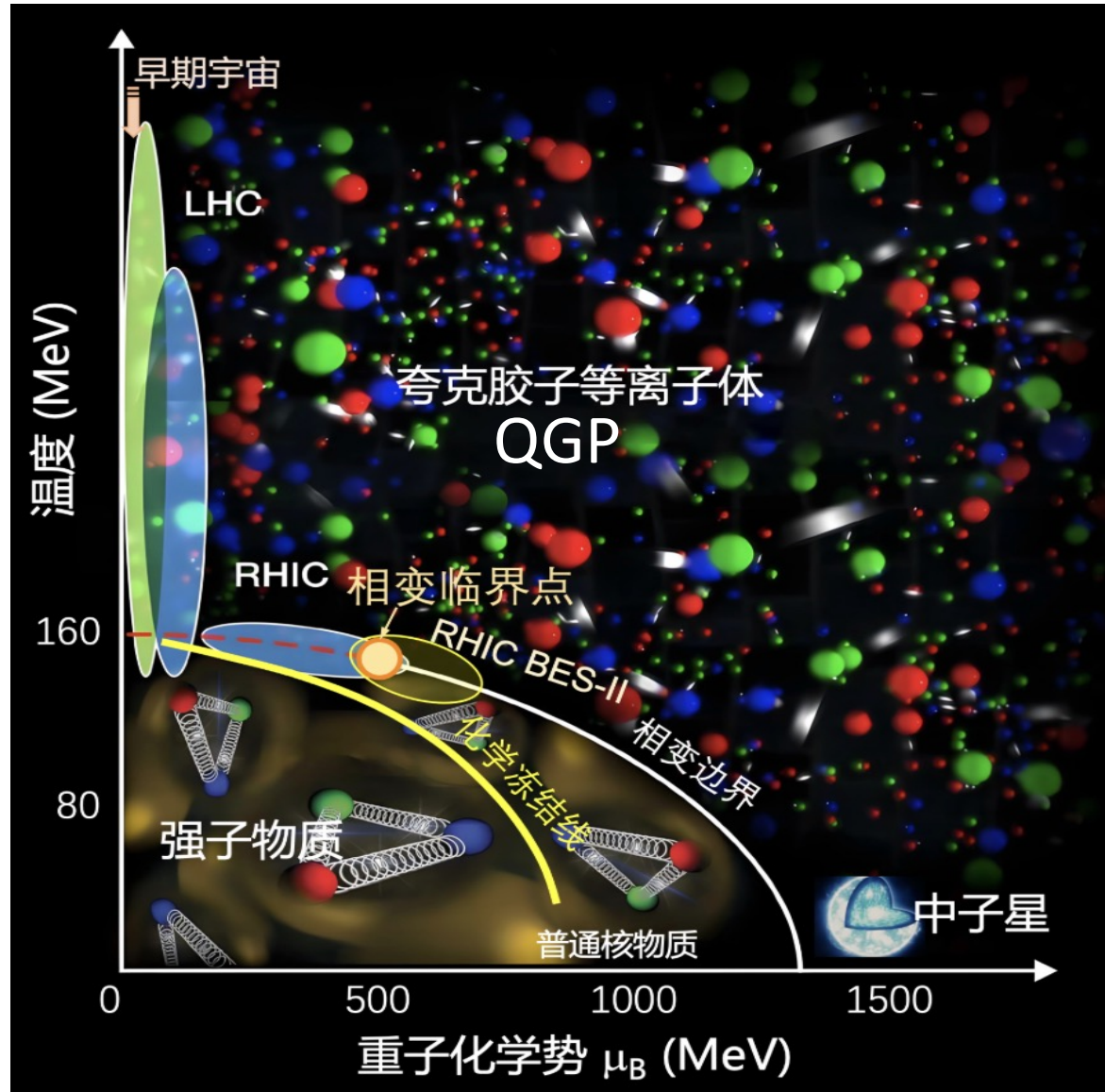
--- Selected Experimental Highlights of Chinese Teams



叶早晨（华南师大）

中国物理学会高能物理分会，2026年7月13-19日 广州

Why Heavy-Ion Collisions



➤ QCD phase diagram:

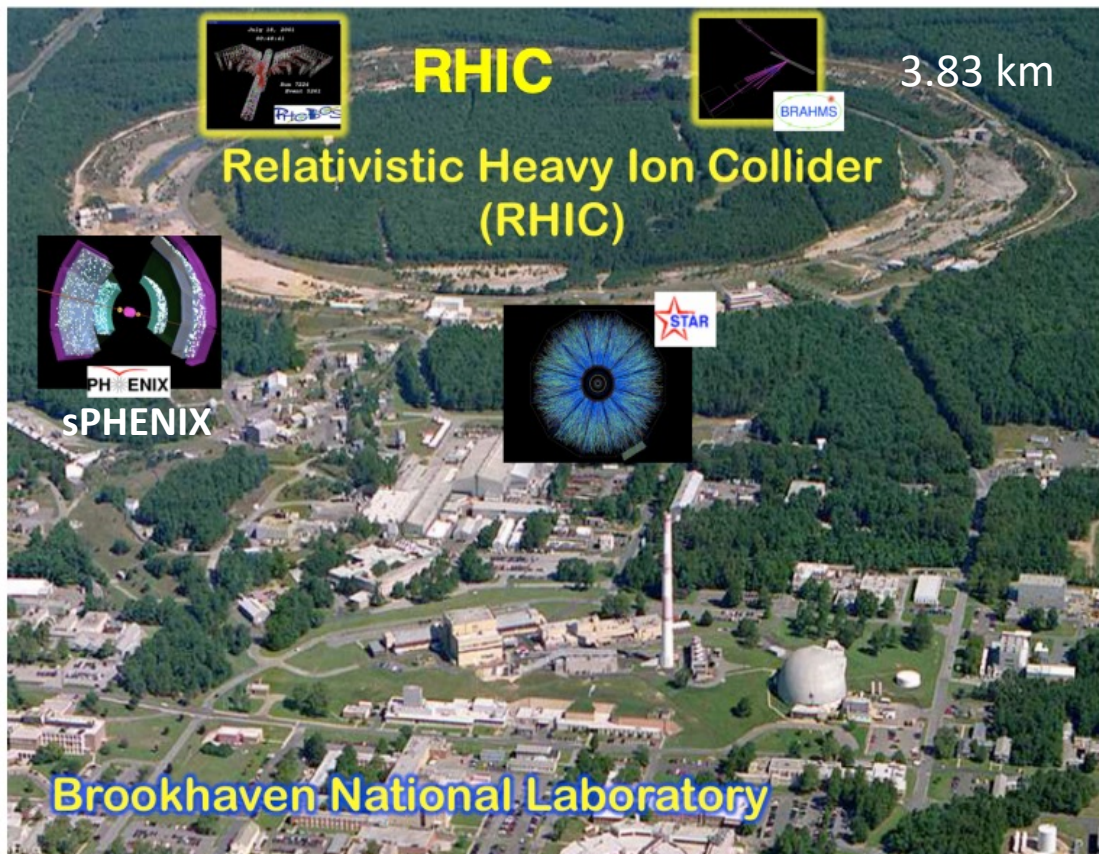
- Maps phases of strongly interacting matter under different conditions

➤ Heavy-ion collisions:

- Create extreme QCD matter
- Produce the Quark-Gluon Plasma (QGP)
- Study QGP's properties and evolution
- Explore QCD phase diagram with various trajectories

High Energy Heavy-Ion Experiments

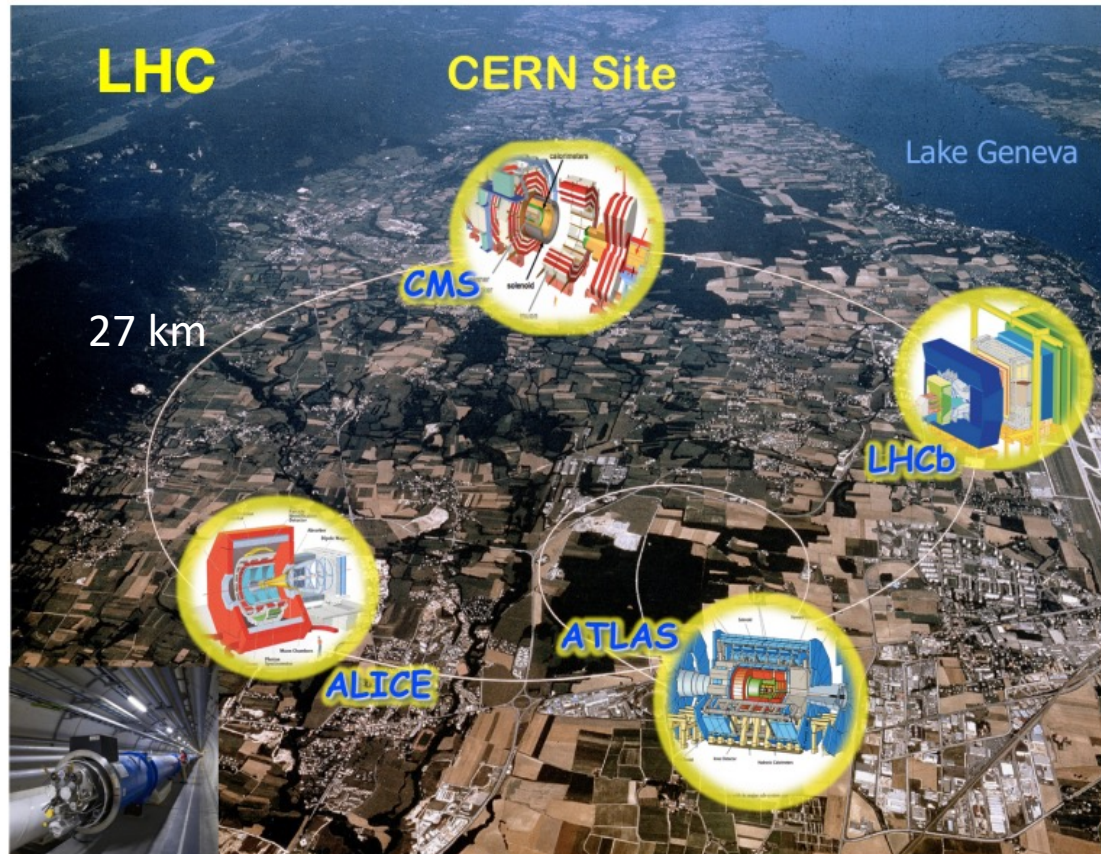
美国相对论重离子对撞机



RHIC (2000 - 2026):

- pp, pAu, dAu, OO, CuCu, AuAu, UU...
- AuAu @ 3-200GeV (Beam Energy Scan)

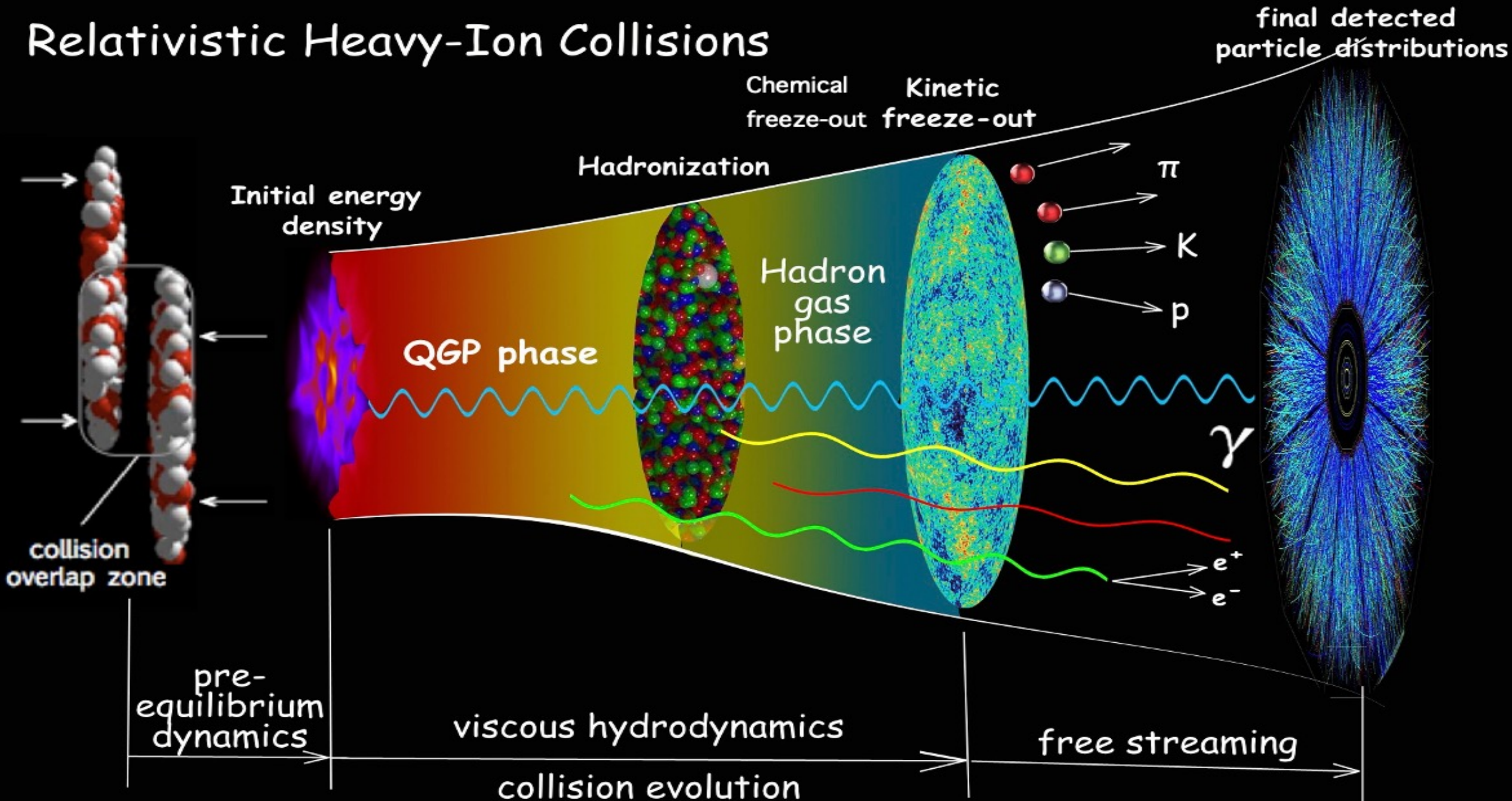
欧洲大型强子对撞机



LHC (2009 -):

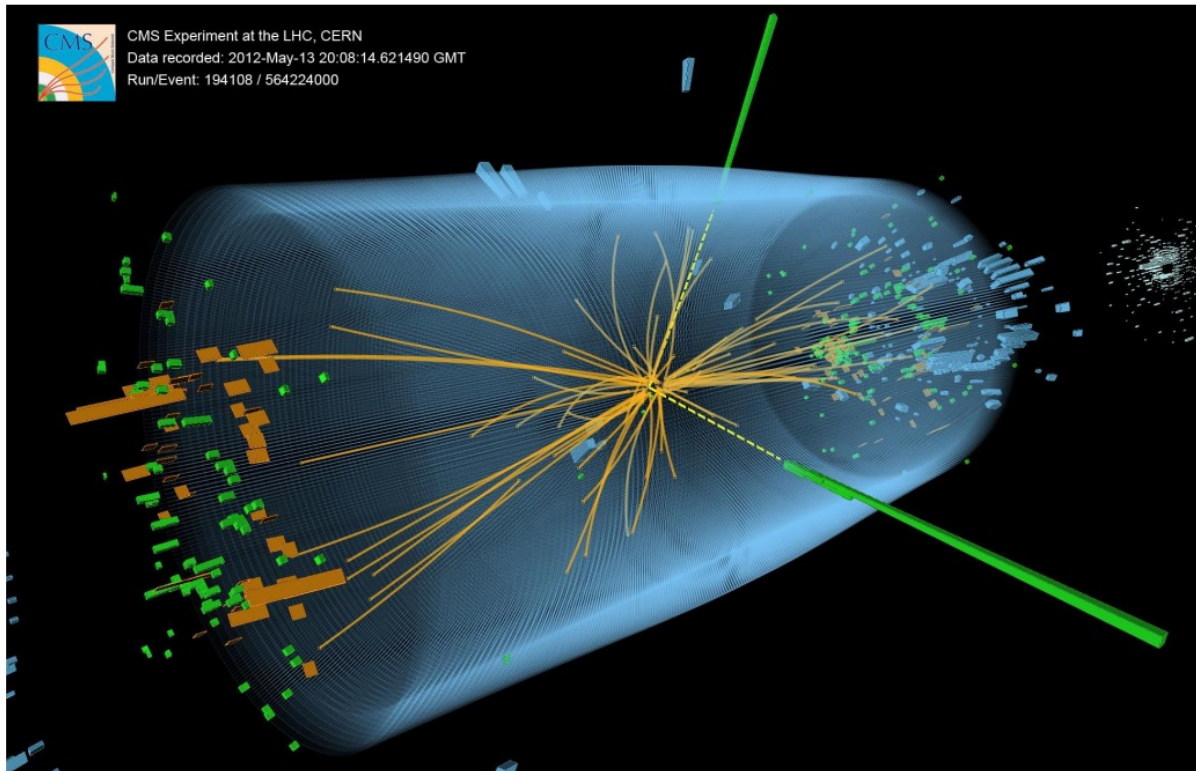
- pp, pPb, OO, NeNe, p-O, PbPb
- PbPb @ 2.76, 5.02, 5.36 TeV

Relativistic Heavy-Ion Collisions

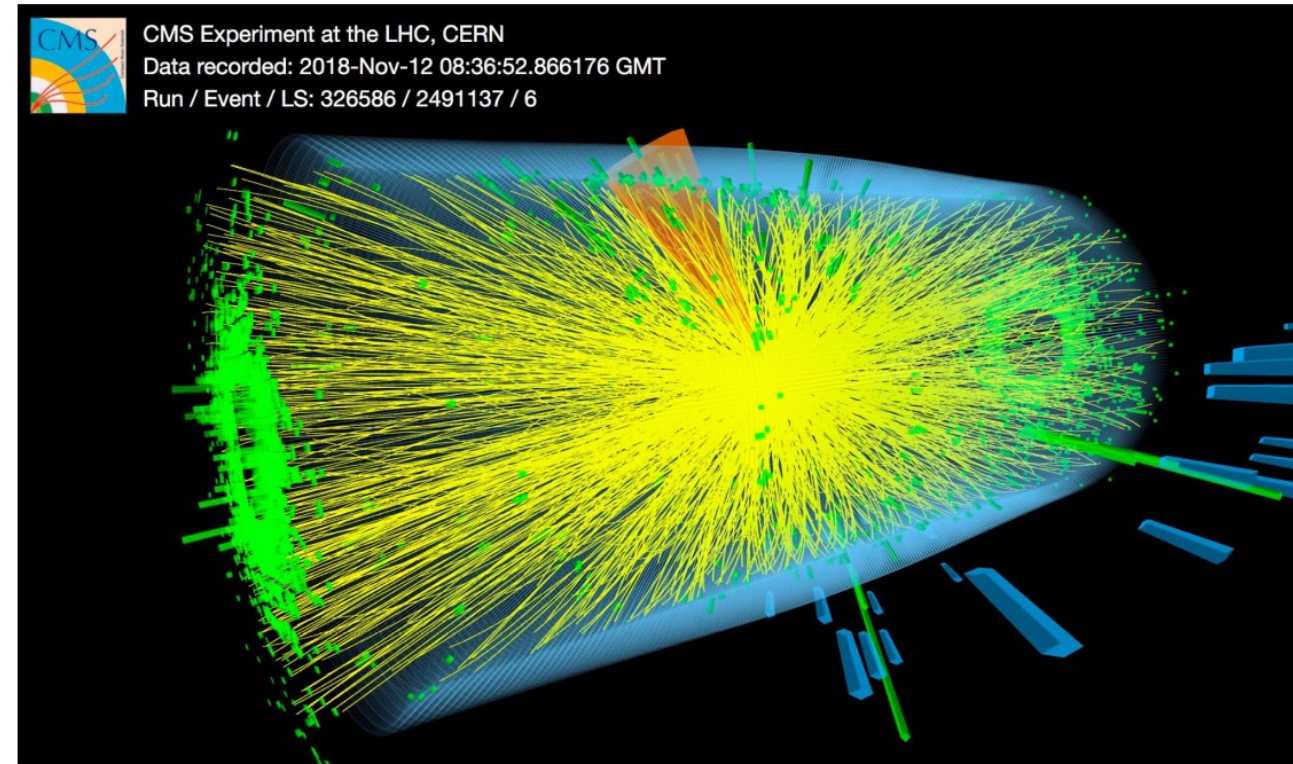


Event Display of Collisions

Proton-Proton collision at CMS

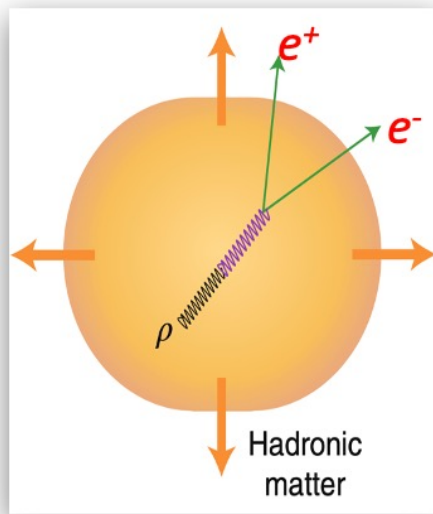
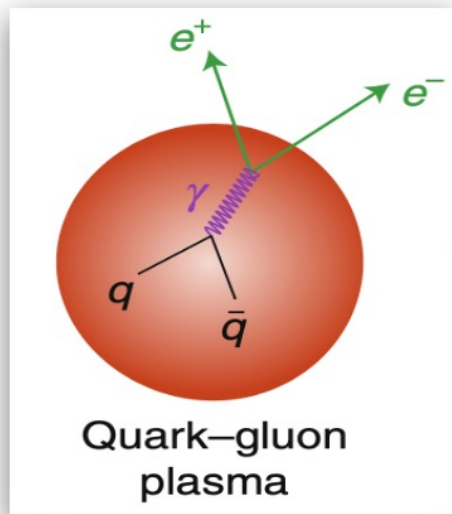


Lead-Lead collision at CMS



Unlike the relatively simple pp event, a heavy-ion collision produces an extremely dense spray of particles from the expanding fireball.

