D^0 R_{AA} and v_2 analysis progress in Isobar collisions

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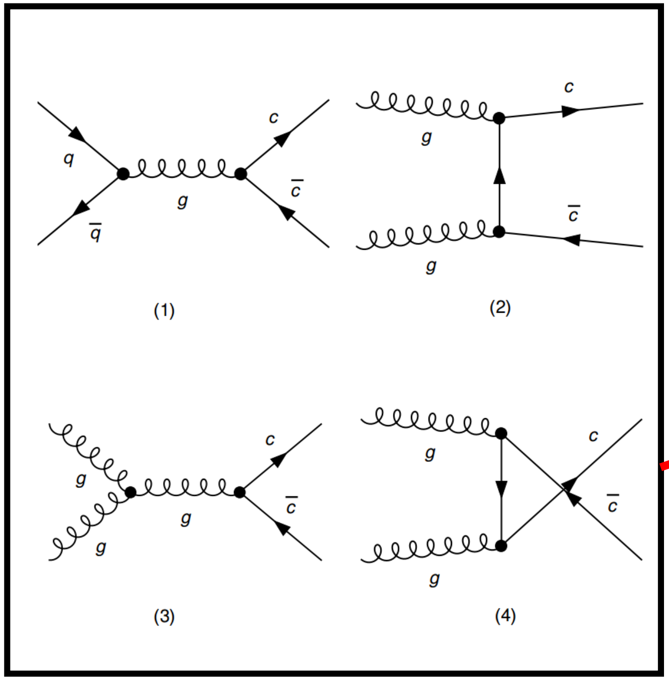
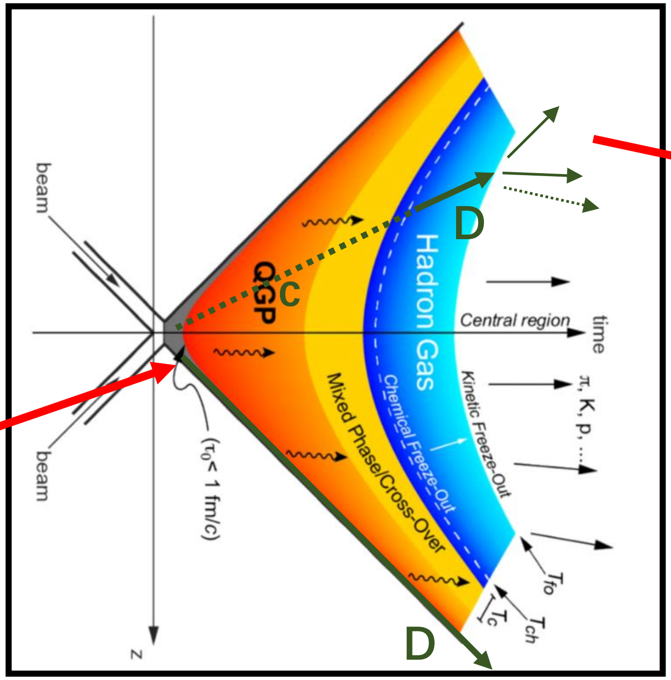
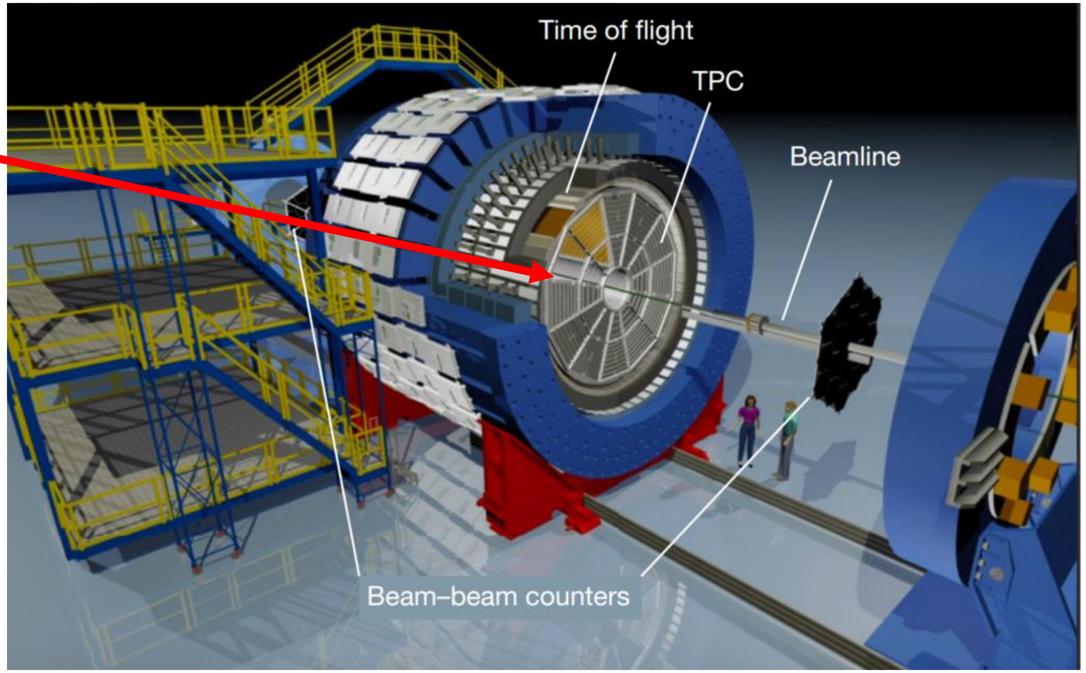
Motivation



< 1 fm/c, initial partonic hard scattering



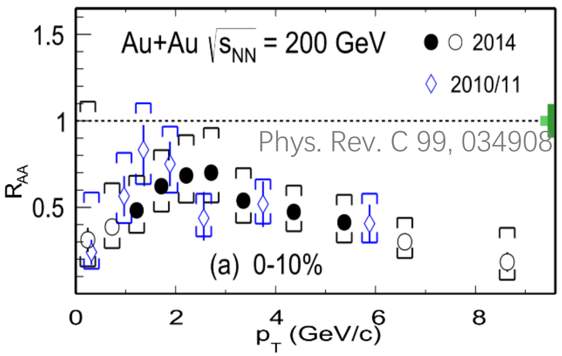
$m_c > \Lambda_{QCD}$, an ideal probe with a high probability of penetrating QGP

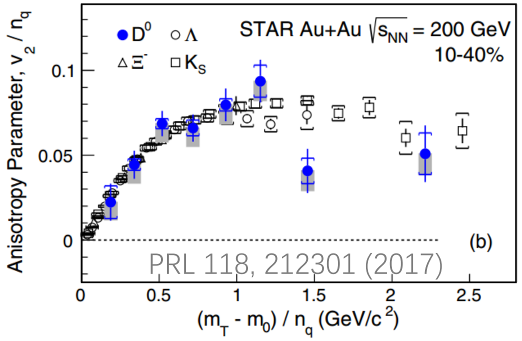


~ 350 µm, vertex resolution with more than 1000 tracks, by TPC; the precise 1/β extends PID power, TOF

Observed !

- A significant energy loss of charm quarks in Isobar collisions?
- The N_{bin}-scale effect of the D^0 p_T spectra between Isobar and Au-Au collisions?
- A strong collective behavior of charm quarks and may be close to thermal equilibrium at 200 GeV in Isobar collisions?