Thermal Dileptons: A Thermometer of QGP



$$q + \bar{q} \rightarrow \gamma^* \rightarrow e^+ + e^- \quad \pi^+ + \pi^- \rightarrow \rho^* \rightarrow e^+ + e^-$$

STAR, NC 16 9098 (2025)

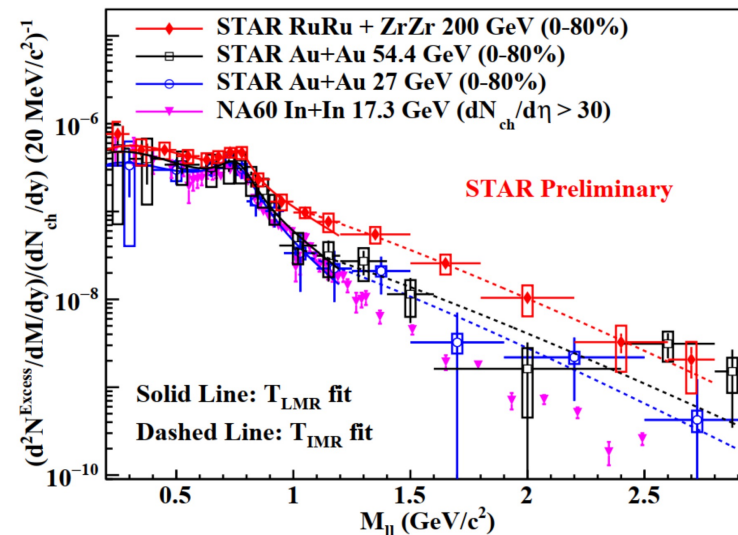
SCIENTIFIC
AMERICAN

《科学美国人》专题报道

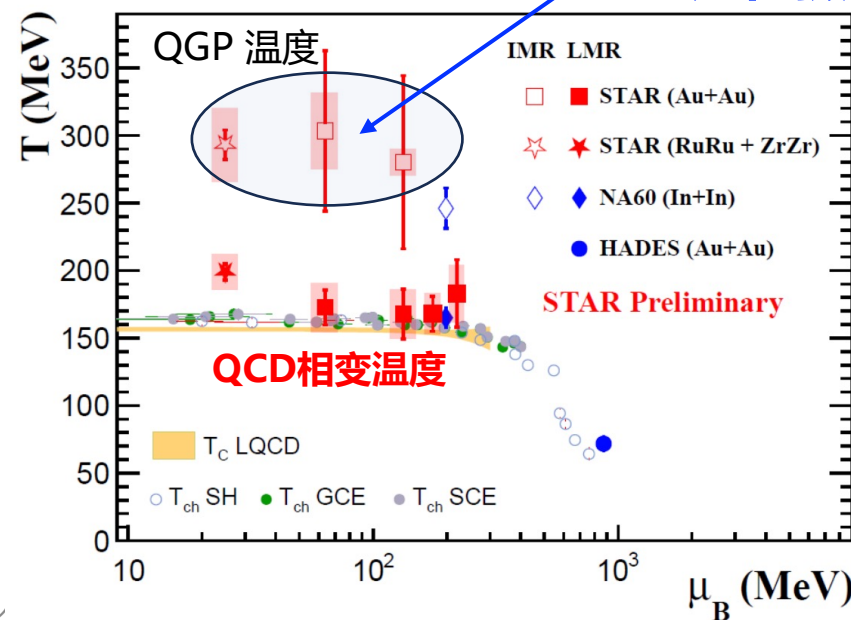
Scientists Create 3.3 Trillion Degree Particle Soup to Mimic the Universe Just after the Big Bang

Scientists Measure the Temperature of the Universe Just after the Big Bang

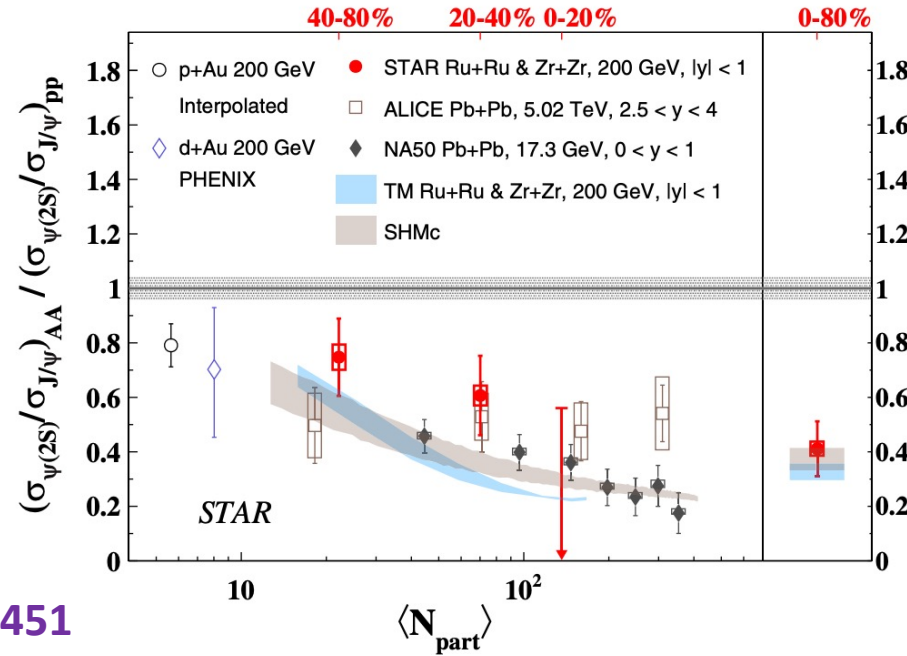
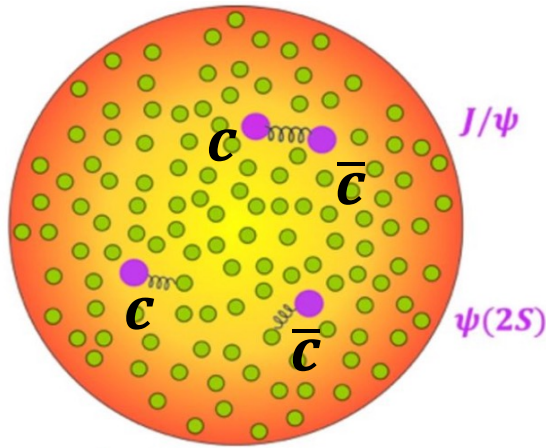
Quark-gluon plasma, a bizarre state of matter that mimics the early cosmos, is the hottest thing ever made on Earth



~ 3.3万亿摄氏度!



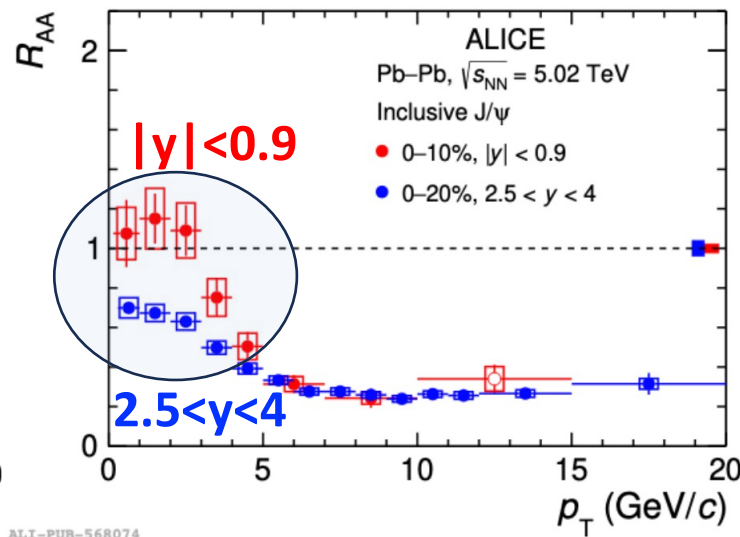
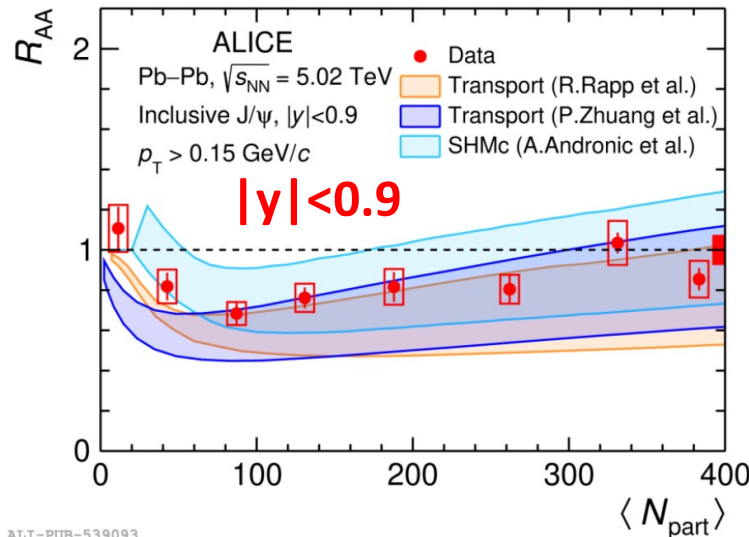
Quarkonium As a Probe of Hot QCD Matter



STAR, PRL 136, 122302 (2026)

- First evidence of **charmonium sequential suppression** at RHIC

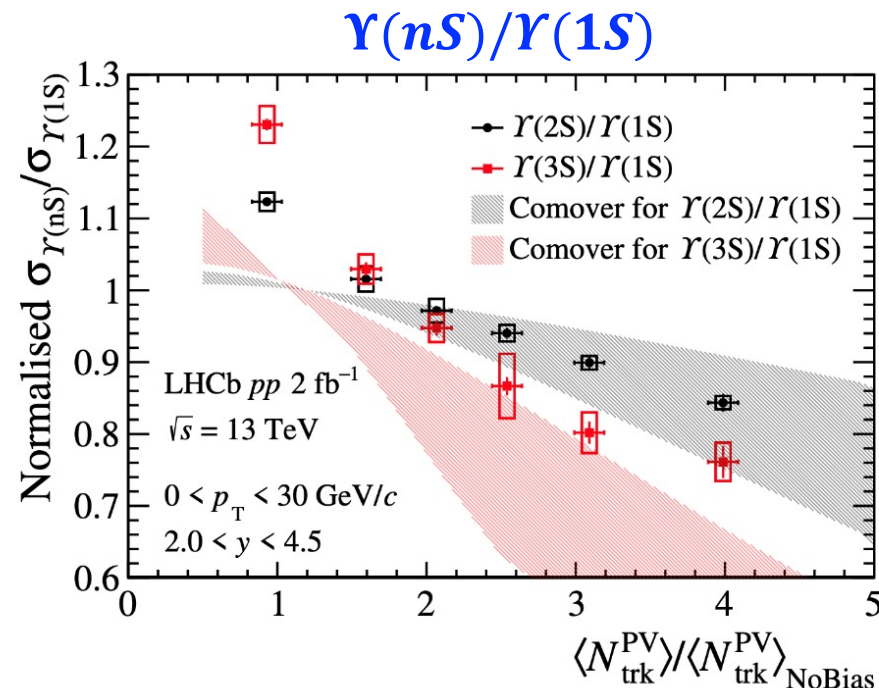
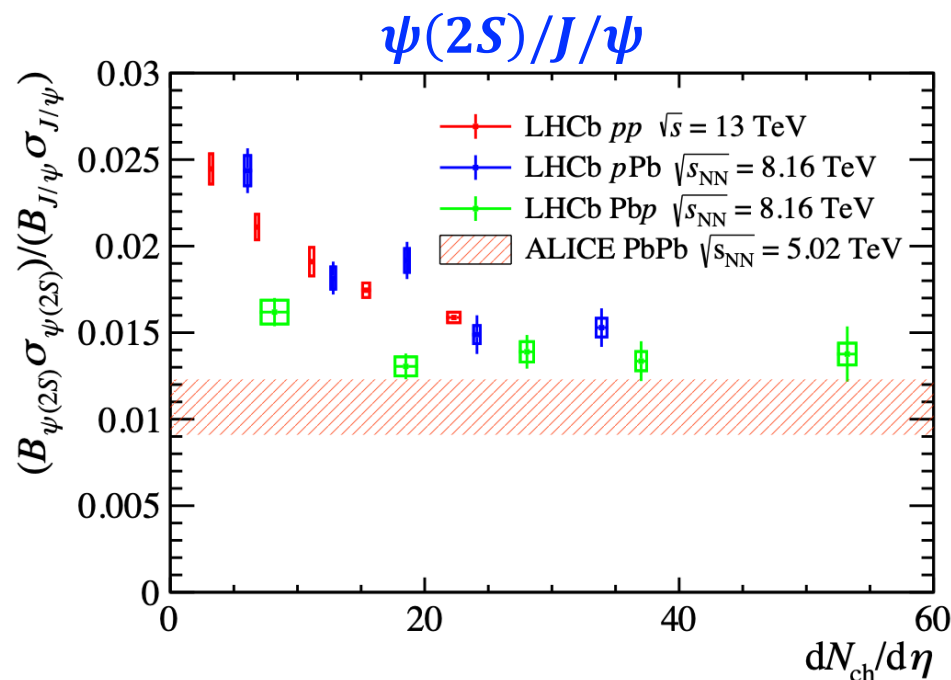
ALICE, PLB 849 (2024) 138451



- Direct evidence for J/ψ **regeneration** at LHC, larger contribution at mid rapidity

Quarkonium Sequential Suppression in Small Systems

Sequential quarkonium suppression is a hallmark signature of QGP formation

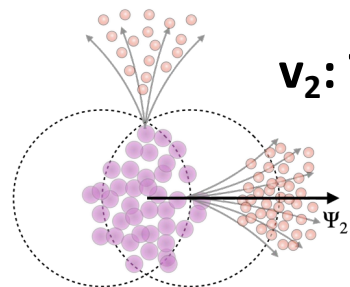


LHCb, JHEP 05 (2025) 011; JHEP 07 (2025) 235; JHEP 11 (2025) 169

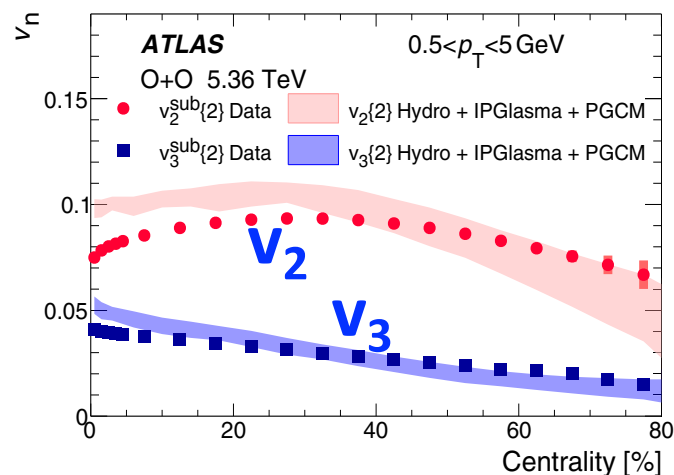
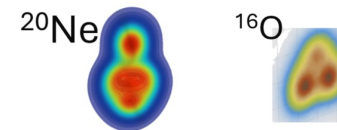
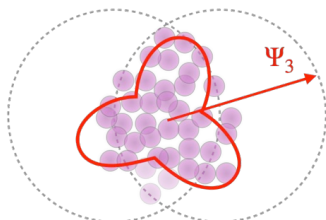
- LHCb observed **sequential suppression in high-multiplicity small systems**, providing new evidence for QGP-like medium effects or **co-mover** effects in small systems.

Collectivity in Intermediate-Size Systems at the LHC

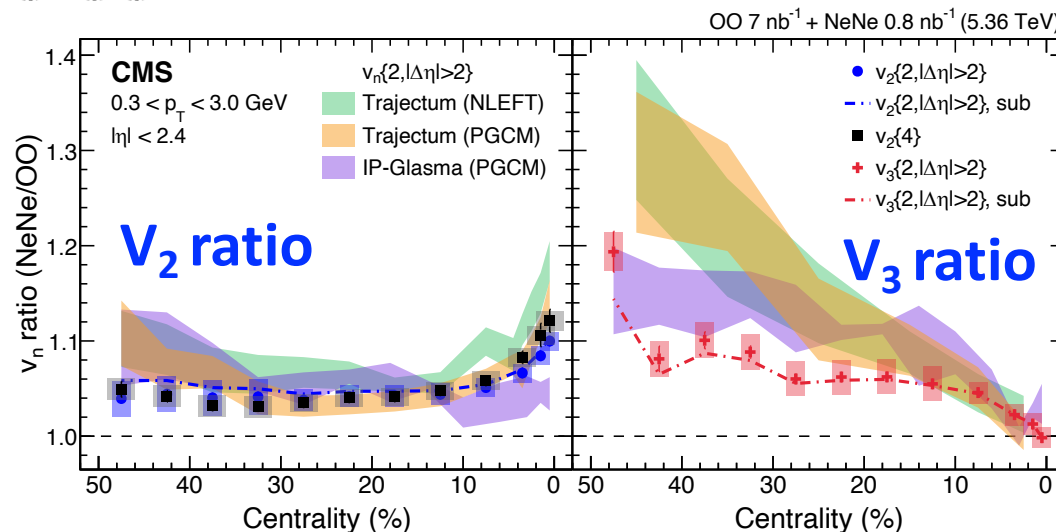
v_2 : Tests hydrodynamic response to initial geometry.



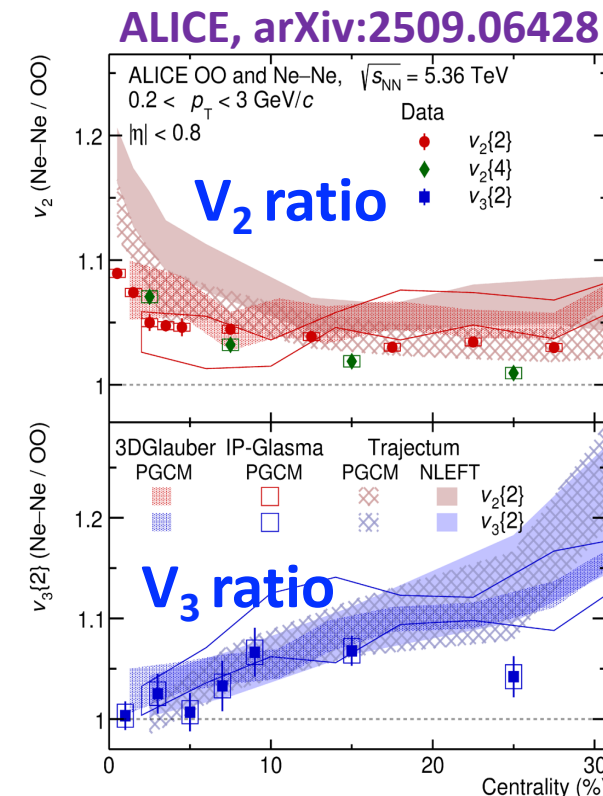
v_3 : Tests hydrodynamic response to initial-state fluctuations.



ATLAS, PRC 113 (2026) 045205

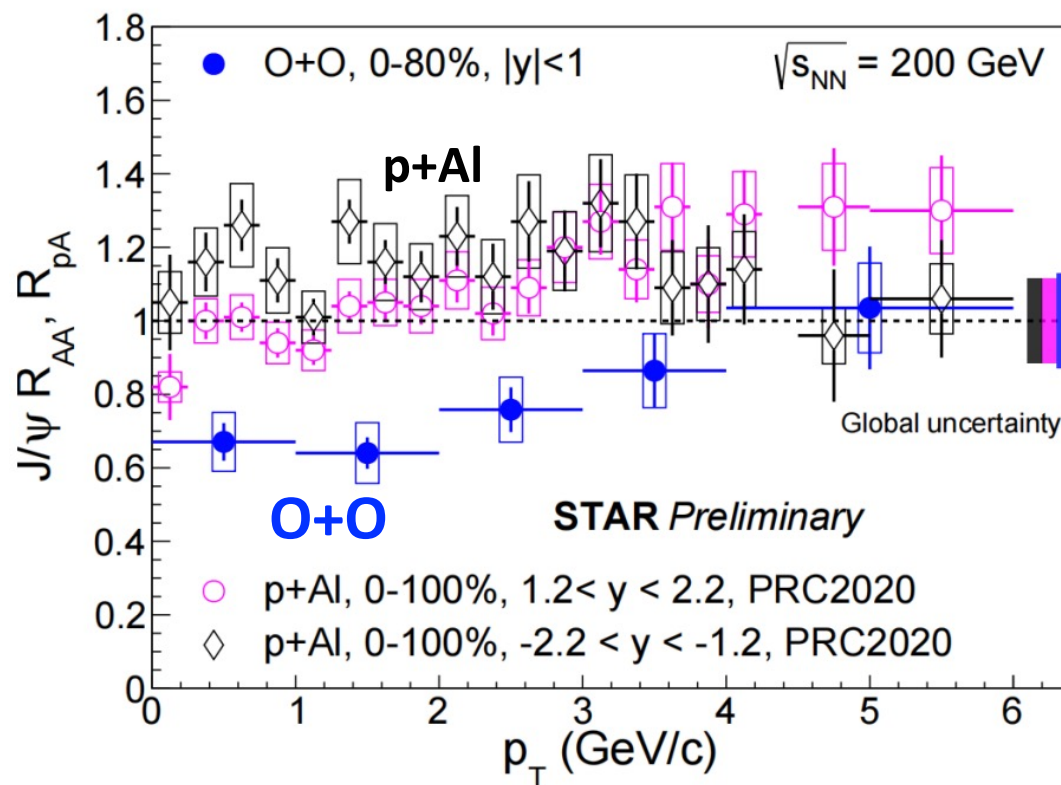
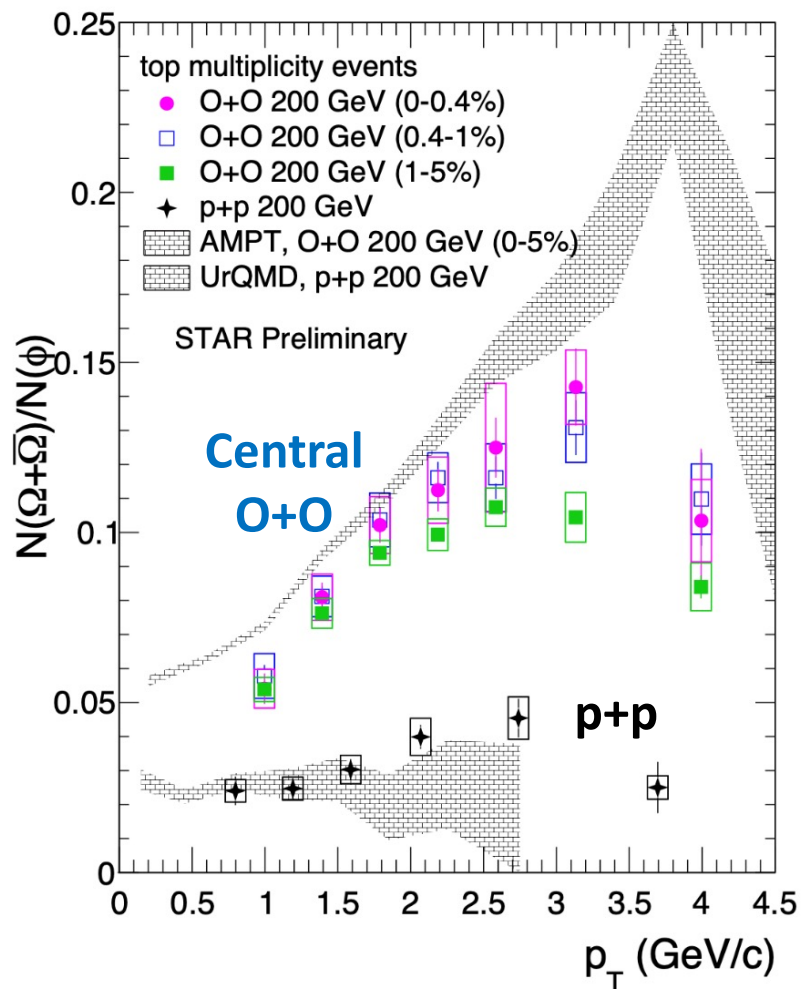


CMS, arXiv:2510.02580, PRL accepted



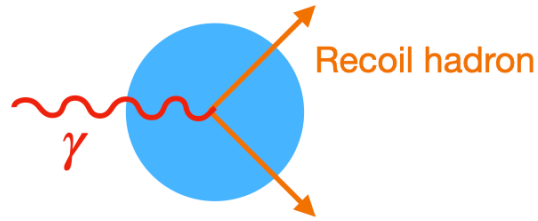
- **First** evidence of hydro. response to initial geom. and fluct. in OO, NeNe collisions
- **Larger** flow values are observed in **NeNe** than **OO**

Strangeness Enhancement and J/ψ Suppression in OO at RHIC



- Clear J/ψ suppression in OO collisions at low p_T
- Significant enhancement of the Ω/ϕ ratio in central OO collisions relative to pp collisions
- Support QGP is formed in OO at RHIC!

Quenching Effects in OO at LHC and RHIC



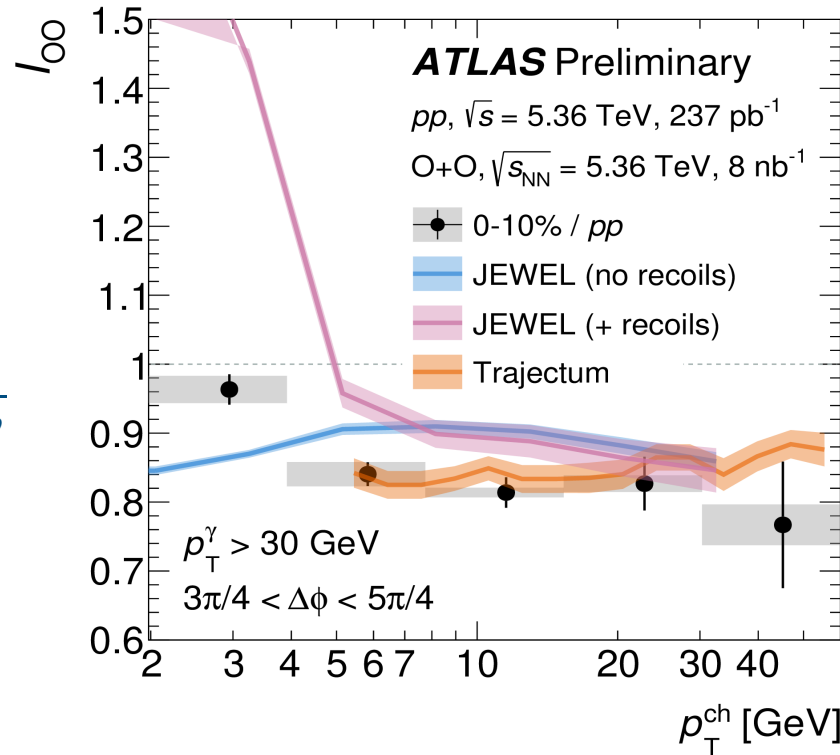
Per- γ yields of charged particles

$$Y(p_T) = \frac{1}{N_\gamma} \frac{d^2 N_{ch}}{dp_T d\Delta\phi}$$

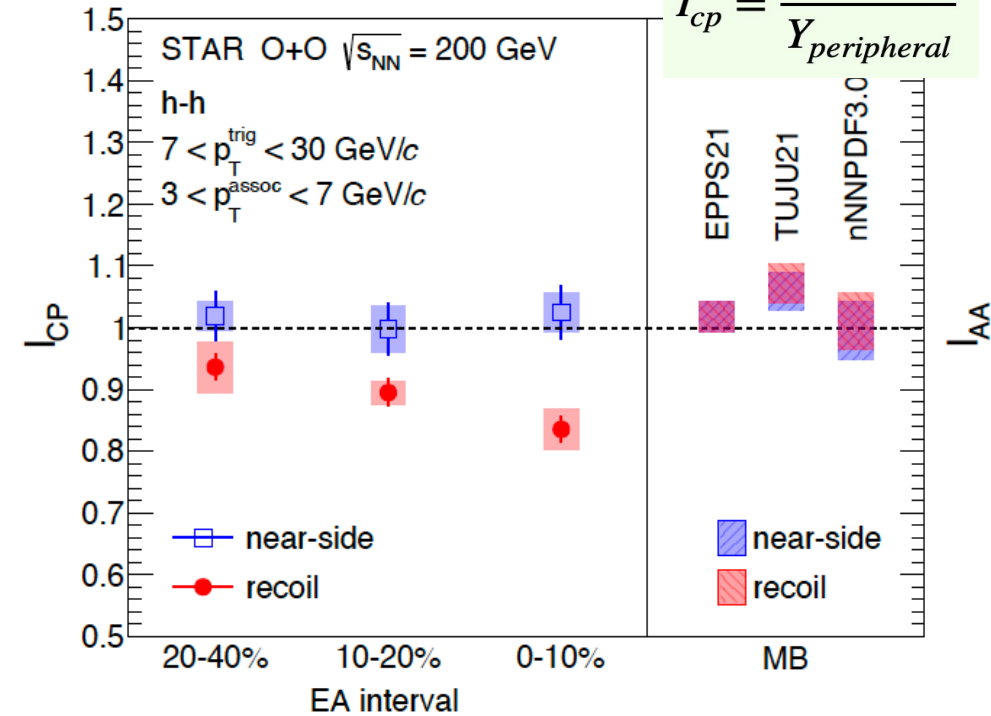
Jet quenching observable

$$I_{AA}(p_T) = \frac{Y^{A+A}}{Y^{p+p}}$$

ATLAS-CONF-2026-007



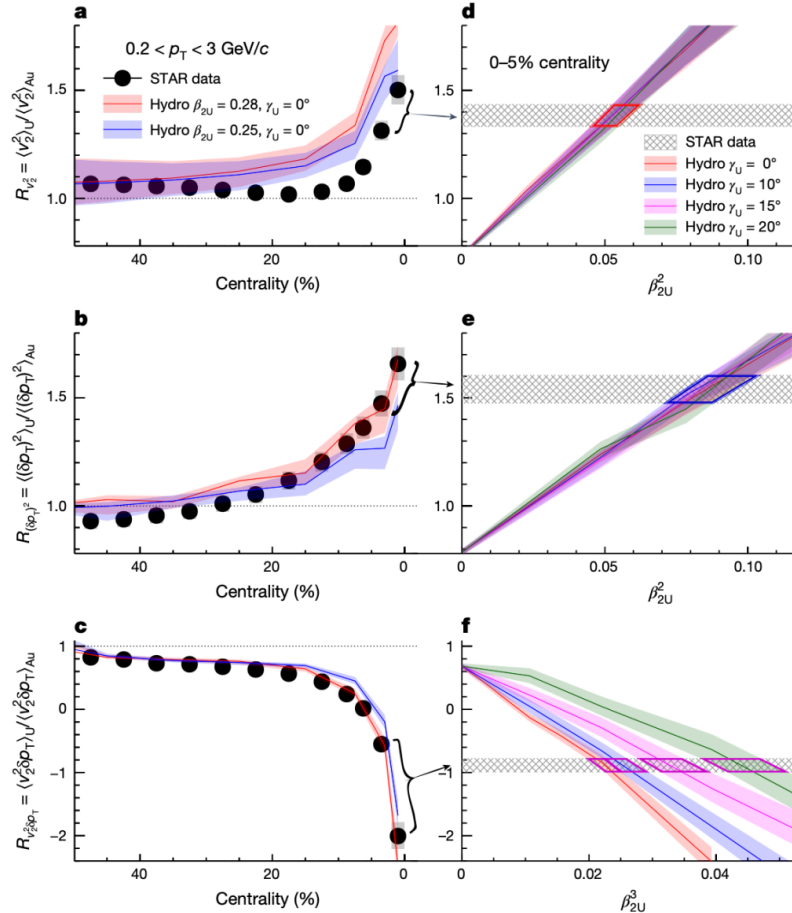
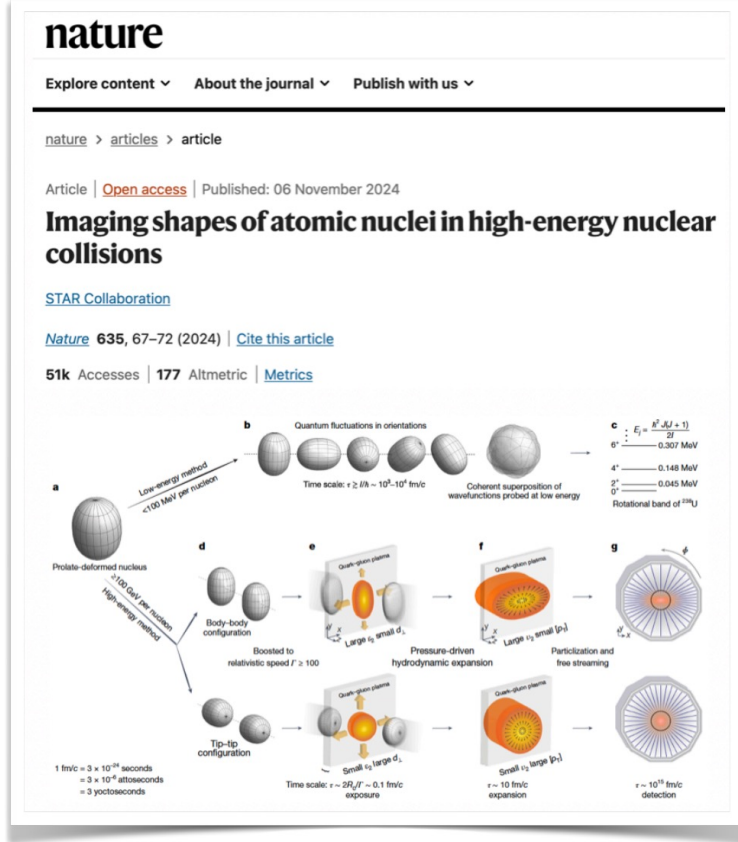
Di-hadron correlation



STAR, arXiv: 2604.13935, submitted PRL

- **Jet quenching** observed via high- p_T jets (ATLAS) and di-hadron correlations (STAR), providing **complementary evidence for QGP formation** in O+O collisions.

Imaging ^{238}U Shapes via v_n - $[p_T]$ Correlations



- Ratios (UU/AuAu) cancel final state effects and isolate the effects of nuclear structures!
- Hydro. model studies confirm connection btw final collective motion and nuclear structure
- Allows the **first constraints** on the **axial quadrupole** (四极轴对称形变) and **triaxial deformations** (三轴形变) of ^{238}U nucleus in HIN.

$$\beta_2(U) = 0.297 \pm 0.015,$$

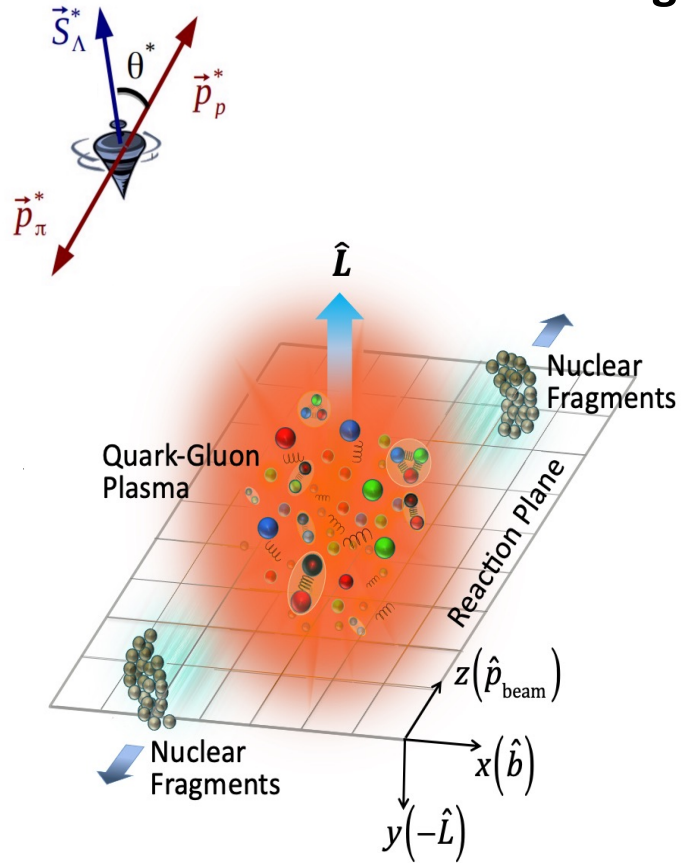
$$\gamma(U) = 8.7^\circ \pm 4.5^\circ$$

STAR, Nature 635, 67 (2024); Rep. Prog. Phys. 88 (2025) 108601; arXiv: 2510.19645

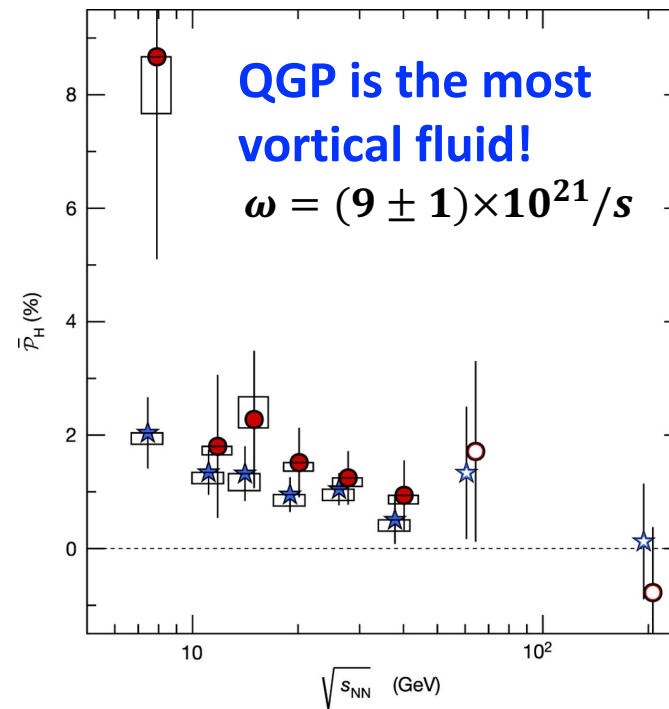
- Established a novel tool for imaging nuclear shapes in heavy-ion collisions.

Global Spin Polarization Along OAM Direction

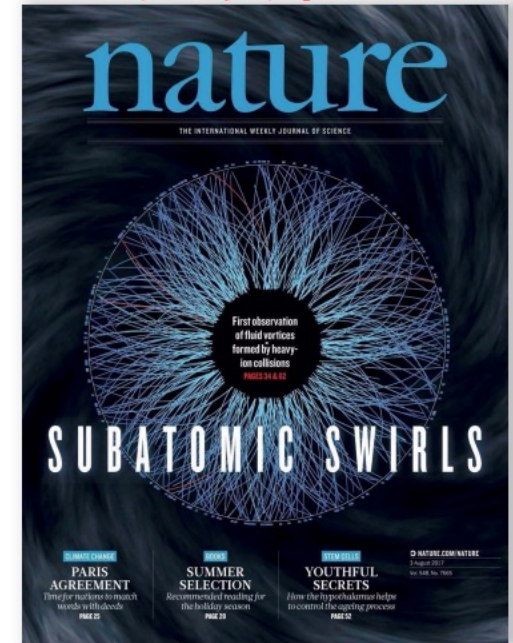
Huge orbital angular momentum $\rightarrow$ QGP vorticity $\rightarrow$ spin-vorticity coupling $\rightarrow$ hyperon global polarization.