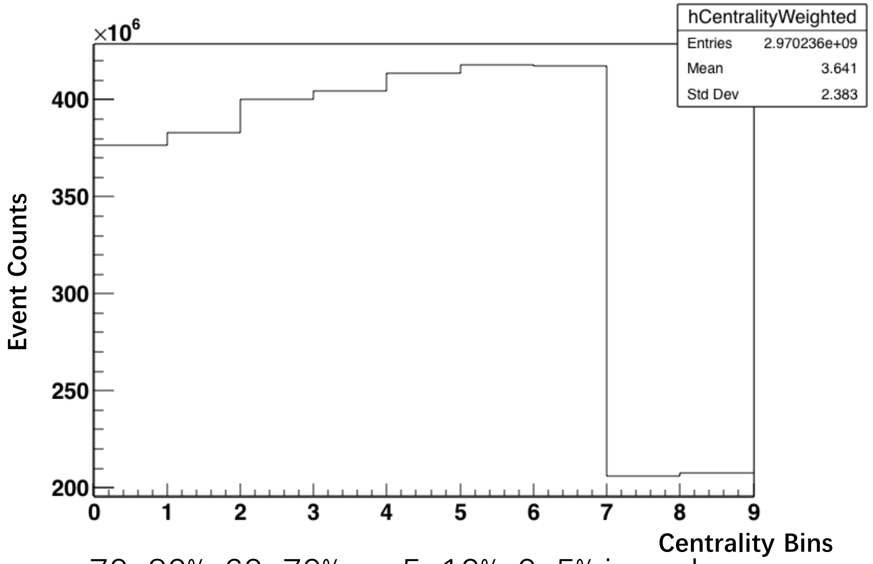


Contents

- D^0 signal reconstruction and yield extraction
- Efficiency correction to raw momentum spectra
- Systematic Uncertainty
- D^0 nuclear modification factor R_{AB} and elliptic flow v_2
- Summary and Next plan

Data sets and Analysis cuts

- **Data sets:** production_isobar_2018
- **Production tag:** P20ic
- **Trigger:** 600001, 600011, 600021, 600031 (MB)
- **Embedding Request ID:** 20201503
  (5M events for each for pi+, pi- and 1M events each for K+/K-)
- **Badrunlist:** Ru+Ru Zr+Zr



70-80%, 60-70%, ..., 5-10%, 0-5% in order.

19086038,19086050,19086052,19089047,19090019,19090021,19093042,19093043,19095061,19096002,
19096005,19096006,19098005,19098017,19098018,19098020,19102020,19102023,19103041,19104012,
19107045,19111038,19111051,19112012,19112029,19113030,19114007,19114022,19116035,19120047,
19120048,19122054,19124025,19126015,19127045,19128002, 19084053,19084055,19086060,19086061,
19086062, 19086063,19086064,19086066,19087038,19087042,19110015,19116002,19125044,19125049,
19126008,19126011,19127047;19083050,19084032,19084033,19085039,19086016,19086026,19088052,
19088053,19088055,19089005,19095031,19097001,19097005,19097040,19097046,19100054,19102055,
19103007,19103022,19107002,19115020,19117030,19122004,19122005,19122010,19126043,19088051,
19097057,19110051,19117036, 19120021, 19120025

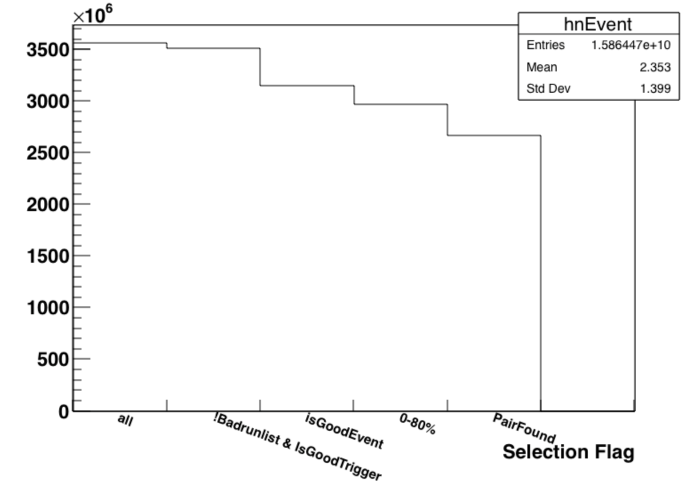
Data sets and Analysis cuts

Analysis cuts

Event Level cuts	
Cuts	Value
$\lvert V_z \rvert$	(-35,25) cm
V_r	< 2. cm
VzDiff	< 3. cm
!Badrun_list	
GoodTrigger	
!isBadRun()	
passnTofMatchRefmultCut()	
0-80%	
# Events	2.7B

Track quality cuts	
Cuts	Value
p_T (GeV/c)	> 0.6
TPC Nhits	⩾20
nHits/HitsMax	[0.52, 1.2]
gDCA	⩽ 2.0 cm
$\lvert\eta\rvert$	< 1.
nHitsDedx	> 10.
charge	±1
Primary tracks	

PID cuts	
Cuts	Value
btofYLocal (TOF matched)	[-1.8, 1.8]
p < 1.6 && β > 0	hybrid PID functions
p ≥ 1.6 && β > 0 (Pion)	hybrid PID functions
p ≥ 1.6 && !TofisAvailble	$\lvert n\sigma_K \rvert$< 2. && $\lvert n\sigma_\pi \rvert$< 2.
$\lvert y \rvert_{D^0}$	< 1.0



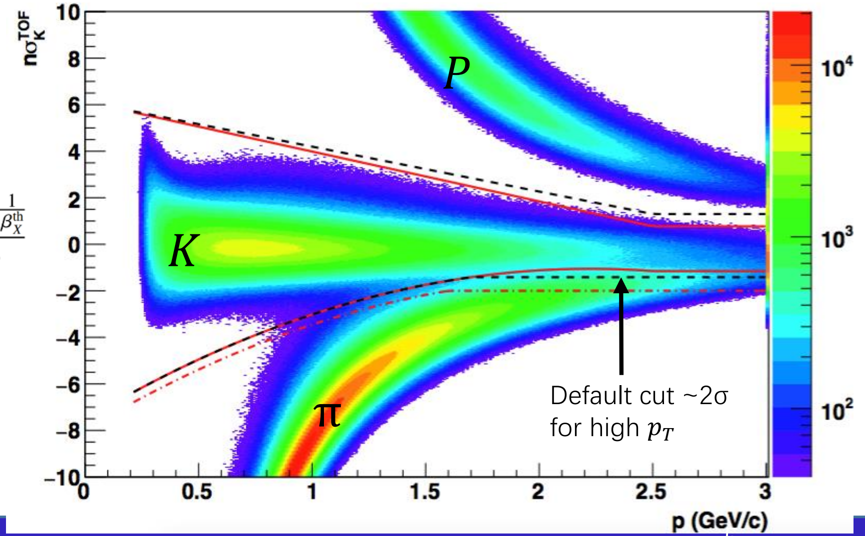
hybrid PID functions

$$f_\pi^{max}(p) = \begin{cases} 5.1-2.25p, & p\le1.6 \\ 1.5, & p>1.6 \end{cases}$$

$$f_K^{max}(p) = \begin{cases} 6.129 - 1.9316p, & p\le2.5 \\ 1.3, & p>2.5 \end{cases}$$

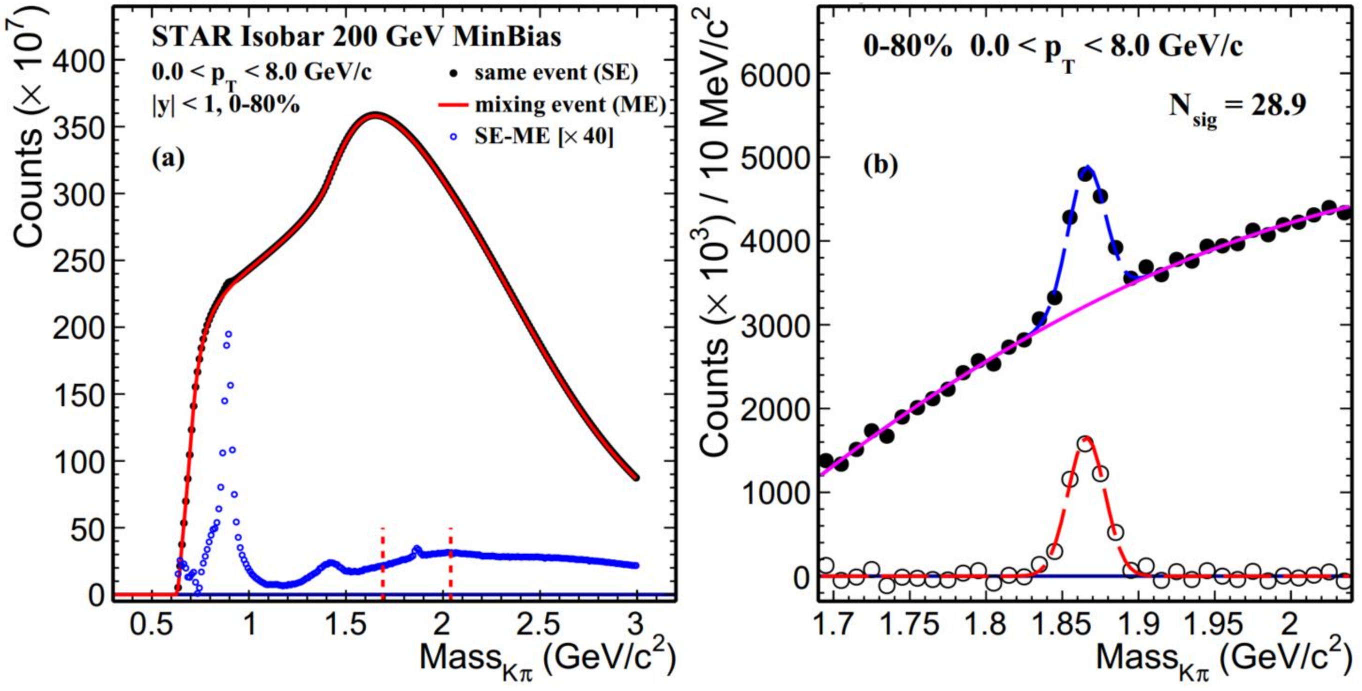
$$f_K^{min}(p) = \begin{cases} -7.54 + 5.83p - 1.31p^2, & p\le1.7 \\ -1.4149, & p>1.7 \end{cases}$$

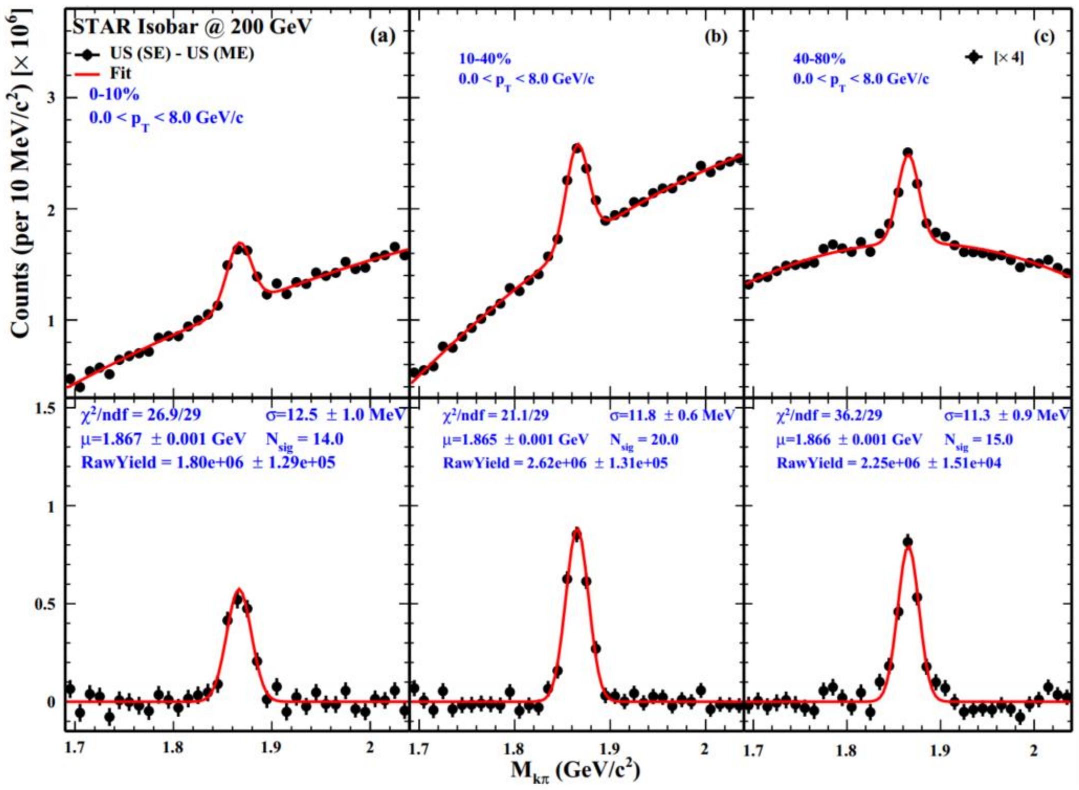
$$n\sigma_X^{\mathrm{TOF}} = \frac{\frac{1}{\beta^{\mathrm{mea}}} - \frac{1}{\beta_X^{\mathrm{th}}}}{R_{1/\beta}}$$



D^0 signal reconstruction

hadronic modes: $D^0 \rightarrow K^- + \pi^+$; $\overline{D}^0 \rightarrow K^+ + \pi^-$ (Γ_i/Γ ~ 3.95%)





- The K, π invariant mass distribution with centrality 0-80% and p_T range 0-8 GeV/c at midrapidity.
- The mix-event method can well reproduce the combination background (solid red line).

- D^0 signal at 0-10% (a), 10-40% (b), 40-80% (c) centrality bins with transverse momentum range 0-8 GeV/c at midrapidity.