STAR, Nature 548, 62, (2017)



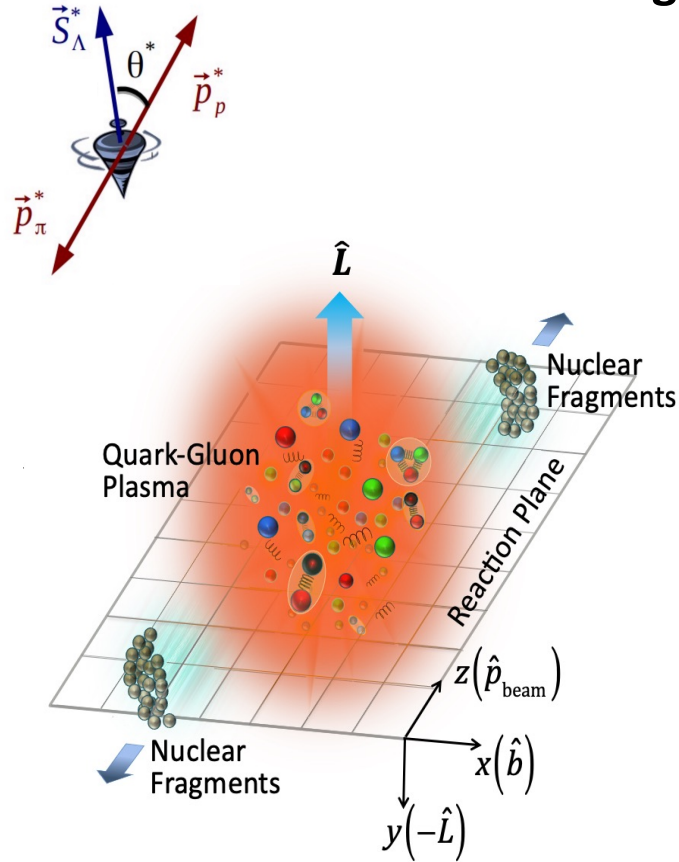
封面文章



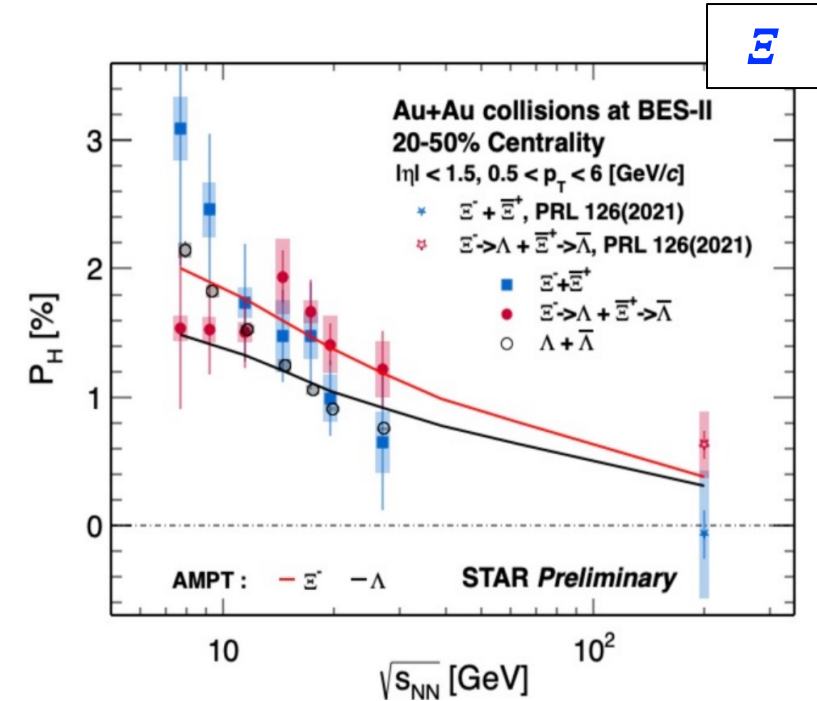
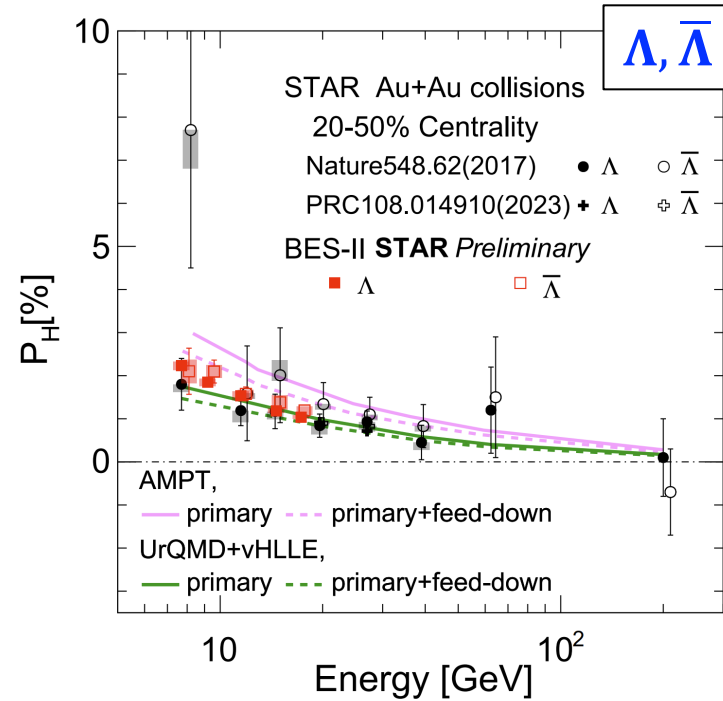
Z.T. Liang & X.N. Wang, PRL 94, 102301 (2005)

Global Spin Polarization Along OAM Direction

Huge orbital angular momentum $\rightarrow$ QGP vorticity $\rightarrow$ spin-vorticity coupling $\rightarrow$ hyperon global polarization.



Z.T. Liang & X.N. Wang, PRL 94, 102301 (2005)

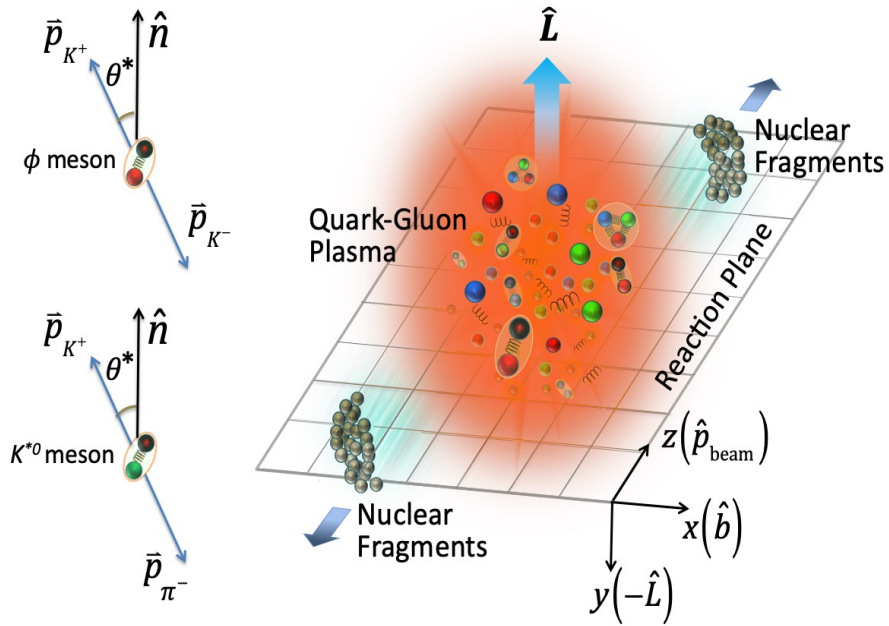


High precision STAR BES-II data ($\sim 10 \times$ BES-I):

- Confirm the energy dependence, **no $\Lambda - \bar{\Lambda}$ splitting**
- First measurement of Ξ polarization, **similar decreasing trend** with energy as Λ .

Global Spin Alignment Along OAM Direction

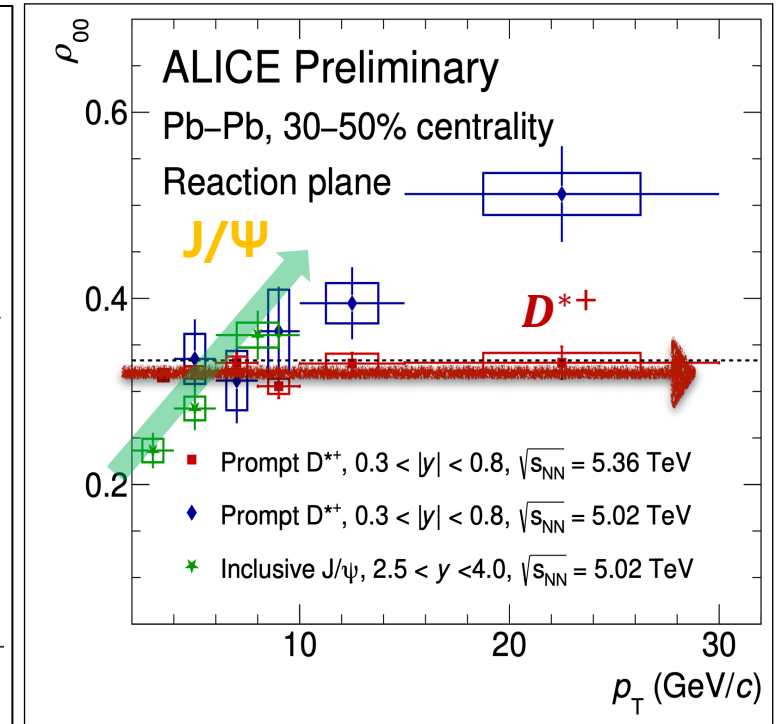
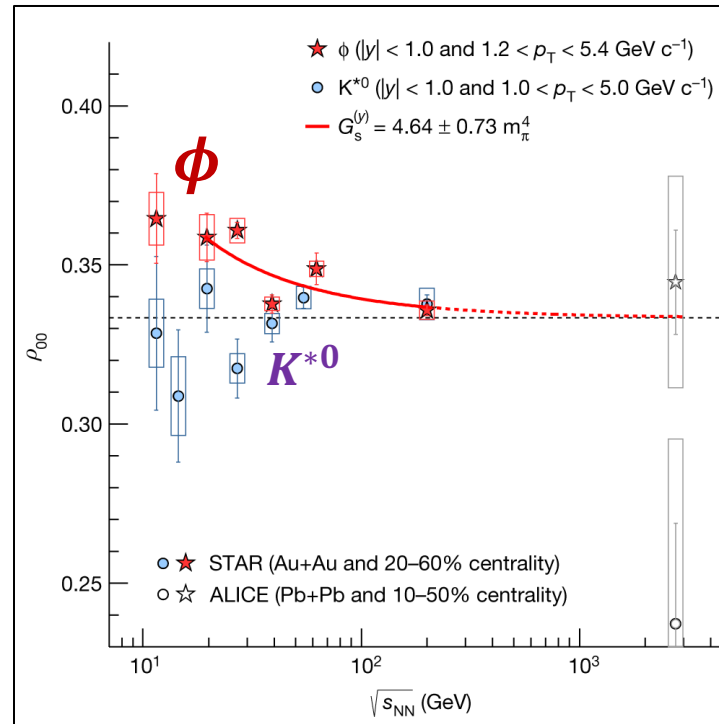
Huge orbital angular momentum $\rightarrow$ QGP vorticity $\rightarrow$ spin-vorticity coupling $\rightarrow$
vector-meson spin alignment?



The cross section for the **decay of spin-1 particles into two spin-0 particles**:

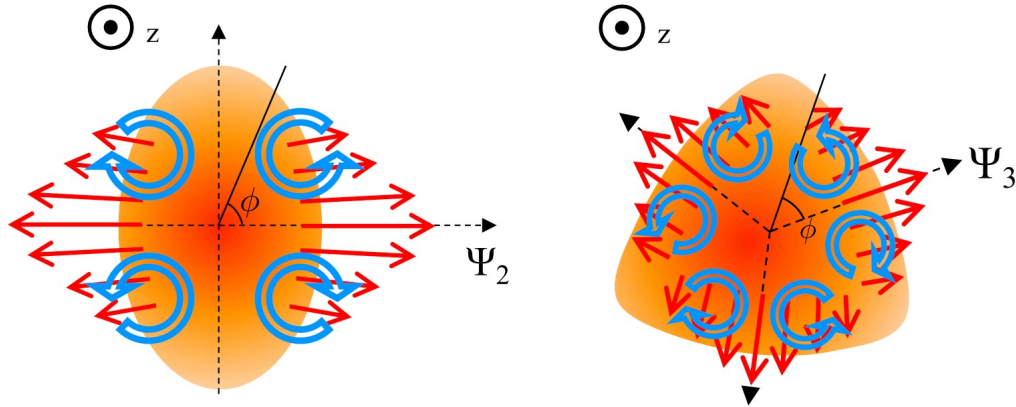
$$\frac{dN}{(\cos\theta^*)} \propto (1 - \rho_{00}) + (3\rho_{00} - 1)\cos^2\theta^*,$$

STAR, Nature 614, 244 (2023)

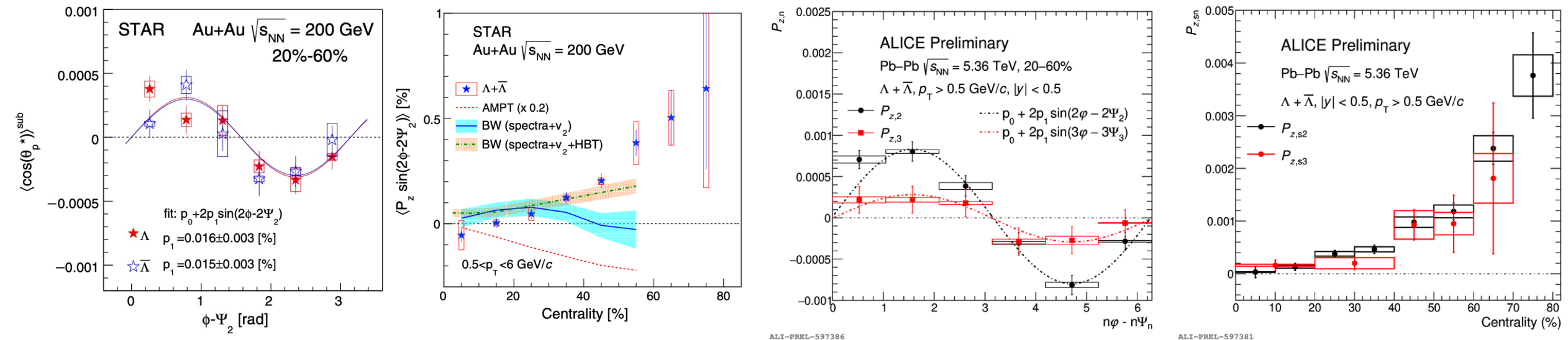


- STAR observed **clear ϕ spin alignment**, not explained by vorticity effects! Better explained by VM strong force field.
- ALICE show a hint of **different p_T dependence** btw **J/ψ** and **D^{*+}**

Local Polarization Along Beam Direction



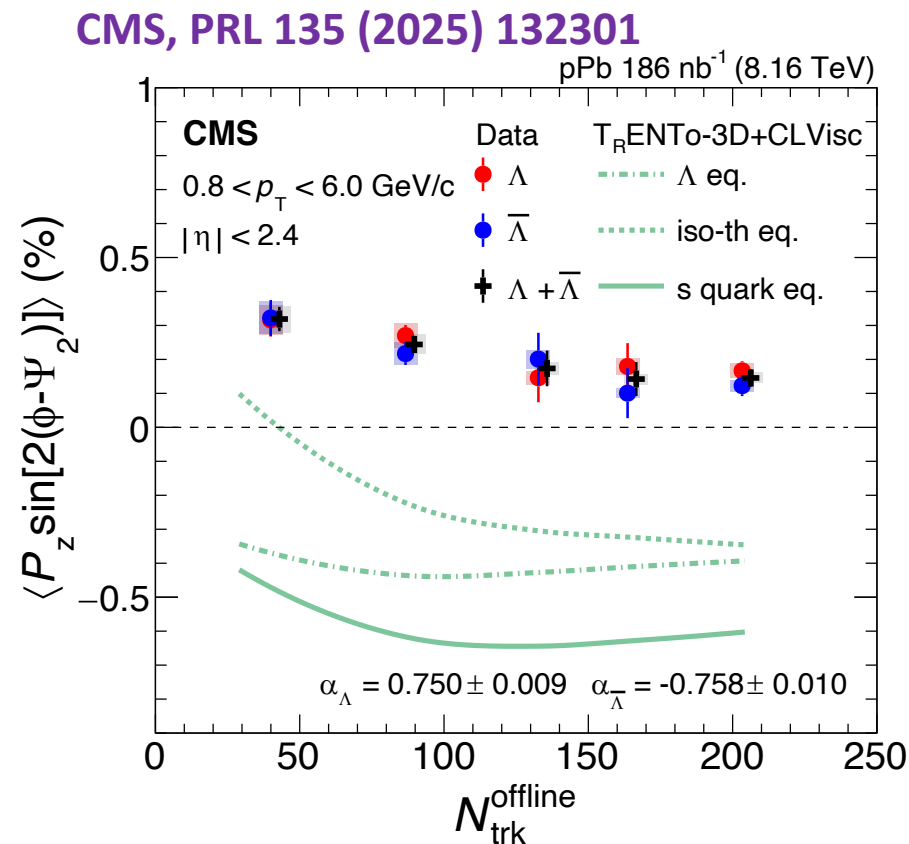
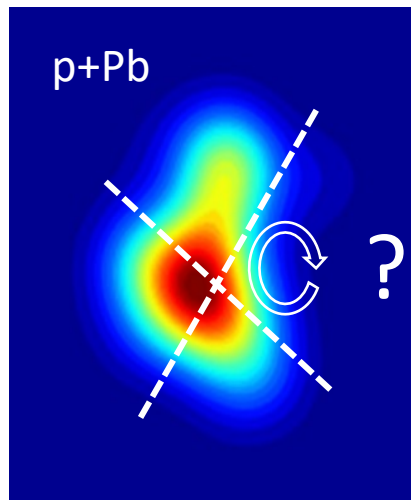
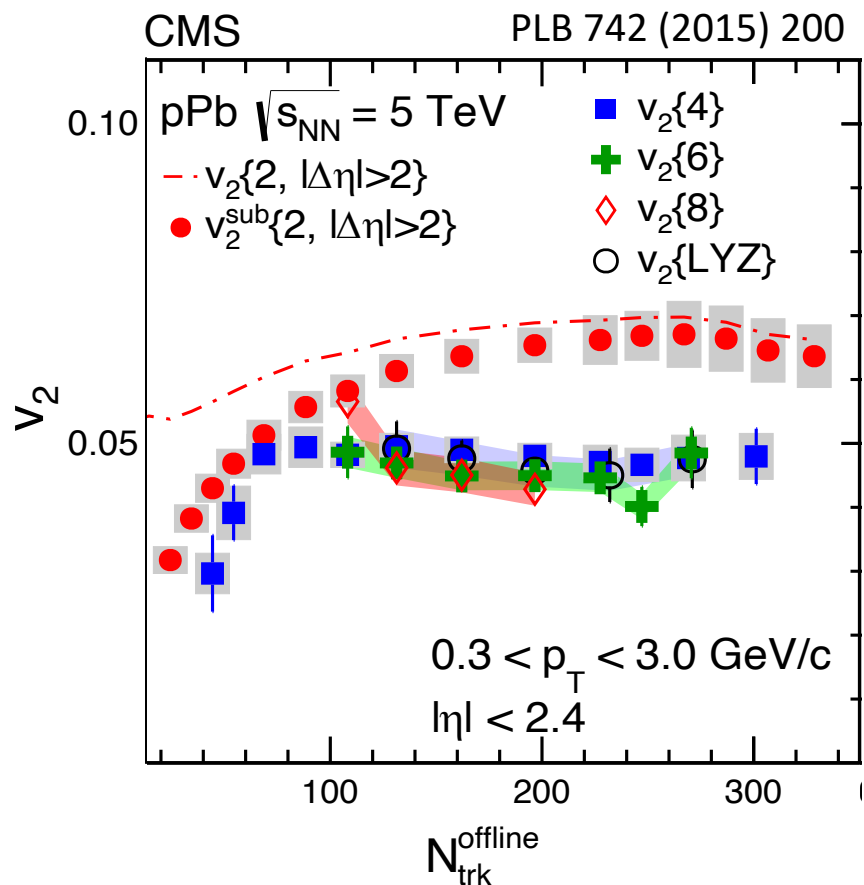
Unlike global polarization, local polarization varies with particle momentum and emission direction, revealing the **local vortical structure** of the QGP.