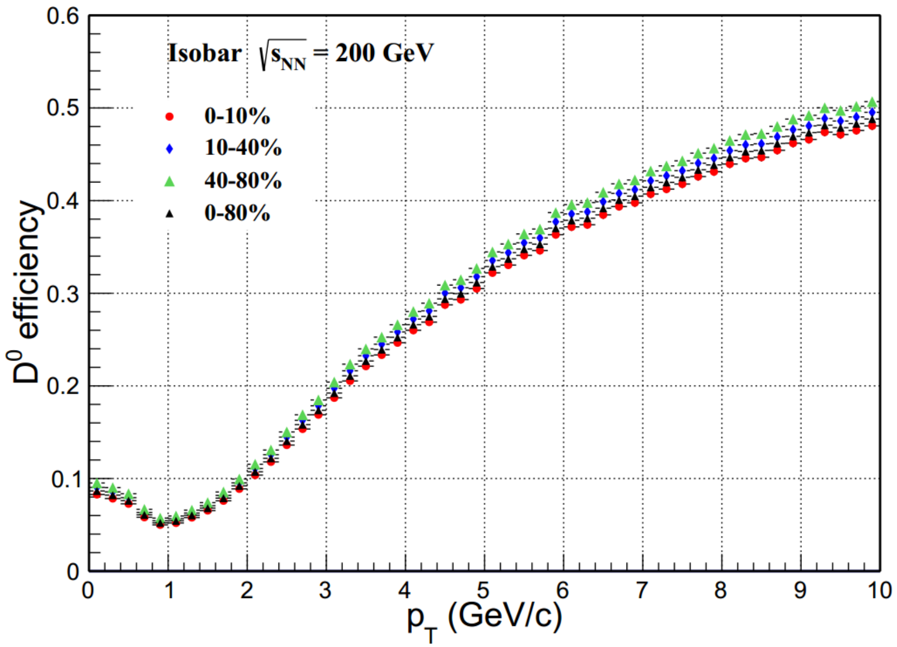
Efficiency correction procedures

$$\frac{d^2 N}{2\pi p_T dp_T dy} = \frac{\Delta N^{raw}/\epsilon_{D^0}^{reco}/2}{2\pi p_T \Delta p_T \Delta y \times N_{events} \times B.R.}$$

$$\epsilon_{D^0}^{reco} = \epsilon_{Accept} \times \epsilon_{TPC} \times \epsilon_{PID}$$

$$\epsilon_{PID} = \epsilon_{n\sigma_X} \cdot \epsilon_{TOF} \cdot \epsilon_{n\sigma_X^{TOF}} + \epsilon_{n\sigma_X} \cdot (1 - \epsilon_{TOF})$$

- ΔN^{raw} : the raw yield measured in the bin $\Delta p_T \Delta y$;
- $\epsilon_{Accept} \times \epsilon_{TPC}$: TPC acceptance and tracking efficiency (embedding);
- ϵ_{PID} : particle identification efficiency (data).



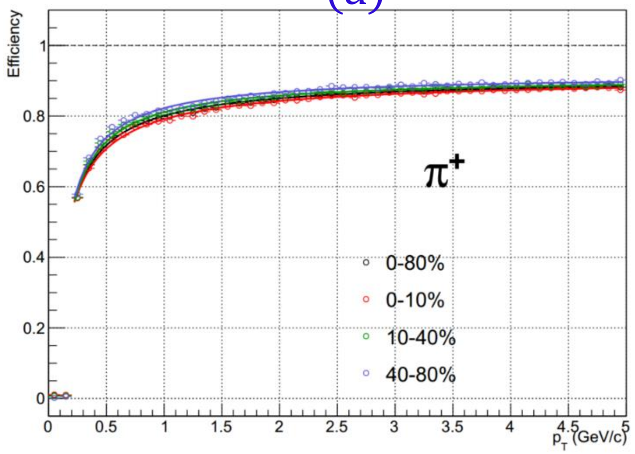
◉ D^0 efficiency as a function of D^0 transverse momentum at different centrality bins.

◉ (a) TPC tracking efficiency for Pion

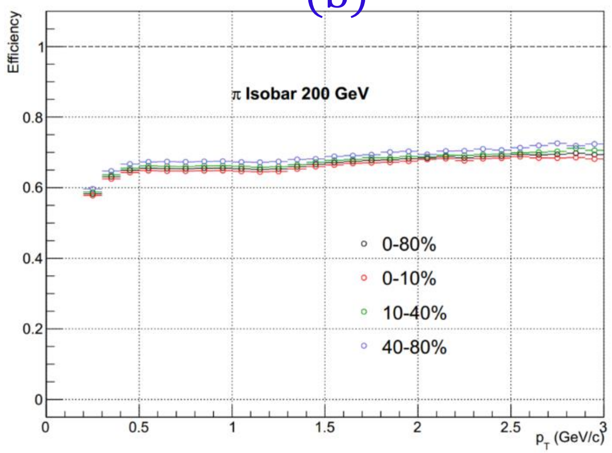
◉ (b) TOF matching efficiency for Pion

◉ (c) Pion TPC PID efficiency (black circles) and TOF PID efficiency (red circles)

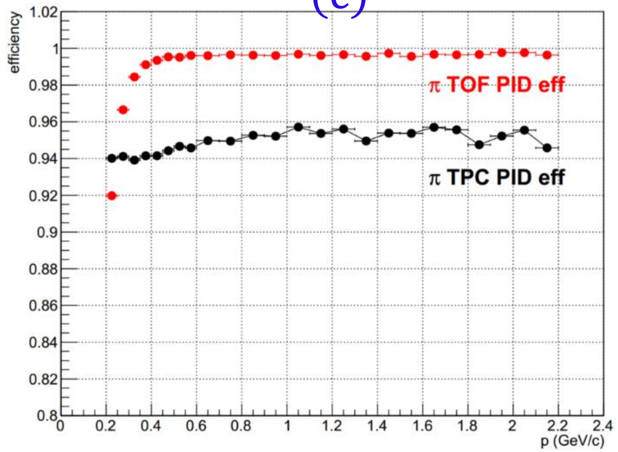
(a)



(b)



(c)



Systematic uncertainties

- Signal extraction
  - The difference between the fitting and counting methods (1.69, 2.04) GeV/c^2;
  - The order of polynomial function to depict the residual background (Pol3);
  - Signal fit range (1.73, 2.00) GeV/c^2;
  - p_T cut variation for daughter particles;
  - Mix-event like-sign normalization factor;

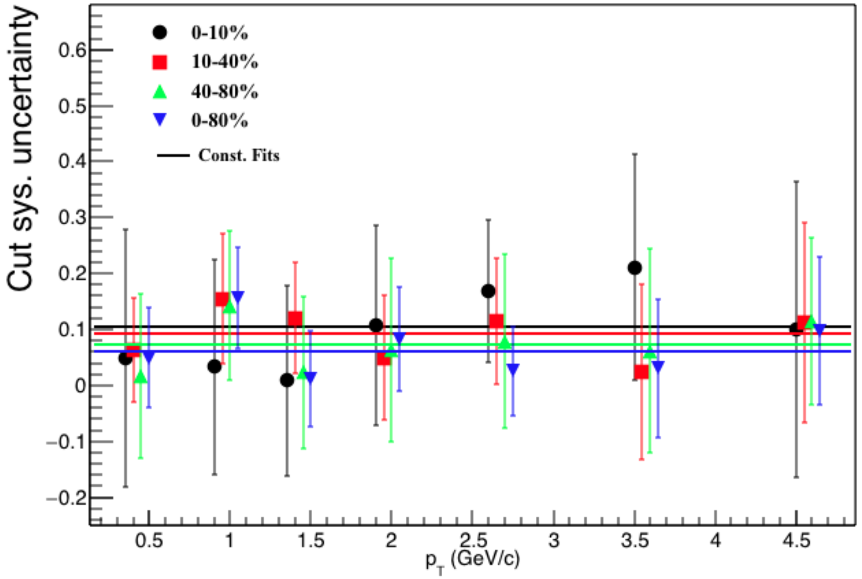
$$Y_1 = N_{raw}(p_T{>}0.6)/\epsilon_{D^0}^{reco}(p_T{>}0.6)$$

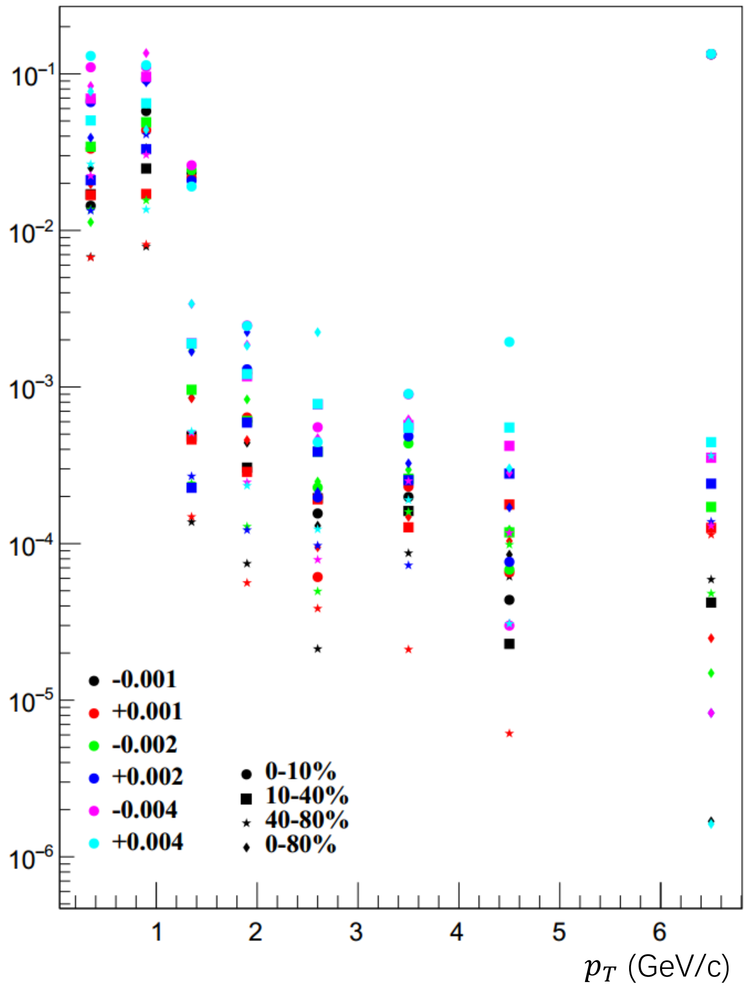
$$Y_2 = N_{raw}(p_T{>}0.2)/\epsilon_{D^0}^{reco}(p_T{>}0.2)$$

$$R = \frac{Y_1 * N_{event2} - Y_2 * N_{event1}}{Y_1 * N_{event2}}$$

Table 3: D^0 raw yield ($\times 10^5$) at different p_T range and centrality bin

pT GeV/c	0-0.7	0.7-1.1	1.1-1.6	1.6-2.2	2.2-3.0	3.0-4.0	4.0-5.0	5.0-8.0
0-80								
Fit	10.76	9.09	9.95	10.13	7.90	3.04	1.08	0.58
Count	10.57	9.37	9.69	9.64	7.93	3.05	1.04	0.62
Average	10.66	9.23	9.82	9.89	7.91	3.04	1.06	0.60
Sys. (%)	0.9	1.5	1.3	2.5	0.2	0.2	2.0	3.5
Fit sys. (%)	0.2	0.2	0.3	0.3	-	0.2	0.2	0.1
0-10								
Fit	3.14	2.59	4.10	3.63	3.49	0.95	0.38	0.13
Count	2.92	2.66	3.99	3.66	3.70	0.93	0.35	0.12
Average	3.03	2.62	4.04	3.65	3.60	0.94	0.37	0.12
Sys. (%)	3.7	1.2	1.4	0.5	2.9	1.1	3.5	3.8
Fit sys. (%)	3.2	4.5	2.8	1.3	7.1	2.8	2.1	7.9
10-40								
Fit	6.45	4.35	5.03	5.58	3.49	1.78	0.57	0.28
Count	6.30	4.54	5.08	5.28	3.39	1.69	0.56	0.29
Average	6.38	4.45	5.06	5.43	3.44	1.73	0.57	0.29
Sys. (%)	1.2	2.1	0.5	2.7	1.4	2.7	0.6	2.0
Fit sys. (%)	-	-	0.2	0.3	0.1	0.2	-	0.5
40-80								
Fit	1.26	1.09	0.94	0.90	1.06	0.40	0.17	0.10
Count	1.27	1.16	0.88	0.95	0.92	0.46	0.16	0.10
Average	1.27	1.12	0.91	0.93	0.99	0.43	0.16	0.10
Sys. (%)	0.14	3.2	3.4	3.0	7.3	7.3	3.5	1.3
Fit sys. (%)	0.8	3.4	1.4	1.1	0.2	0.3	0.4	0.3