STAR, PRL 123, 132301 (2019)

- Local polarization **first** observed by **STAR**, now **confirmed** by ALICE Run 3 data
- A clear **increase** toward peripheral collisions, supports a **vorticity-driven origin**

Local Polarization in Small System (p+Pb)

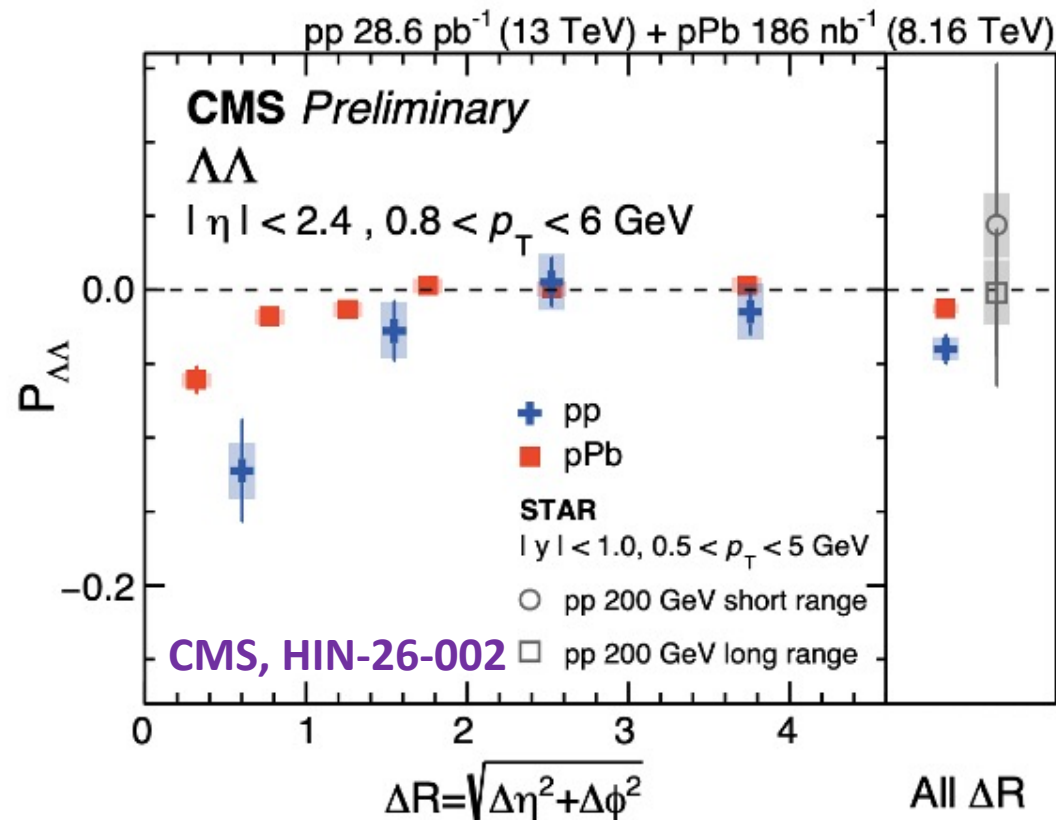
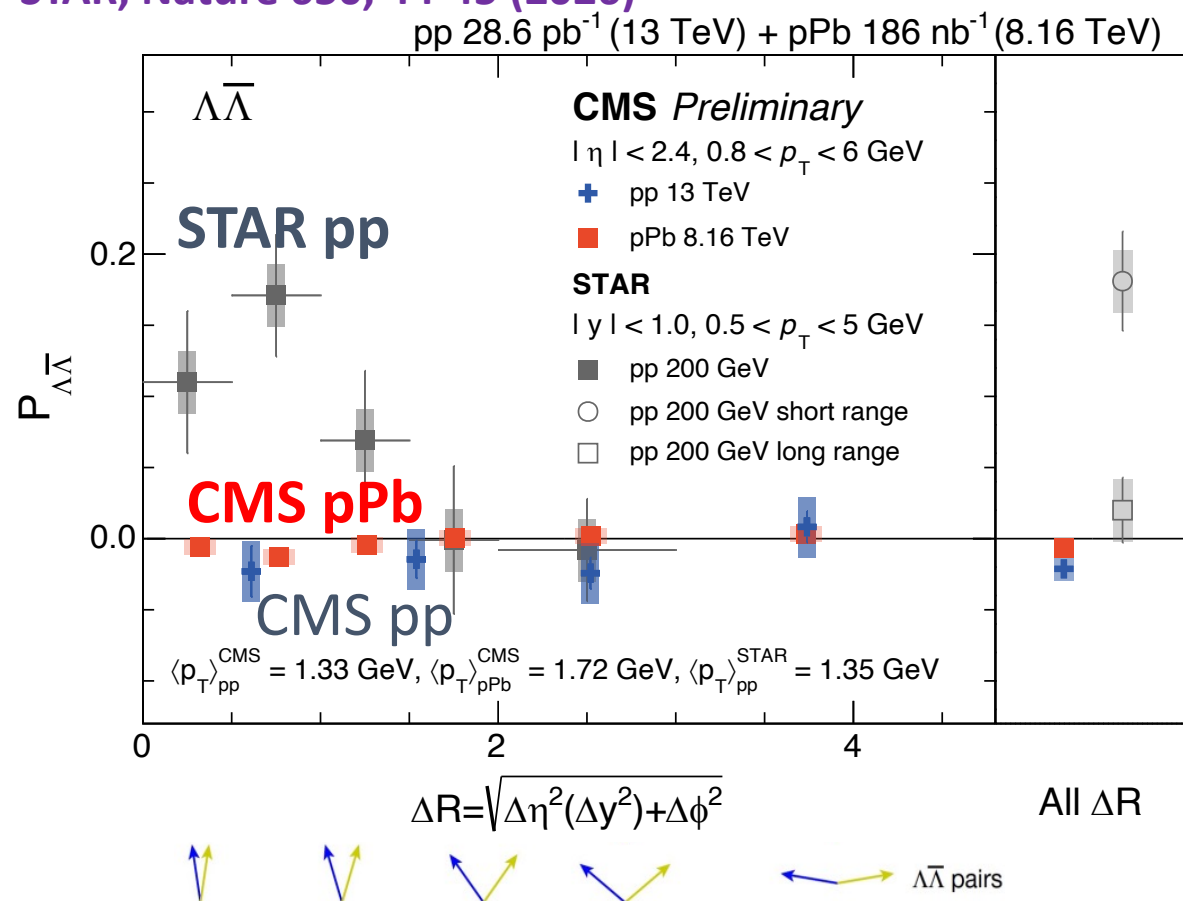


CMS reports the first Λ ($\bar{\Lambda}$) local polarization measurement in small collision systems:

- Polarization **decrease** with multiplicity, **opposite trend of v_2 results**
- Challenge the current hydro.-based models, new mechanisms are needed

Spin Correlation of Hyperon Pair in pp and pPb

STAR, Nature 650, 44-45 (2026)

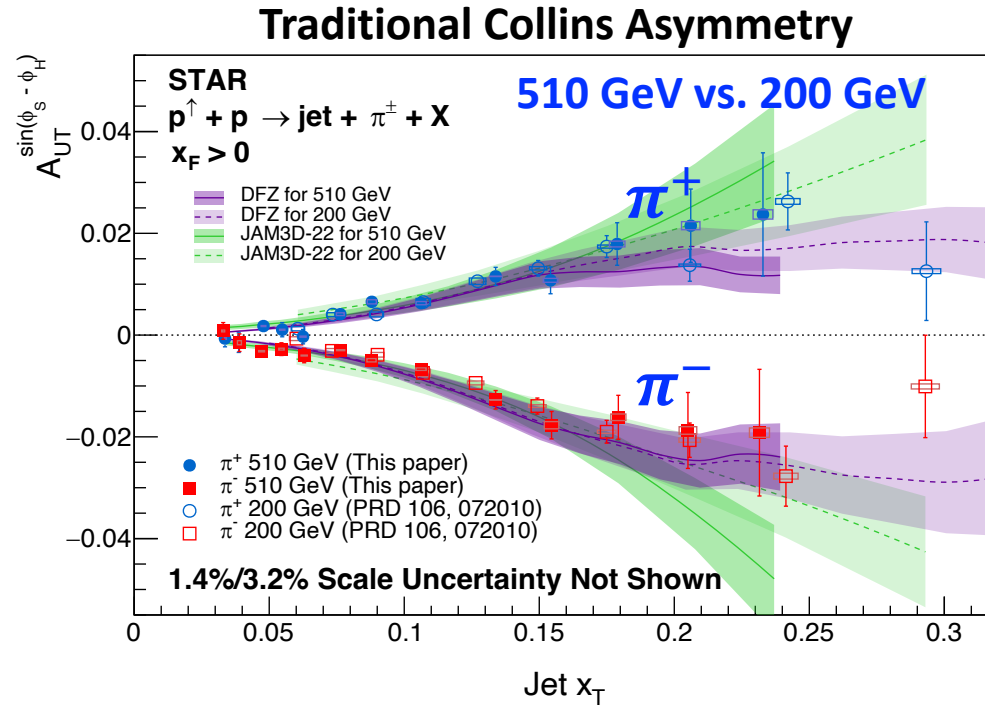


- $\Lambda - \bar{\Lambda}$ spin correlation: consistent with **zero at LHC** while **positive at RHIC**
- $\Lambda - \Lambda$ or $\bar{\Lambda} - \bar{\Lambda}$ spin correlation: **Negative** correlations at **small ΔR** (Short-range) at LHC

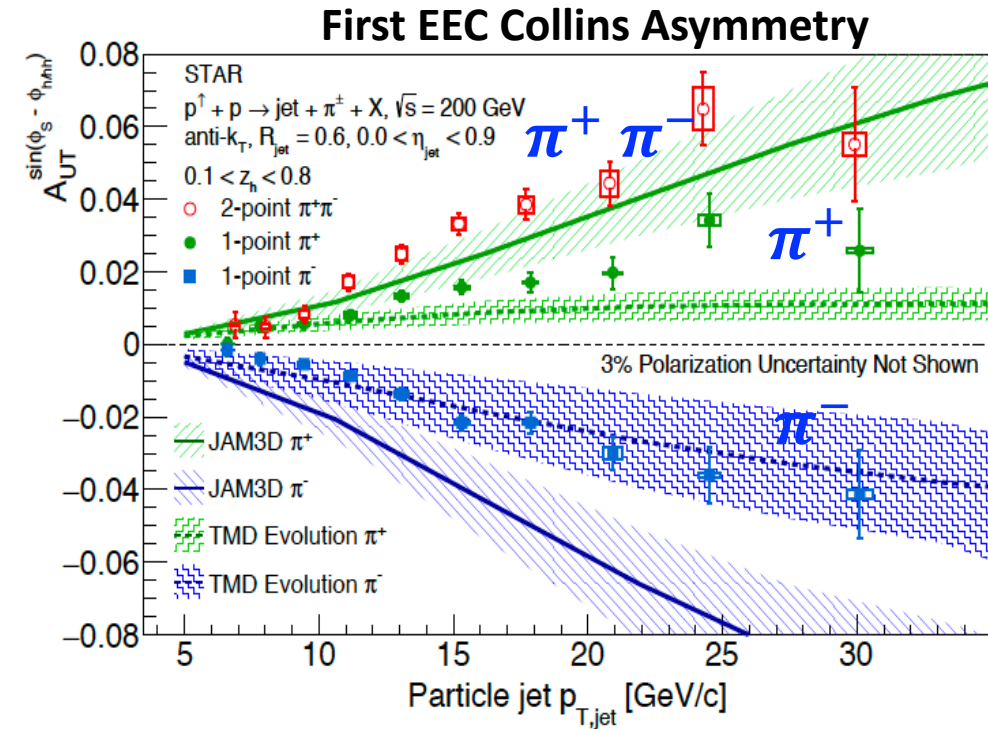
Spin Physics in Polarized pp Collisions

Collins Asymmetry provides direct access to proton's transversity through spin-dependent quark fragmentation.

Theory: Gao, Kang, Li, Shao, Zhao, PRL 136, 151902 (2026)



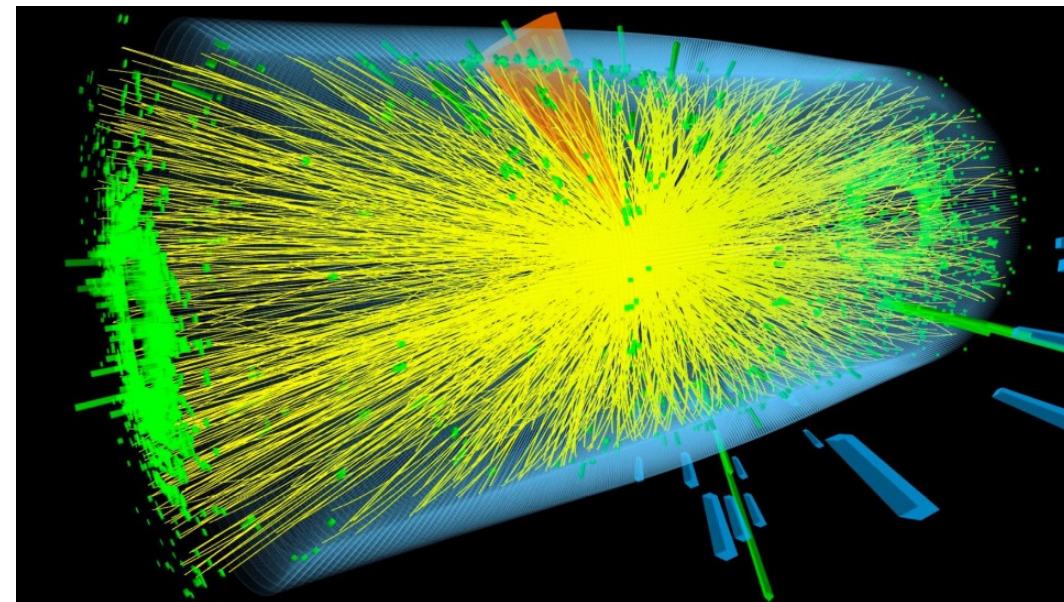
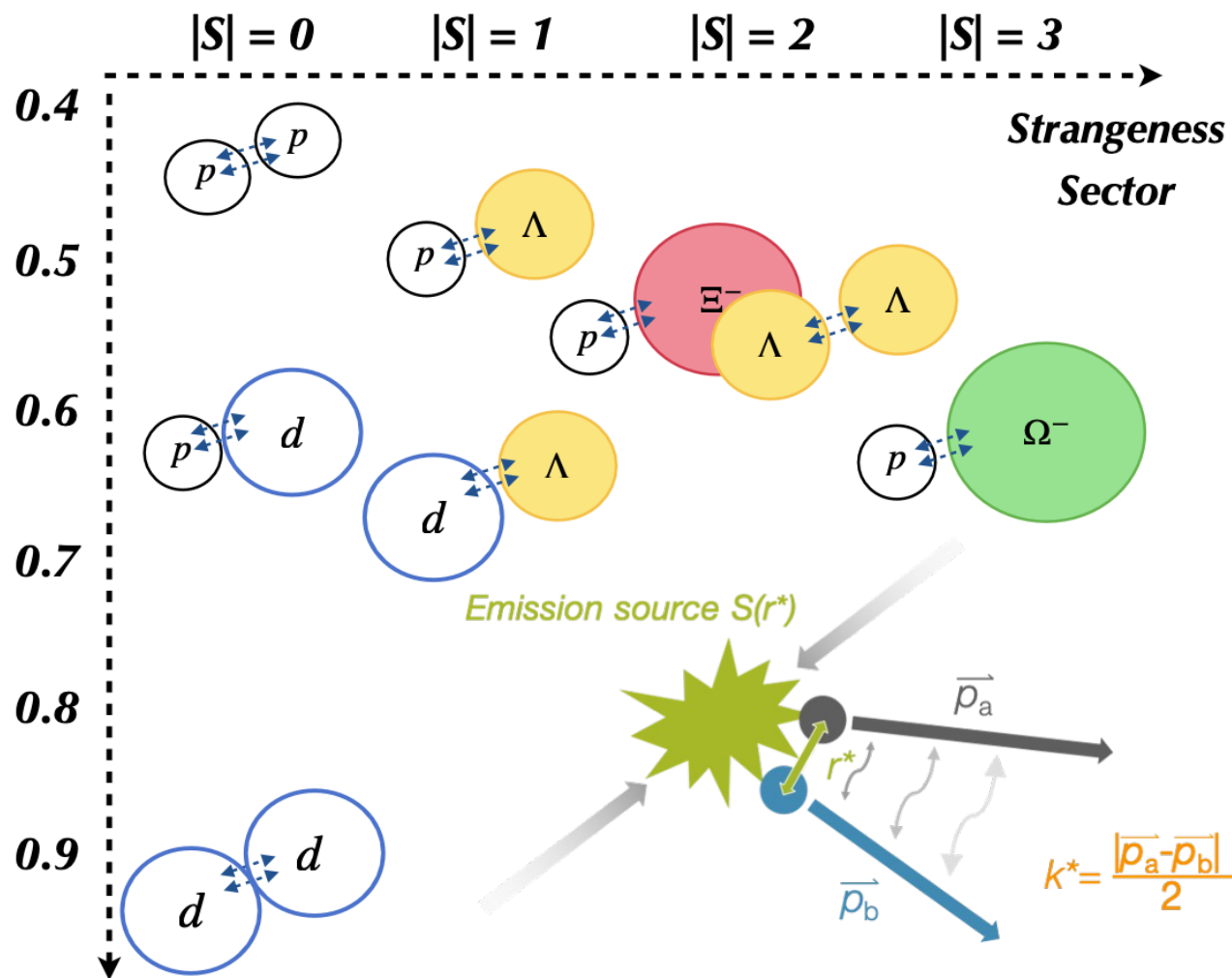
STAR, PRL135, 261902 (2025)



STAR, arXiv:2604.15543, submitted PRL

- Most precise measurements of Collins Asymmetry, show significant asymmetry of π^+ and π^- , with weak energy dependence.
- First measurement of EEC Collins Asymmetry establishes a new cleaner tool for transversity studies.

Abundant Hadron and Hyperons in Heavy-Ion Collisions

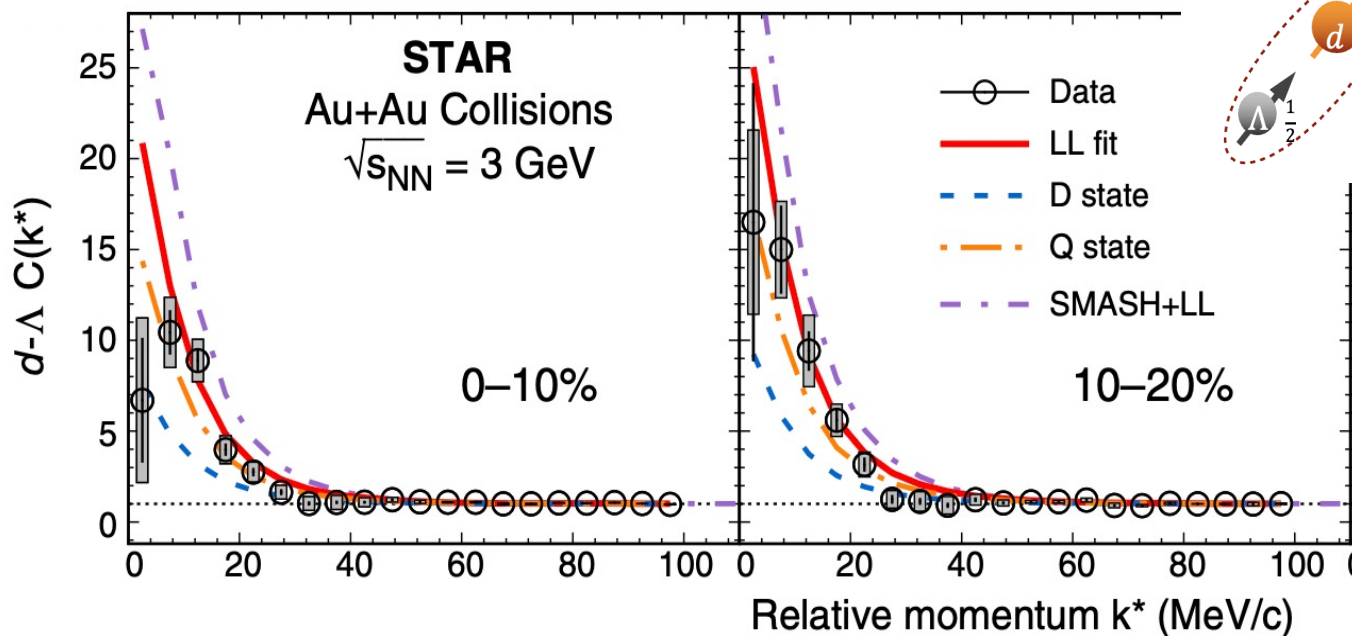


Abundant nucleons (N) and hyperons (Y) make heavy-ion collisions **an ideal laboratory for NN, YN, and YY interactions**, providing crucial constraints on the EoS at high baryon densities.