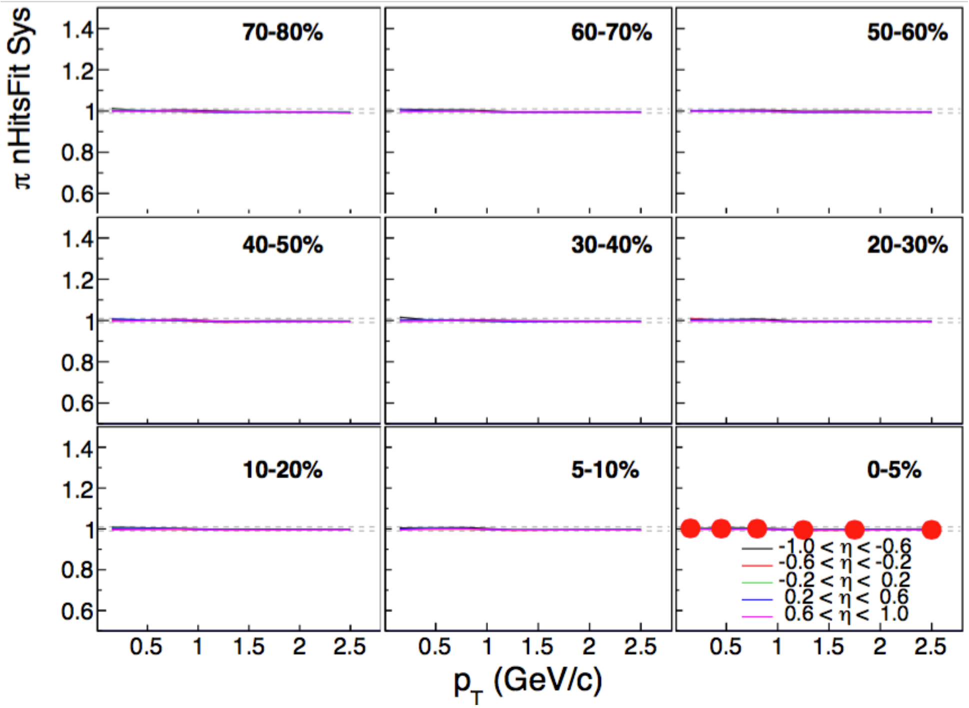


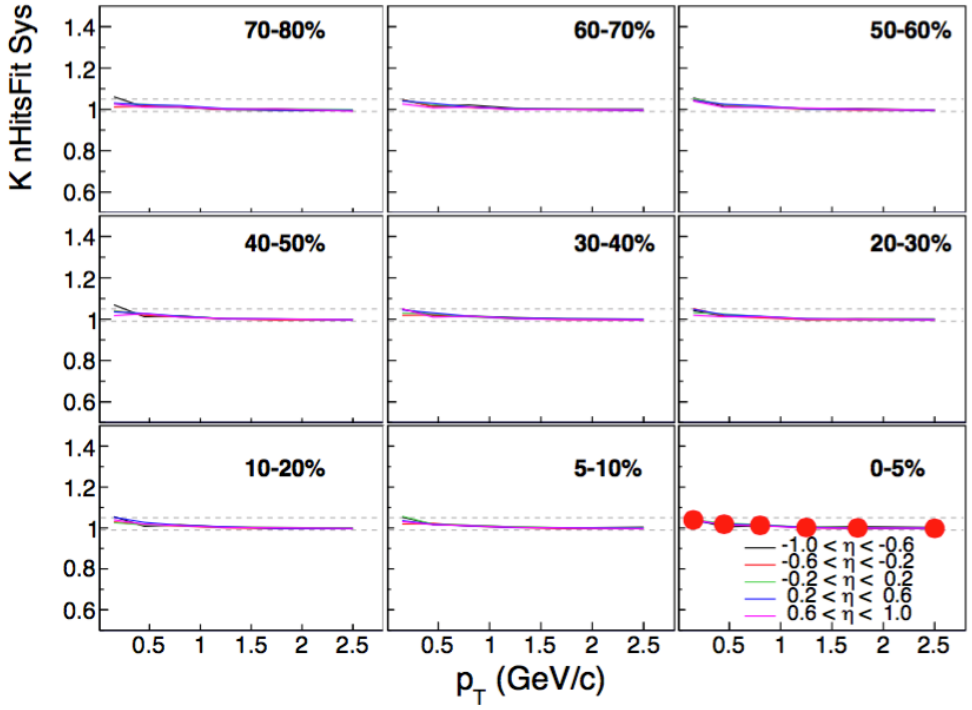


Systematic uncertainties

- TPC tracking
  - DCA: 2cm (default);
  - nHitsFit: 20 (default)

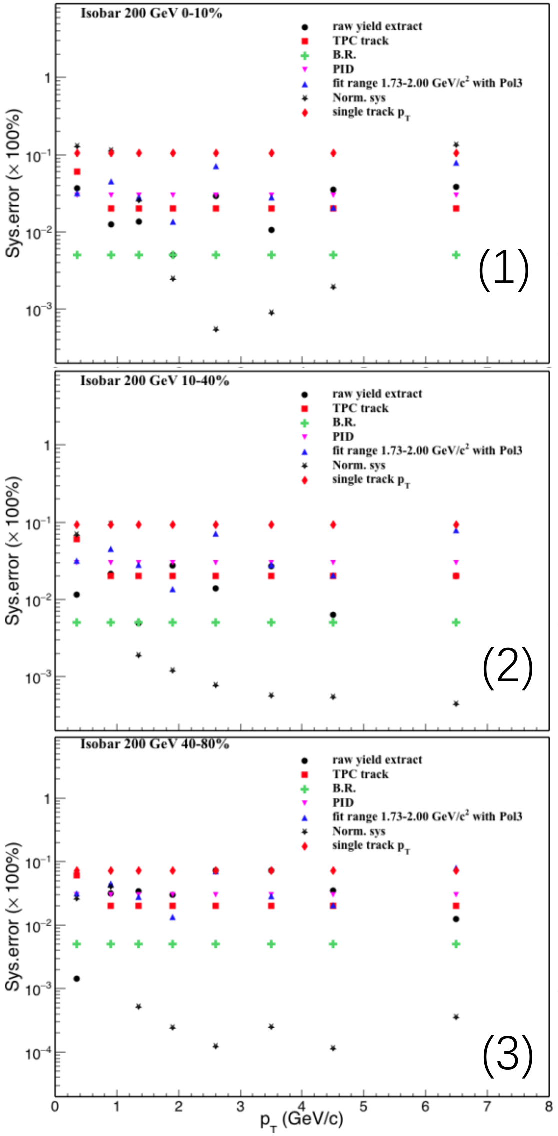
$$R(nHitsFit) = \frac{N_{data}(nHitsFit > 15)/N_{data}(nHitsFit \geq 20)}{N_{emb}^{MC}(nHitsFit > 15)/N_{emb}^{MC}(nHitsFit \geq 20)}$$