Strong Interactions via Femtoscopy

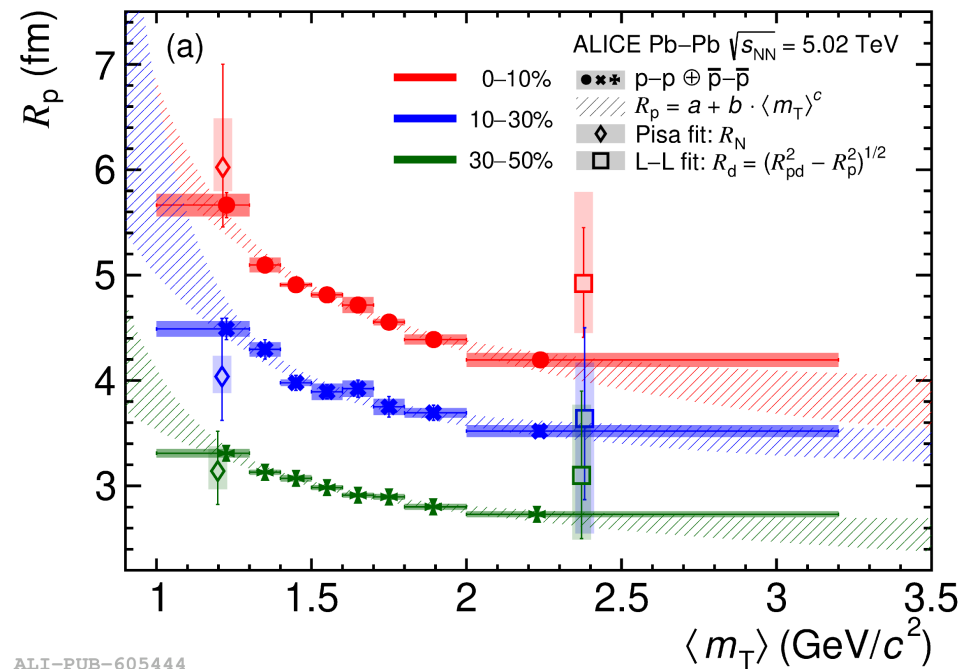
STAR: d- Λ

PRL 136, 242303 (2026)



$${}^3_{\Lambda}H B_{\Lambda} = 0.06^{+0.06}_{-0.03} \text{ (MeV)}$$

ALICE: p-p, p-d

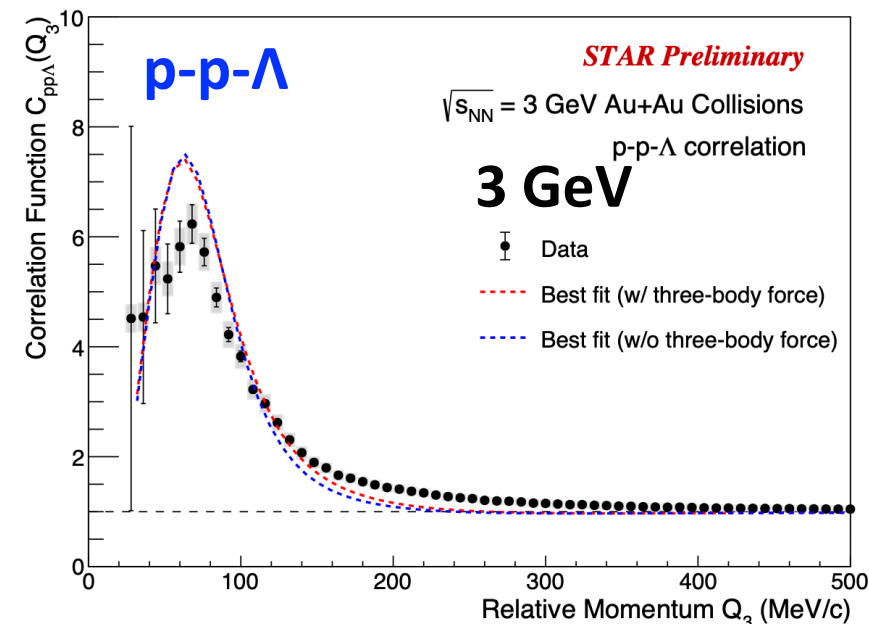
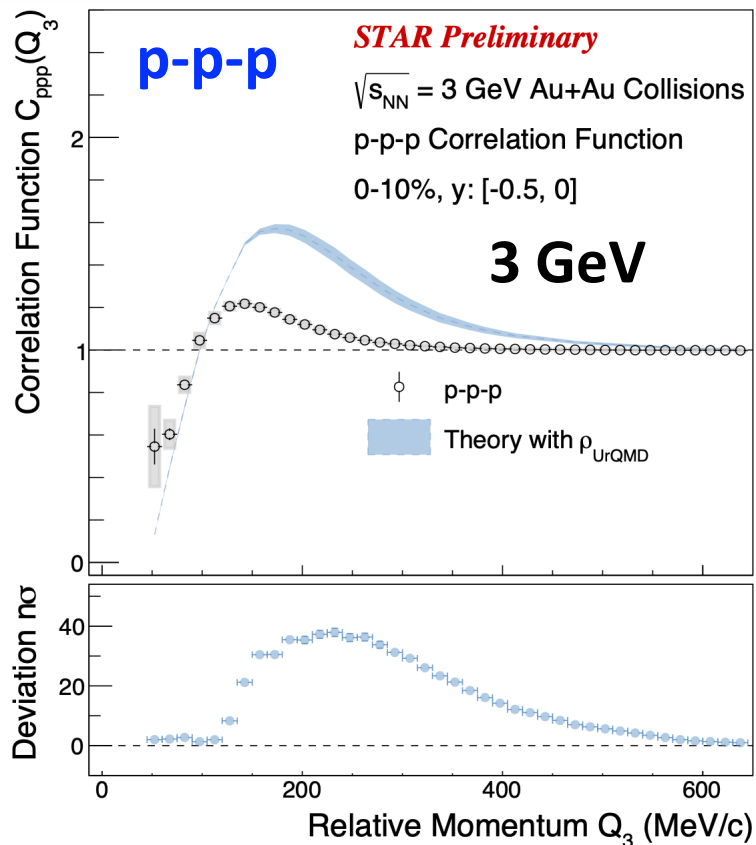
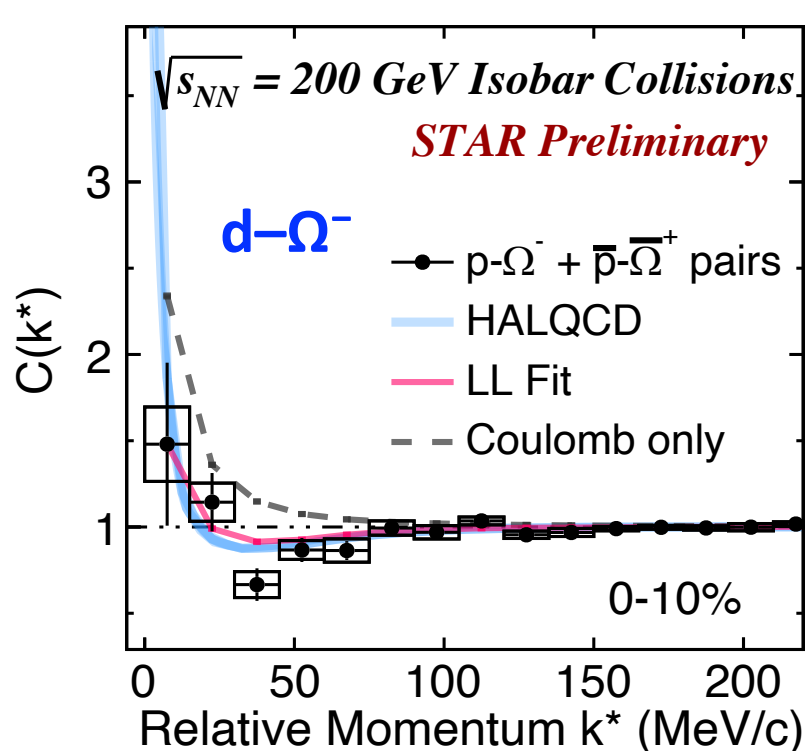


ALI-PUB-605444

ALICE, PLB 871 (2025) 139921

- STAR: First d- Λ femtoscopy, enabling most precise determination of H-3- Λ binding energy, precisely constraining YN interactions.
- ALICE: p-p, p-d femtoscopy reveal the m_T -scaling of proton emission source radius.

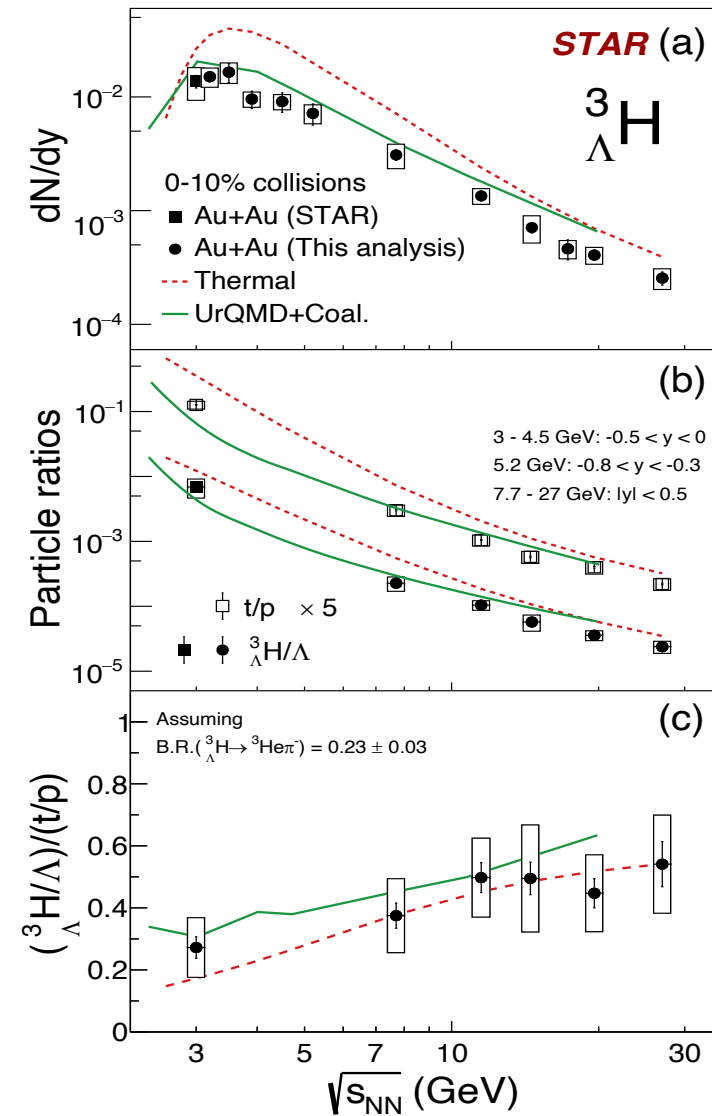
Strong Interactions via Femtoscopy



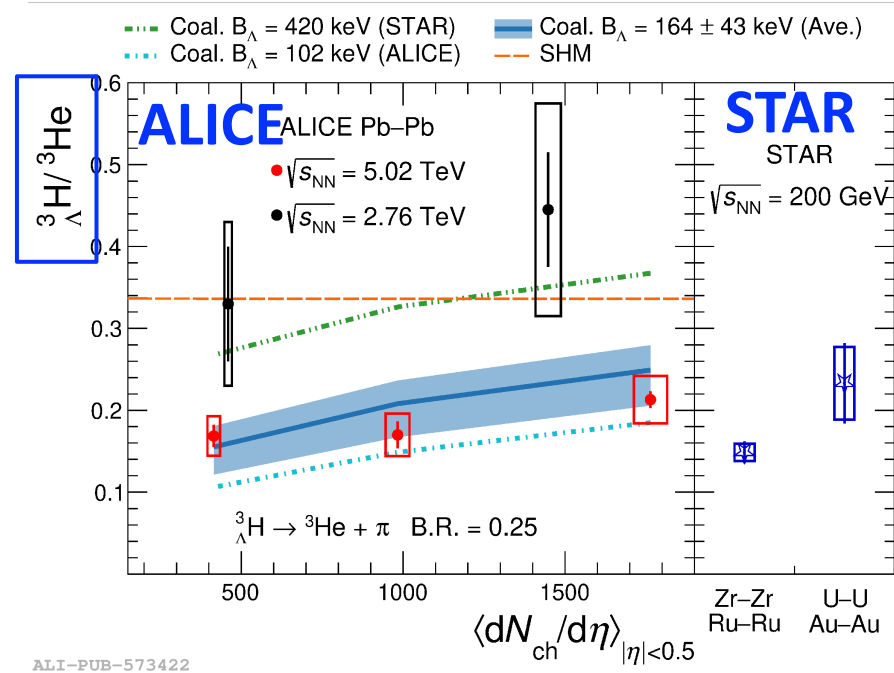
- **First** experimental constraints on the **p- Ω^-** interaction and the **first 3-body femtoscopy** measurements (p-p-p, p-p- Λ) at RHIC.
- Provide key inputs for understanding the strong interactions at high baryon densities.

Hypertriton Production

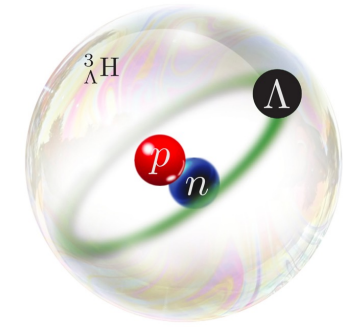
STAR 3-27 GeV



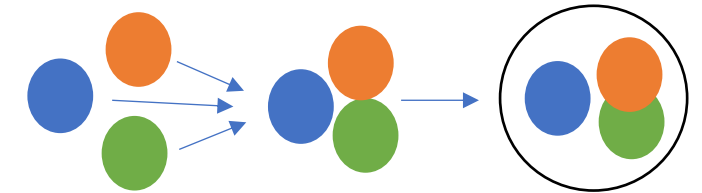
STAR, arXiv:2604.18214



ALICE, PLB 860, 139066 (2025)



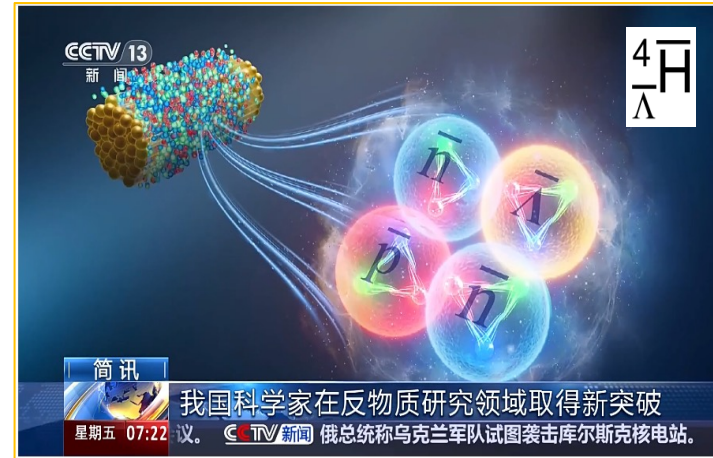
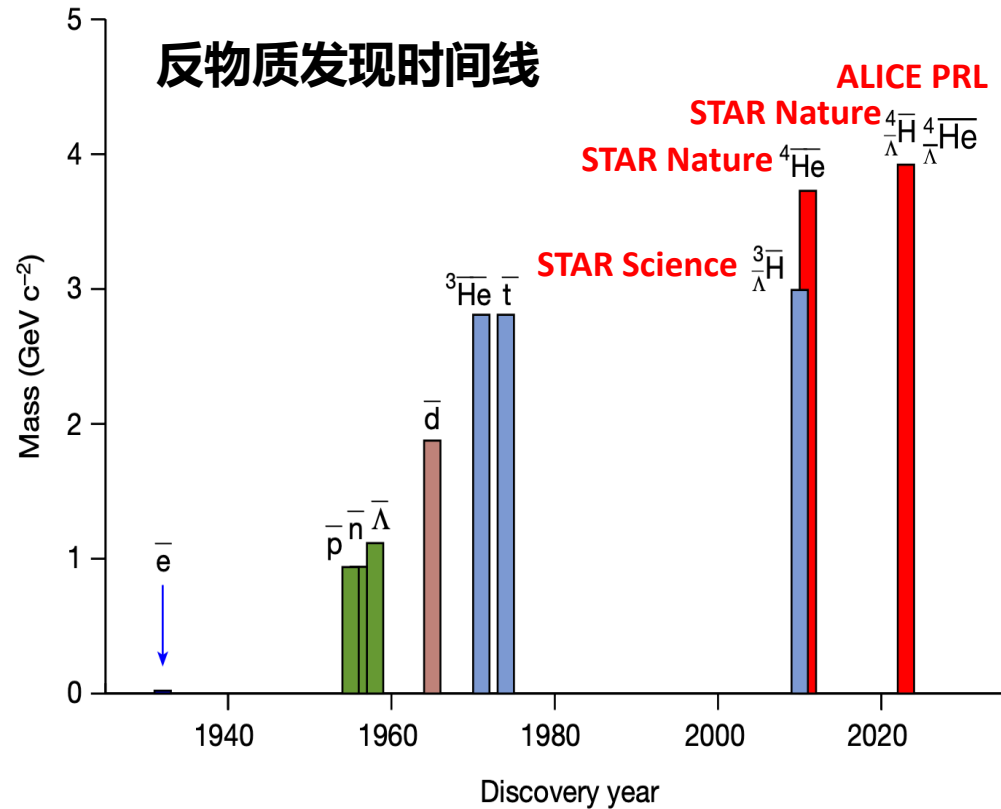
核子融合机制:



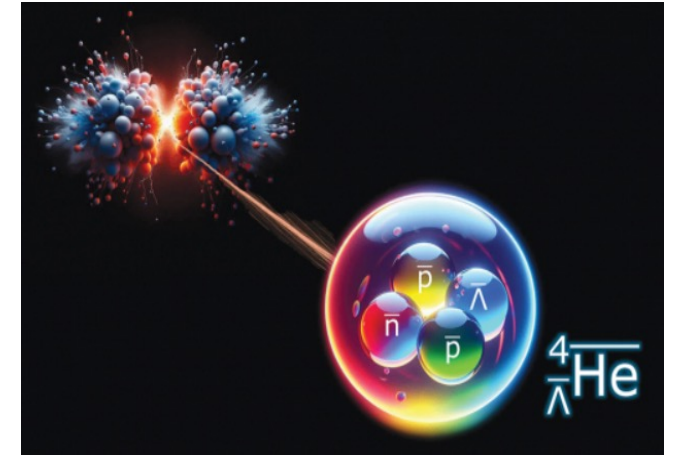
- Precision measurements of hypertriton production **support the nucleon coalescence mechanism** over thermal production in heavy-ion collisions at both RHIC and the LHC.

Discovery of the Heaviest Antimatter Nucleus

Heavy-ion collisions have enabled the **discovery of the four heaviest known antimatter nuclei and antihypernuclei.**



STAR, Nature 632 (2024) 1026



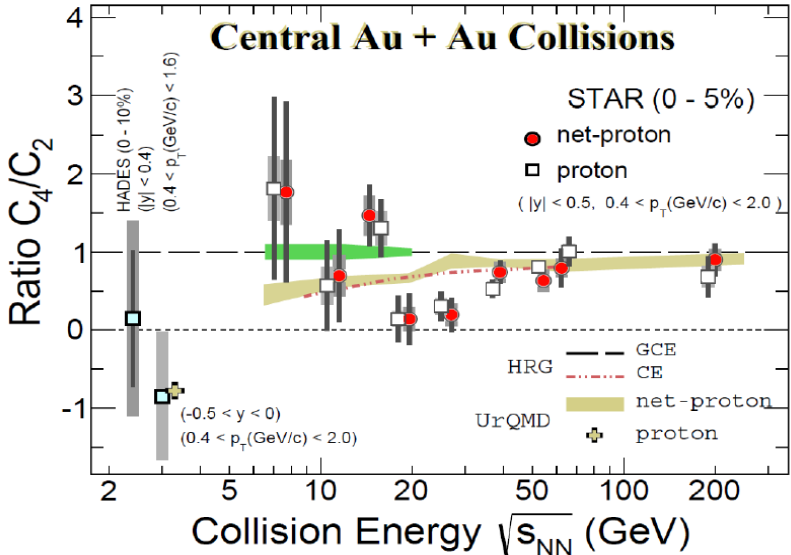
ALICE, PRL 134 (2025) 162301

- STAR and ALICE **extend the antimatter frontier with the observation of heaviest anti-hypernuclei.**
- New opportunities to **test CPT symmetry in complex antimatter systems.**

Net-Proton Fluctuations and Critical Point Search

Higher-order net-proton fluctuations provide a sensitive probe of the QCD critical point.

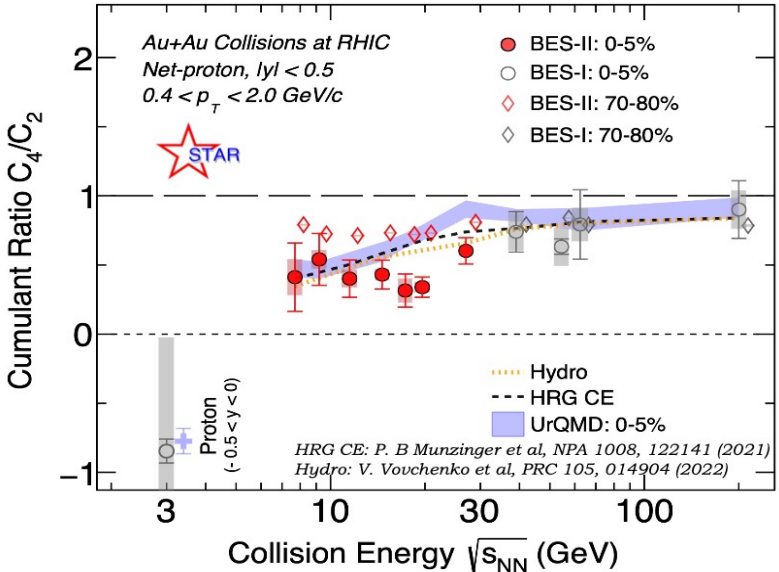
BES-I (3 – 200 GeV)



STAR: PRL 105, 022302 (2010)
PRL 112, 032302 (2014)
PRL 126, 092301 (2021)
PRL 128, 202303 (2022)
PRC 104, 024902 (2021)
PRC 107, 024908 (2023)
HADES: PRC 102, 024914 (2020)

$\sqrt{s_{NN}}$ (GeV)	Events BES-I (10 ⁶)	Events BES-II (10 ⁶)
7.7	3	45
9.2	-	78
11.5	7	110
14.5	20	178
17.3	-	116
19.6	15	270
27	30	220

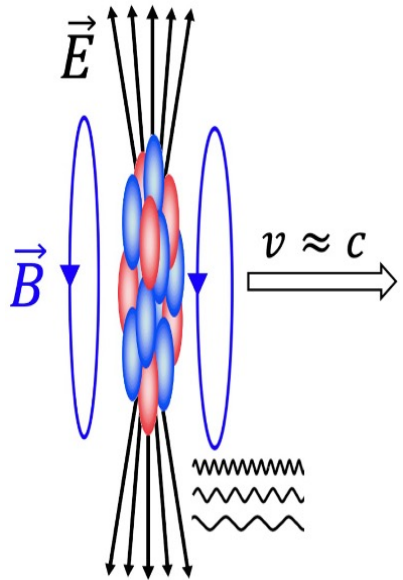
BES-II (7.7 – 27 GeV)



STAR : PRL 135, 142301 (2025)
[Editor's Suggestion, Featured in Physics]

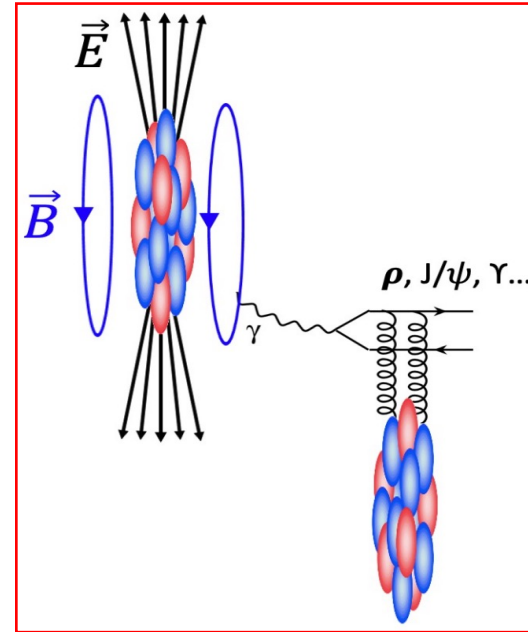
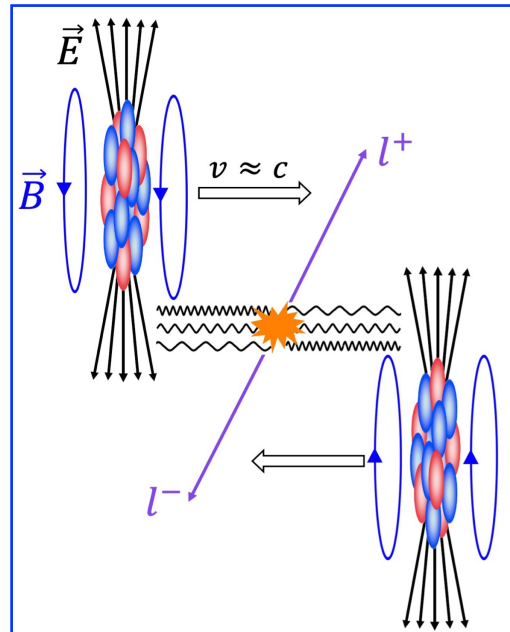
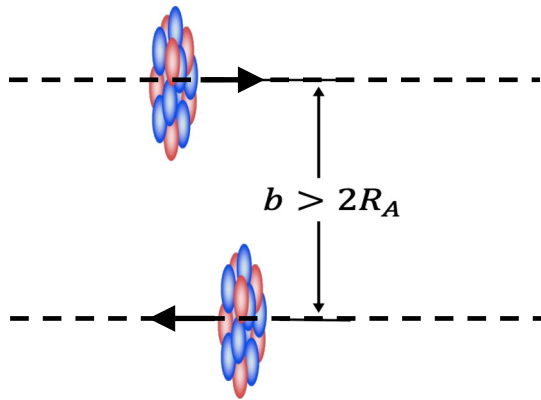
- BES-II consistent with BES-I data with much higher precision.
- A pronounced **non-monotonic beam-energy dependence** challenges non-critical models.

Ultra-Peripheral Collision (UPC)



- Lorentz contracted EM fields $\rightarrow$ flux of quasi-real photons ($Q^2 < \hbar^2/R^2$).
- The photon flux $\propto Z^2$.
- Photon kinematics: $p_T < \hbar/R_A \sim 30 \text{ MeV}$ ($E_{\text{max}} \sim 80 \text{ GeV}$) at LHC.

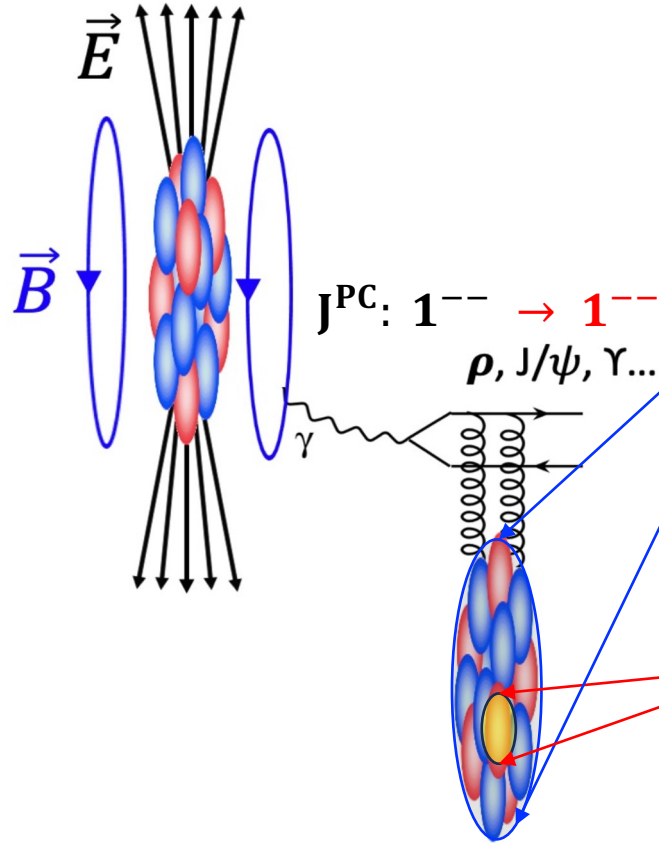
Heavy ion collider is also a **Photon-Photon** and **Photon-Ion** collider !!!



- Exam QED at extreme field
- Probe nuclear structure
- Search for new physics

Probe Nuclear Gluonic Structure via VM Photoproduction

Vector Meson photoproduction is sensitive to the gluonic structure of target nucleus



Coherent production:

- Photon fluctuated dipole couples **coherently to entire nucleus**
- **Target** nucleus remains **intact** at ground state
- VM $\langle p_T \rangle \sim 10^1$ MeV
- Probing the **average gluon density**

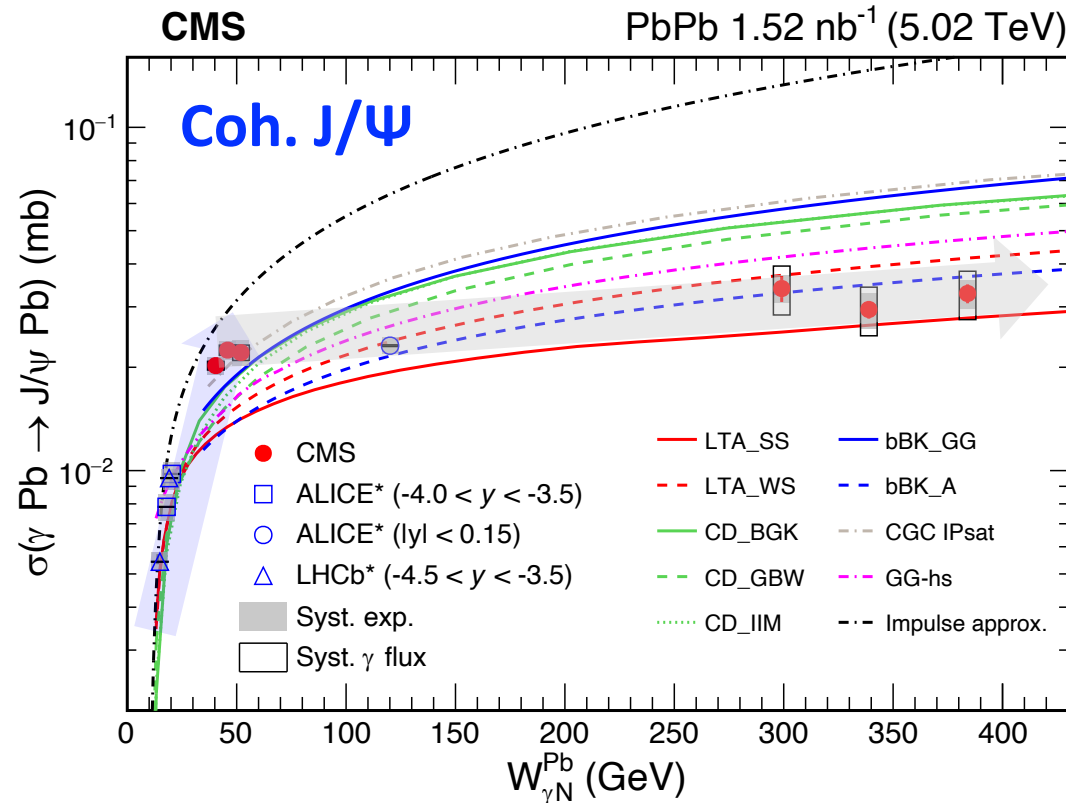
Incoherent production:

- Photon fluctuated dipole couples to **local gluonic hotspots**
- **Target** nucleus get excited, or **breaks (mostly)**
- VM $\langle p_T \rangle \sim 10^2\text{-}10^3$ MeV
- Probing the **local gluon density and fluctuations**

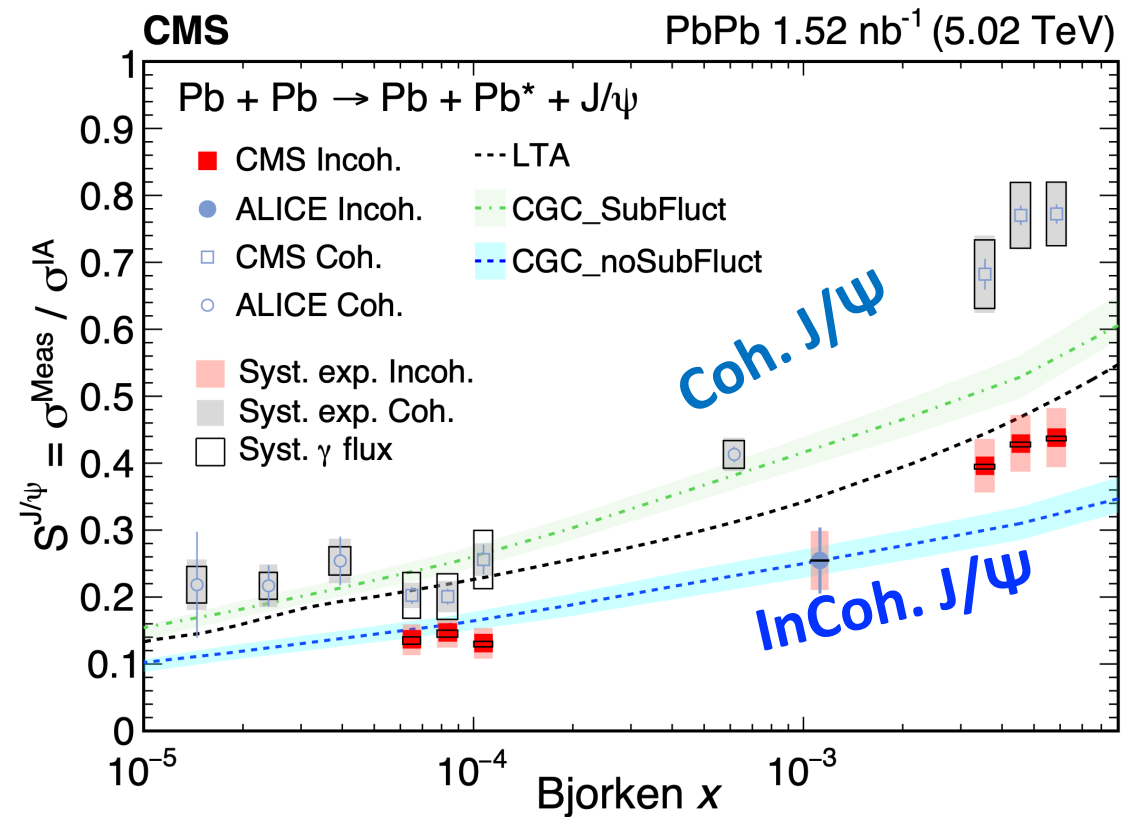
$$\sigma \propto [xG(x, Q^2)]^2$$

Excellent probe for the gluon saturation search!

First Energy (x) Dependent Coh. and Incoh. J/ψ



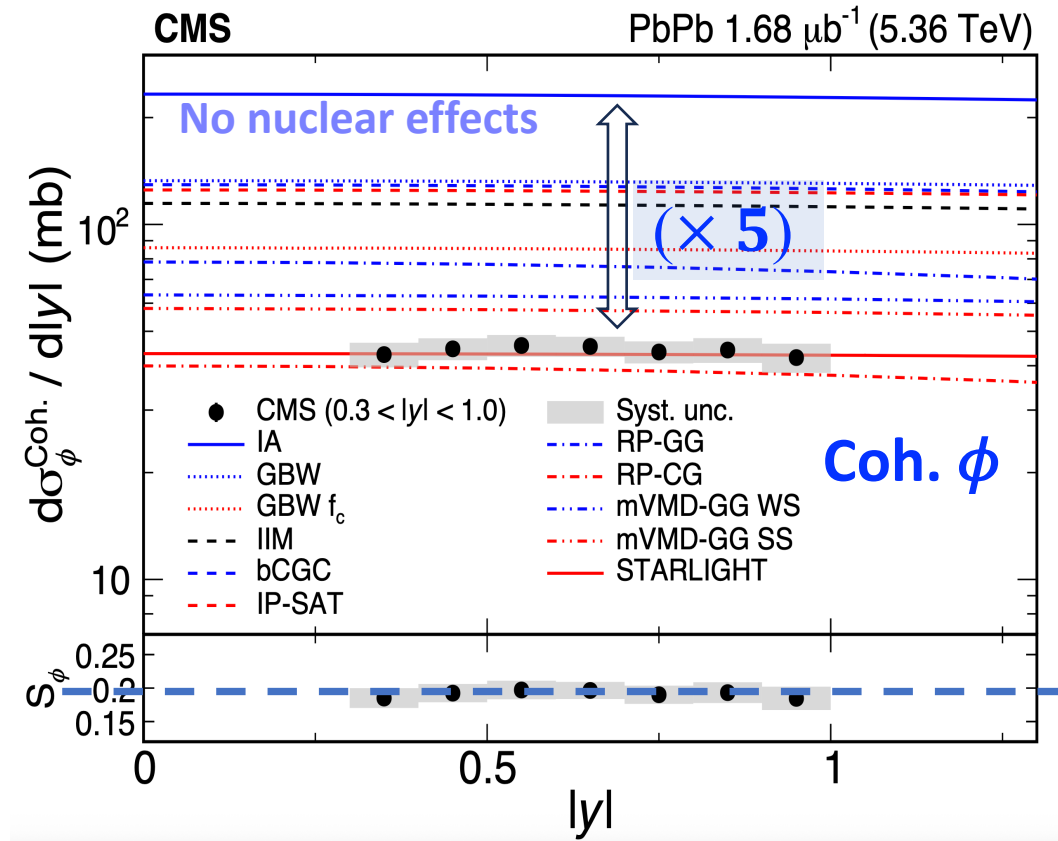
CMS, PRL 131, 26201 (2023)



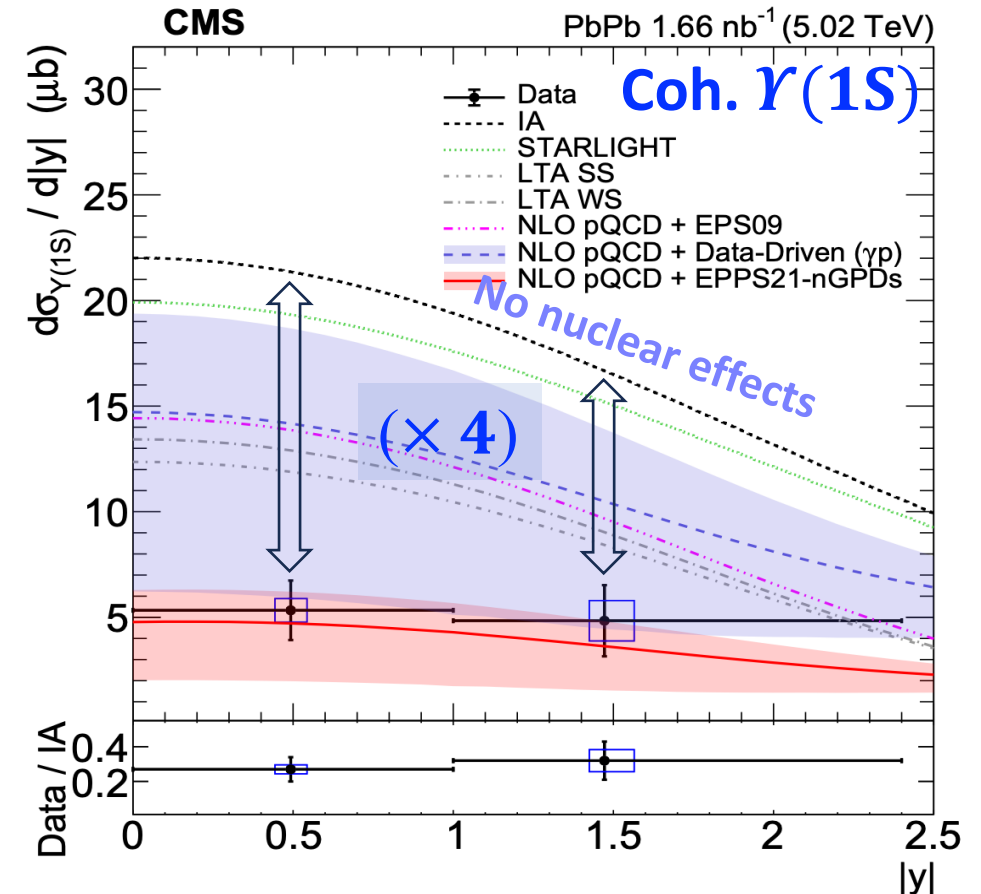
CMS, PRL 135, 112301 (2025), Editors' Suggestion

- **First direct probe of gluonic nuclear structure across a broad x range ($\sim 10^{-2} - 10^{-5}$)**
- **Both Coh. and InCoh. J/ψ cross sections show significant saturated trend vs. energy**
- **Stronger suppression towards lower x , eventually flattens out**

First Coh. ϕ and $\Upsilon(1S)$ Photoproduction in UPCs



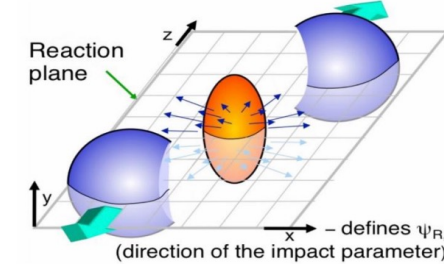
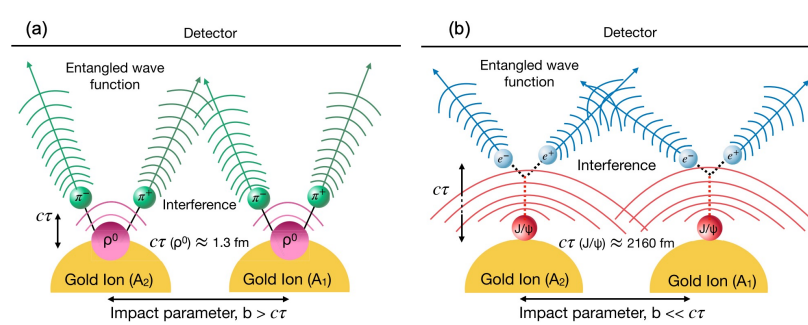
CMS, PRL 135, 262301 (2025)