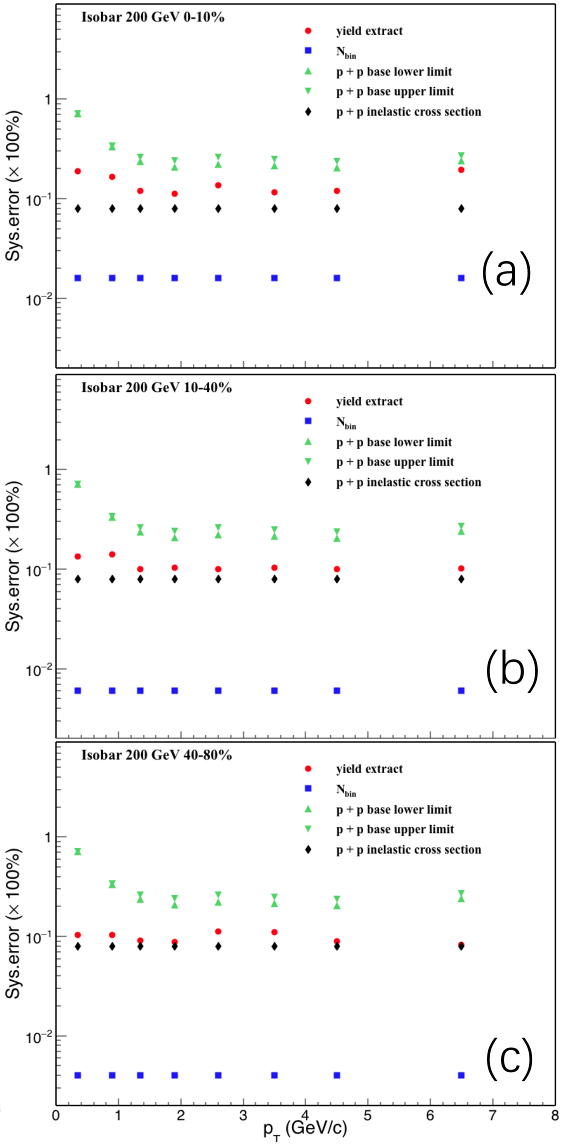




- PID cuts 3%
- B.R. 0.5%
- p + p inelastic scattering cross section 8%

Systematic uncertainties





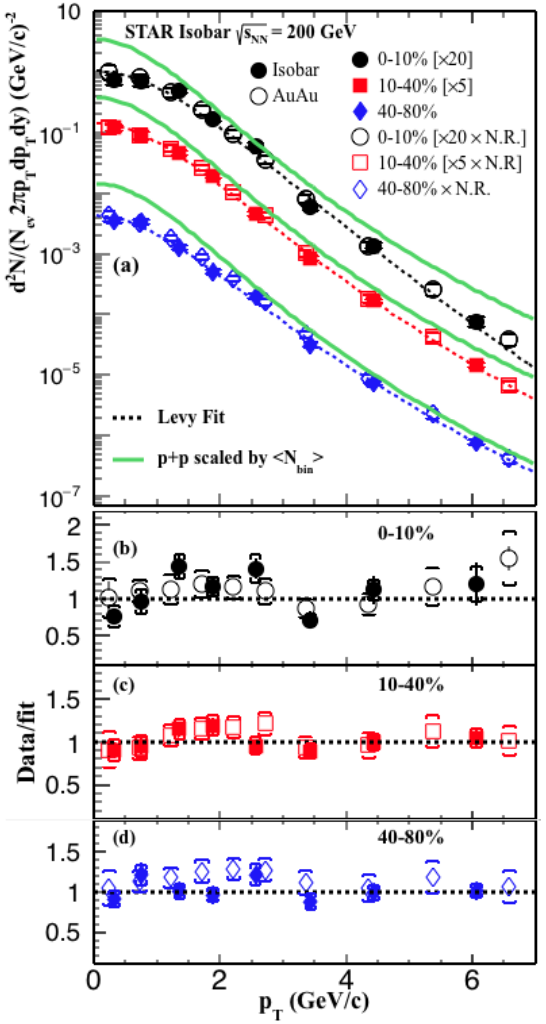
$$R_{AA} = \frac{1}{\langle N_{\text{bin}} \rangle} \frac{\mathrm{d}^2 N_{AA}^{D^0} / \mathrm{d}p_T\ \mathrm{d}y}{\mathrm{d}^2 N_{pp}^{D^0} / \mathrm{d}p_T\ \mathrm{d}y}$$

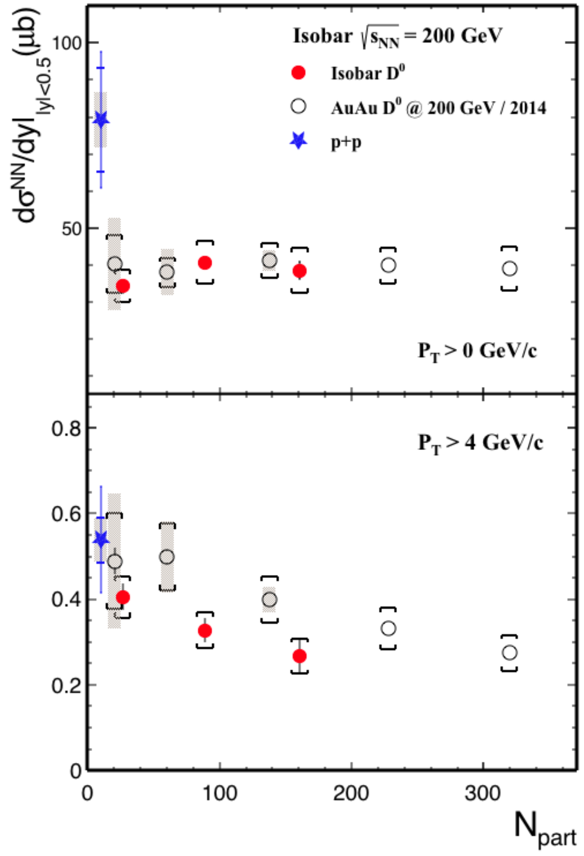
Table Systematic uncertainties in D^0 analysis

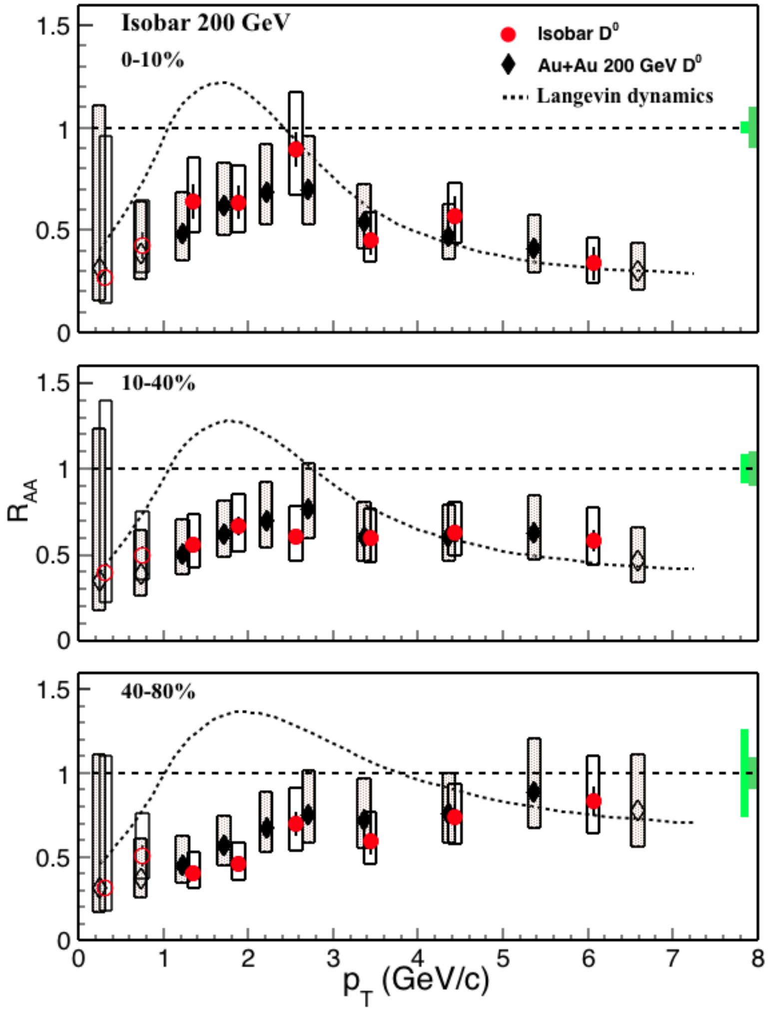
		0-10%	10-40%	40-80%	Correlation in pT
	Raw yield	11.3-19.6%	10.0-14.0%	8.3-11.2 %	uncorrelated
	Double counting	0.7%	0.8%	0.9%	uncorrelated
spectra	PID	3%	3%	3%	Largely correlated
	TPC	2-6%	2-6%	2-6%	Largely correlated
	B.R.	0.5%	0.5%	0.5%	global
R_{AA}	<Nbin>	1.6%	0.6%	0.4%	global
	ppbase	20.6-71.8%	20.6-71.8%	20.6-71.8%	partially correlated
		0-10%		10-40%	
Rcp	Raw yield	13.6-20.7%		12.4-16.5 %	uncorrelated
(/40-80%)	B.R.	0		0	global
	TPC	0		0	Largely correlated
Integrated cross		pt>0		pt >4 GeV/c	
section	Total	12.7-15.8%		12.0-15.2 %	