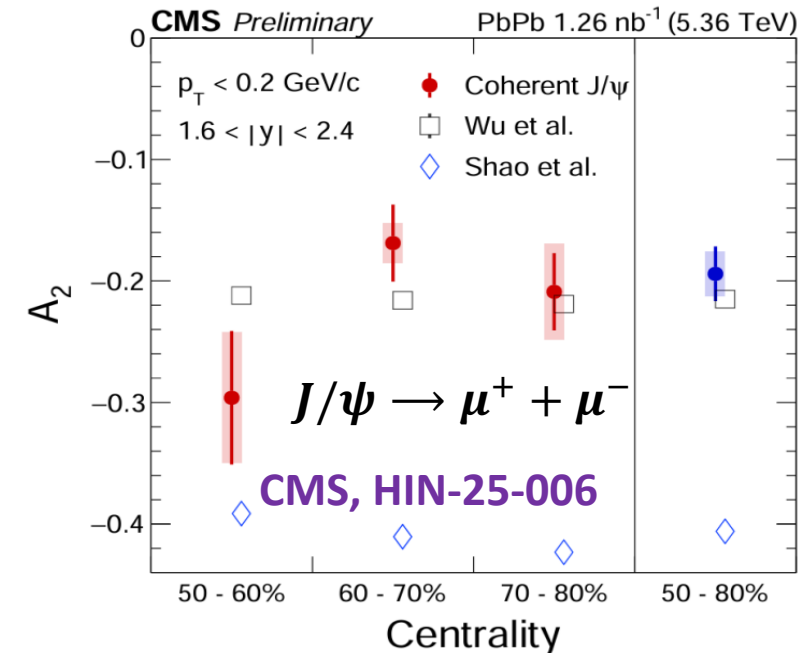
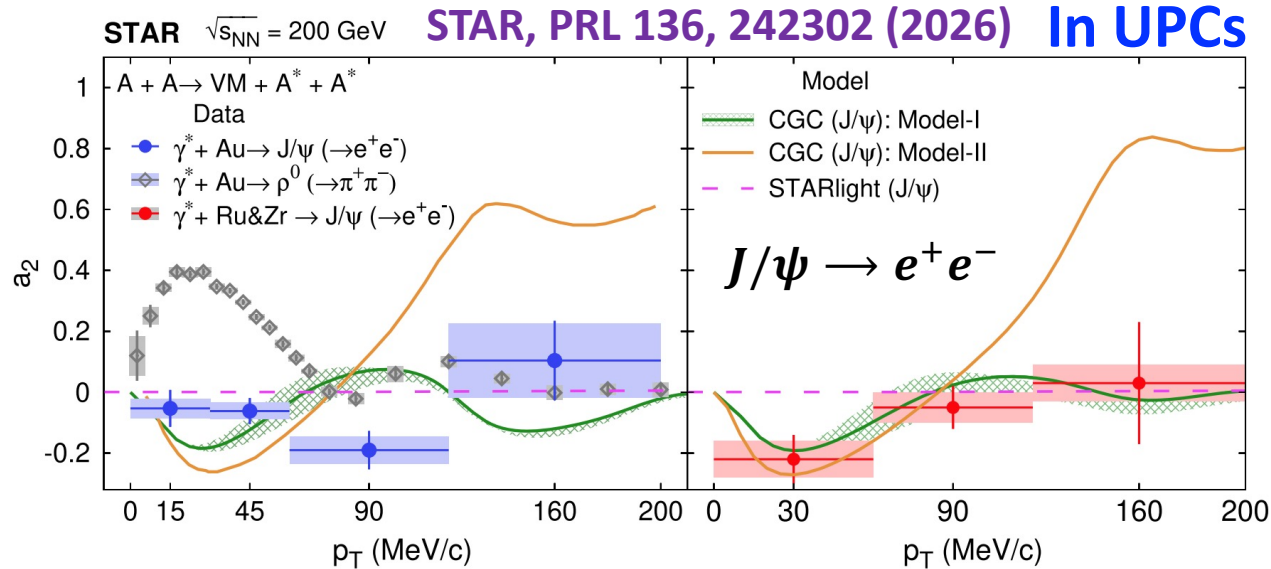
CMS, arXiv:2604.05814, submitted to PRL

- **First** observation of **coherent ϕ** and **$\Upsilon(1S)$** photoproduction off heavy nucleus.
- Their cross sections are **strongly suppressed**, exceeding gluon saturation predictions.

Azimuthal Asymmetry in Coh. J/ψ Photoproduction

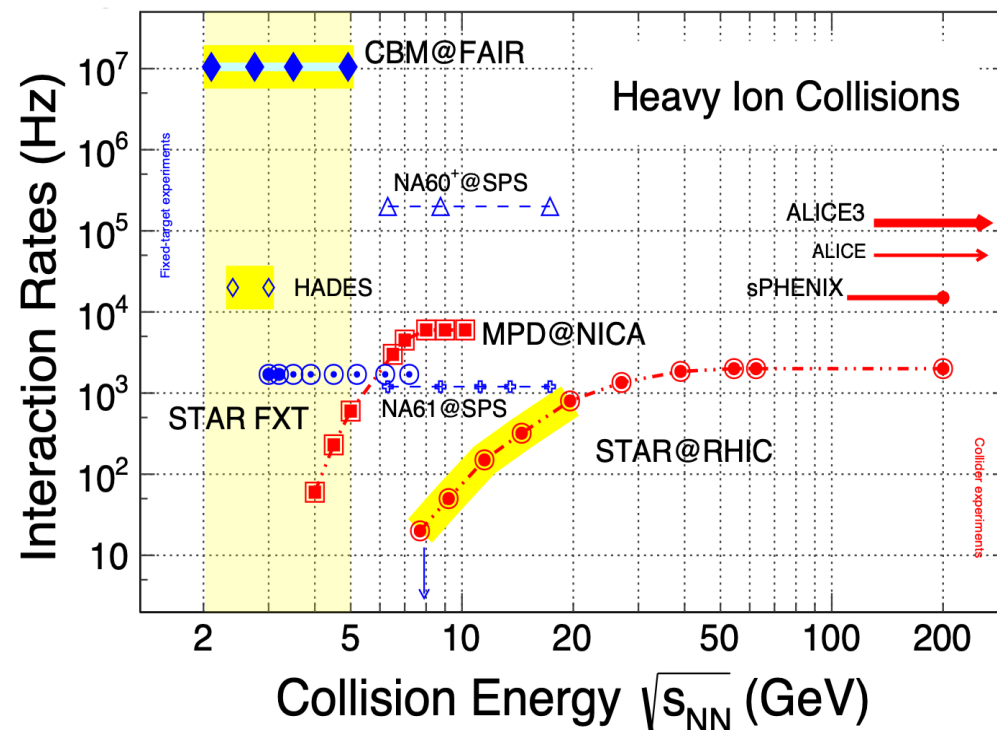
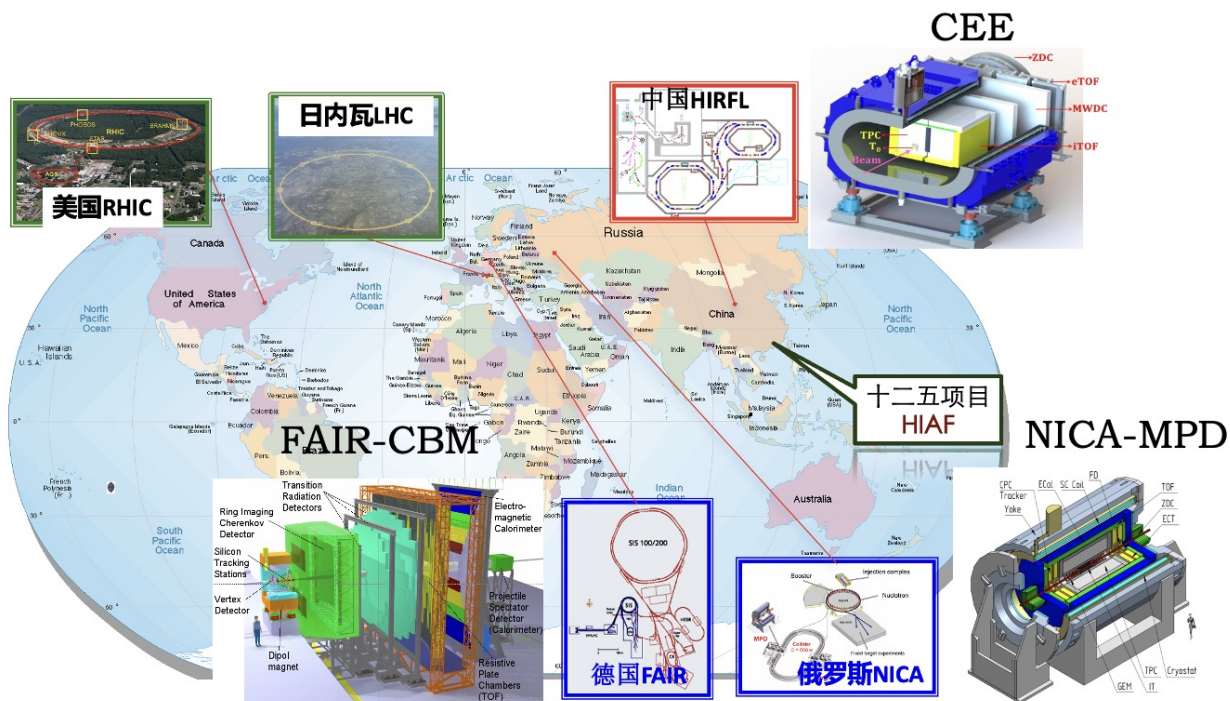


In hadronic events



- STAR report the **first** evidence of spin interference in coherent $J/\psi \rightarrow e^+e^-$ in UPCs
- **High precision** CMS measurements **demonstrate a novel reaction plane determination**

Future Heavy-Ion Experiments

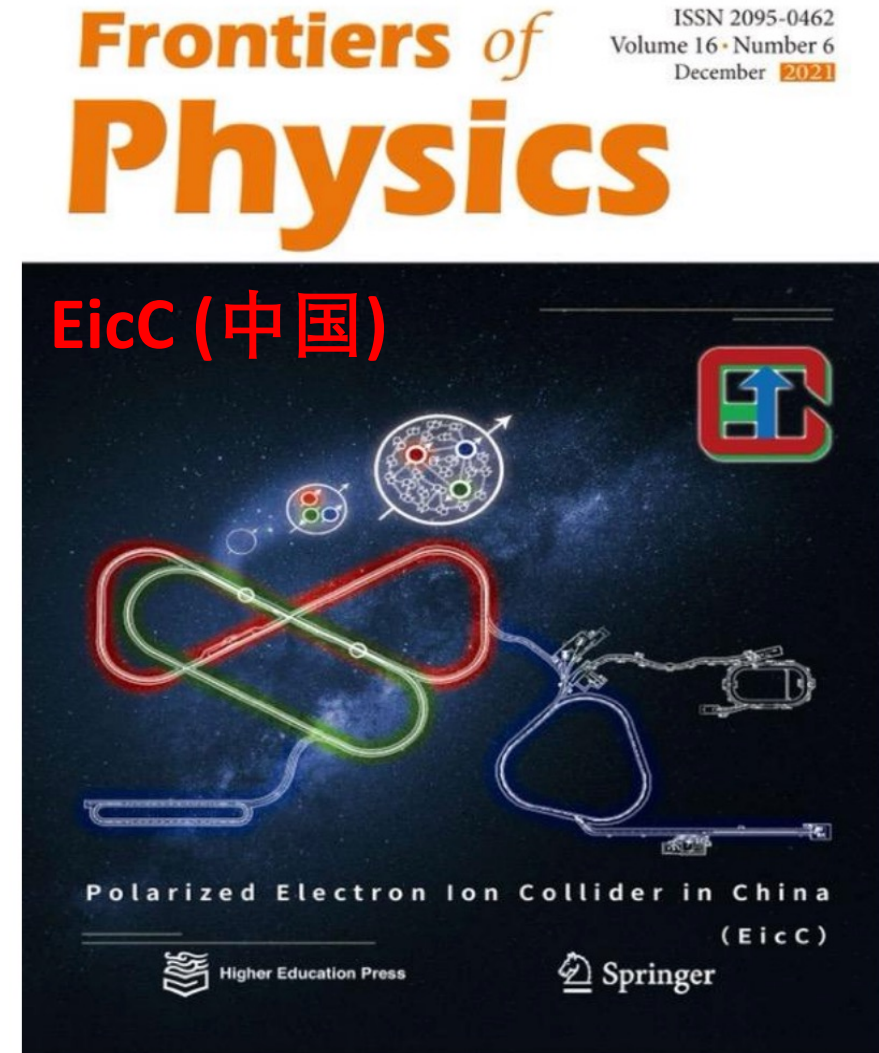


- **RHIC** has completed its physics program, marking the transition to the EIC era.
- **LHC** Run 3 has concluded; detector upgrades are underway during LS3, with HL-LHC Run 4 since 2030.

Future Low Energy Experiments :

- **CSR-CEE** (2.1 GeV, 2026 -)
- **NICA-MPD** (4 - 11 GeV, 2026 -)
- **FAIR-CBM** (2.4 - 4.9 GeV, 2028 -)
- **HIAF-U/H-NS** (2.1- 4.5 GeV, 2030+?)
- **JPARC-HI** (2-5 GeV, planning)

Future Electron-Ion Colliders



Chinese Leadership in Heavy-Ion Experiments

STAR合作组任职情况

- 副发言人：唐泽波
- 数据模拟组协调人：朱相雷
- 各物理工作大组召集人：谢冠男（LFS-UPC）、申迪宇（FCV）

ALICE合作组任职情况

- 会议委员会委员：毛亚显
- 各物理工作大组召集人：寿齐烨（CF）、白晓智（DQ）、彭忻烨（HF）

CMS合作组任职情况

- 各物理工作大组召集人：陈震宇（FC）、杨帅（Dilepton）、叶早晨（UPC）

ATLAS合作组任职情况

- 论文发表委员会成员：胡启鹏

MPD合作组任职情况

- 副发言人：杨驰

Contributions from Heavy-Ion Physics

分会场 III: 高能重离子物理分会（一） 7月15日下午 2号楼二楼佛山厅		
Session-1	Chair: 张本威	
14:00-14:25	Jet quenching and EEC in Heavy ion collisions	Wen-jing Xing
14:25-14:40	利用宇宙线大气簇射进行强相互作用研究	冯存峰
14:40-14:55	Unveiling the medium-induced jet angular broadening in high-energy nuclear collisions	Sa Wang
14:55-15:10	Analysis of nuclear fragmentation functions for pions with A and v dependence	Mengyang Li
15:10-15:25	Study of jet modifications using ALICE Run 3 data at LHC	冯文卉
15:25-15:40	Jet Quenching and Multi-Point Energy Correlators in γ -Jet Production in High-Energy Heavy-Ion Collisions	Hao Wang
15:40-16:10	茶歇	
Session-2	Chair: 徐庆华	
16:10-16:35	FRG approach to the QCD phase diagram	付伟杰
16:35-17:00	相对论重离子碰撞中的光子探针	Chi Yang
17:00-17:15	Dynamical fluctuations of net-baryon density near the QCD critical point	Shanjin Wu
17:15-17:30	Azimuthal modulation in light-by-light scattering from ultraperipheral collisions	林 硕
17:30-17:45	Study on the Deconfining Phase Transition under Real Rotation with the Matrix Model	Qianqian Du
17:45-18:00	(Net-)Proton Number Fluctuations in Au+Au Collisions from RHIC-STAR	Yu Zhang

分会场 III: 高能重离子物理分会（二） 7月16日上午 2号楼二楼佛山厅		
Session-1	Chair: 王 群	
8:30-8:55	QCD in Strong Magnetic Fields from Lattice QCD	Hengtong Ding
8:55-9:20	相对论重离子碰撞中的手征磁效应回顾	Shuzhe Shi
9:20-9:35	Spin Alignment and Phase Transition of QGP in the Presences of Magnetic and Vorticity Fields	冯笙琴
9:35-9:50	QCD matter at finite magnetic field and nonzero chemical potential in extensive and non-extensive statistics	Wenchao Zhang
9:50-10:05	Weyl anomaly induced transport in hydrodynamics	杨诗正
10:05-10:35	茶歇	
Session-2	Chair: 杨 帅	
10:35-11:00	Quantum computing/AI for nuclear physics	郭星雨
11:00-11:15	Quantum Simulation of Hadronization in Relativistic Heavy-Ion Collisions	Wenyang Qian
11:15-11:30	Real-Time Evolution of Dressed Quarks and Jet Energy Correlators	Meijian Li
11:30-11:45	Data-driven measurements of the total beauty productions in pp, p-Pb and Pb-Pb collisions at the LHC	Guangsheng Li
11:45-12:00	Physics-Informed Global Extraction of the Universal Small- x Dipole Amplitude	戴斯为

分会场 III: 高能重离子物理分会（三） 7月16日下午 2号楼二楼佛山厅		
Session-1	Chair: 罗晓峰	
14:00-14:25	Spin polarization and spin hydrodynamics	Shi Pu
14:25-14:40	Hyperon polarization in isobaric Zr+Zr collisions at $\sqrt{s_{NN}} = 200$ GeV: TRENTo3D+ CLVisc with longitudinal flow gradient	Ze-fang Jiang
14:40-14:55	Improved formula for spin polarization at local thermodynamic equilibrium	Xin-li Sheng
14:55-15:10	Spin Entanglement in QCD: from Non-Equilibrium Scattering and Topological Fluctuations	严国维
15:10-15:25	The spin polarization of Lambda hyperon from nucleon-nucleon scattering in low-energy collision	尹轶亮
15:25-15:40	Transverse spin correlation and Anisotropic EEC	杨 磊
15:40-16:10	茶歇	
Session-2	Chair: 刘 峰	
16:10-16:35	高能核物理中的流体力学模型和 QCD 相结构的探索	Li Yan
16:35-17:00	核子自旋结构的实验研究进展	Jinlong Zhang
17:00-17:15	Nonlinear response of flow harmonics in Gubser flow with participant-reaction planes mismatch	任 翔
17:15-17:30	Direct Photon Yield and Thermal Dielectron Flow in Isobar Collisions at STAR	包贤文
17:30-17:45	Probing cluster structure in ultracentral heavy-ion collisions	李 沛
17:45-18:00	Radial Flow Fluctuations of Identified Hadrons in Heavy-Ion Collisions at RHIC-STAR	王国平

分会场 III: 高能重离子物理分会（四） 7月17日上午 2号楼二楼佛山厅		
Session-1	Chair: 侯德富	
8:30-8:55	From H-NS to EicC at HIAF	赵宇翔
8:55-9:20	Imaging nuclear structure across energy scales: from heavy to light ions	Chunjian Zhang
9:20-9:35	Flavor dependences of polarized fragmentation functions	Yu-kun Song
9:35-9:50	Utilizing event topology analysis to understand the flow-like behavior in small systems	郑 亮
9:50-10:05	Dijet production in intermediate x at EIC	Yuan Yuan Zhang
10:05-10:35	茶歇	
Session-2	Chair: 周代翠	
10:35-11:00	重离子碰撞中的重味物理研究进展	Xiaoming Zhang
11:00-11:15	Spin-dependent azimuthal asymmetry of coherent J/ ψ photoproduction in peripheral PbPb collisions with CMS	化雪丽
11:15-11:30	Heavy Quark Transport in QCD Matter: From Perturbative to Non-Perturbative Dynamics	Shuang Li
11:30-11:45	Shear distorted quarkonium and spin alignment	Peiwei Yu
11:45-12:00	D-meson production via sequential hadronization in high-energy nuclear collisions	Zi-xuan Xu, Wei Dai

高能重离子物理墙报与编号

3-01	Jet Suppression and Azimuthal Anisotropy in O+O Collisions from RHIC to the LHC	Cheng Xu
3-02	Determining the NJL Coupling and AMM in Magnetized QCD Matter via Machine Learning	丁梓耕
3-03	Effect of transverse momentum conservation on flow observables	裴家琳
3-04	Resolving jet substructure in the QGP through (de)coherent quenching at NLO	Penghui Hu
3-05	Azimuthal Angle Correlations of Muons Produced via Heavy-Flavor Decays in 5.02 TeV Pb + Pb and pp Collisions	Xi Zeng

3-06	Exploring System-Size and Energy Dependence of J/ ψ production with the STAR experiment	张 炜
3-07	Probing gluon structure with J/ ψ photoproduction in isobaric UPCs at 200 GeV with the STAR experiment	李曾志
3-08	Duality between Entropy and Complexity in QGP: A CV/CA Conjecture Approach	Chenxi Liang
3-09	高能核碰撞中喷注淬火的中心度依赖	孙长乐
3-10	Production of K^+K^- Pairs Through Decay of ϕ Mesons	朱鑫男

3-11	Baryon Correlations and Strange Di-baryon Search at RHIC-STAR	Kehao Zhang
3-12	CEE 实验的集体流分析方法研究	马英萍
3-13	A flow-matching generative model for event-by-event jet-induced hydro response in high-energy heavy-ion collisions	吴开燚
3-14	Is the shear induced spin polarization non-dissipative?	汪家荣
3-15	Vector Meson Spin Alignment from Anisotropic Parton or Hadron Coalescence	董文博

3-16	Inelastic heavy quarkonium photoproduction in p-p and Pb-Pb collisions at LHC energies	马智磊
3-17	Measurement of Light Nuclei Production in Au+Au Collisions at 3–200 GeV from RHIC-STA	Chenghao Zhu
3-18	Measurement of (Net-)Proton Number Fluctuations in Au+Au Collisions from RHIC-STAR : A Centrality-independent Method	Zhaohui Wang
3-19	Rapidity Dependence of Net-Proton Cumulants from Baryon Stopping Effects	平思远
3-20	Spin alignment of quarkonium under anisotropy chromoB	梁宇浩

Congratulations and thanks to everyone who contributed to this exciting scientific program!

THANKS