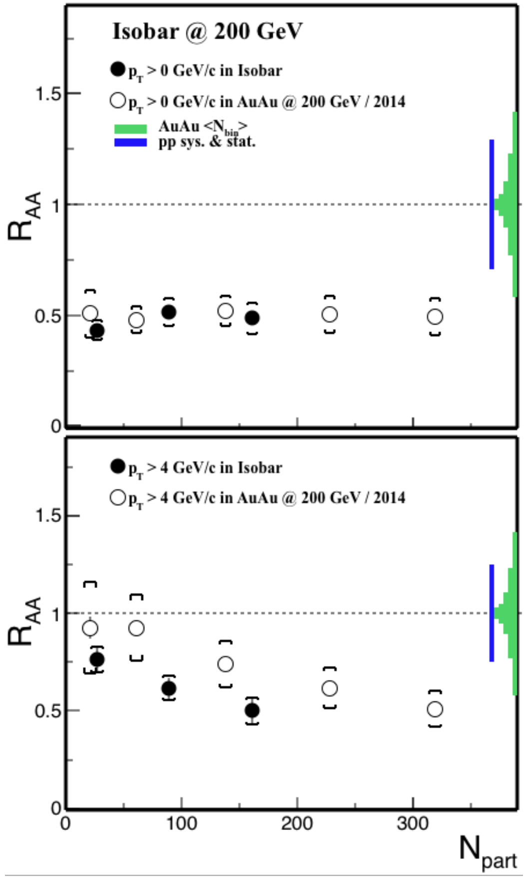
- D^0 spectra at 0-10% (1), 10-40% (2), 40-80% (3).
- D^0 R_{AA} at 0-10% (a), 10-40% (b), 40-80% (c).

p_T Spectra and Integrated yields







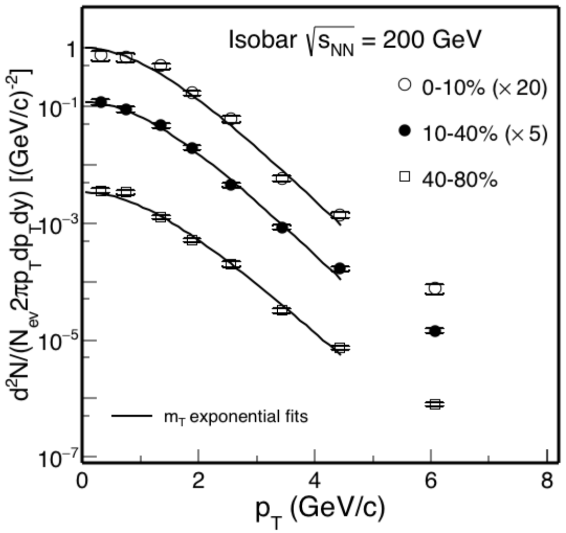


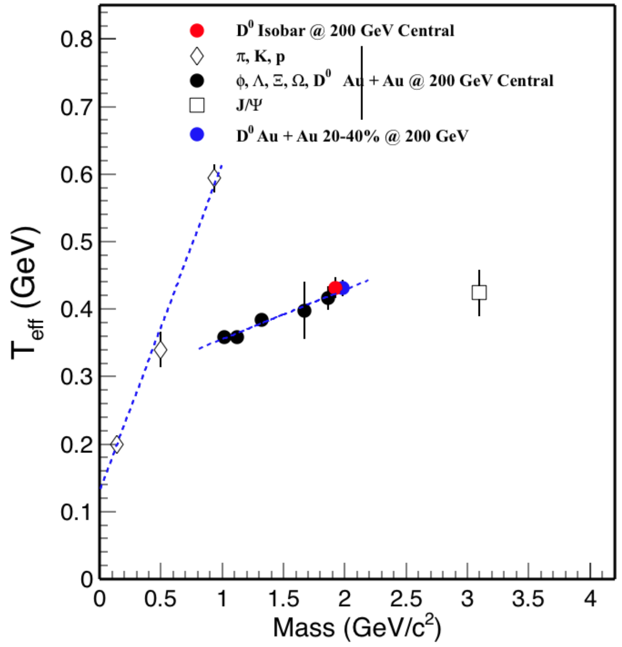
- D^0 invariant yields at mid-rapidity (|y|<1) vs. transverse momentum for different centrality classes in Isobar (solid) and Au + Au (open) collisions at $\sqrt{s_{NN}}$ = 200 GeV.
- D^0 integrated corss sections per nucleon-nucleon collision in Isobar.
- D^0 R_{AA} for different centrality classes in Isobar collisions compared to that of Au + Au results, quenching of hard probes.
- D^0 integrated R_{AA} vs. $< N_{part}>$ for p_T > 0 and p_T > 4 GeV/c in Isobar and Au + Au collisions.

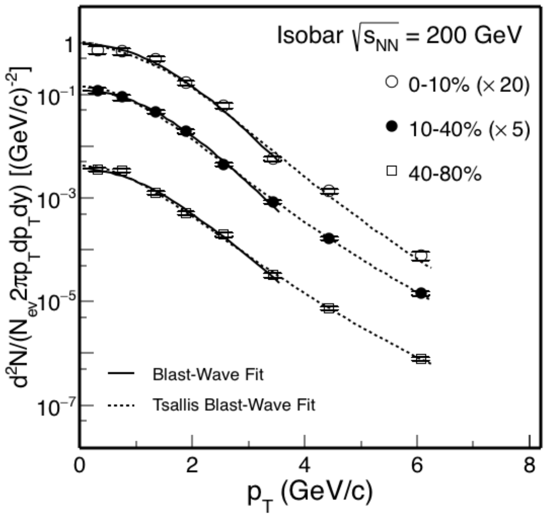
m_T Spectra and Collectivity

$$\frac{d^2N}{2\pi p_T dp_T dy} = \frac{d^2N}{2\pi m_T dm_T dy} = \frac{dN/dy}{2\pi T_{\text{eff}}\,(m_0 + T_{\text{eff}})} e^{-(m_T - m_0)/T_{\text{eff}}}$$

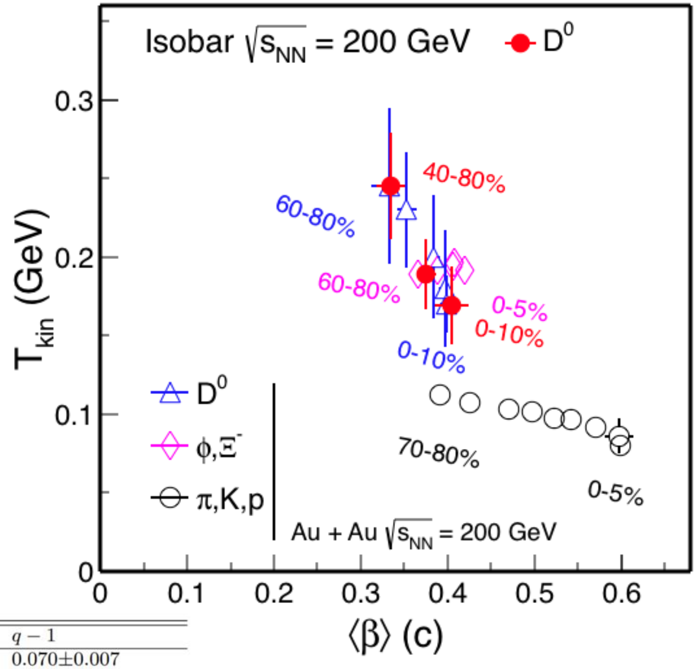
$$\frac{dN}{p_T dp_T} = \frac{dN}{m_T dm_T} \propto \int_0^R r dr m_T I_0\left(\frac{p_T \sinh\rho}{T_{\text{kin}}}\right) K_1\left(\frac{m_T \cosh\rho}{T_{\text{kin}}}\right)$$





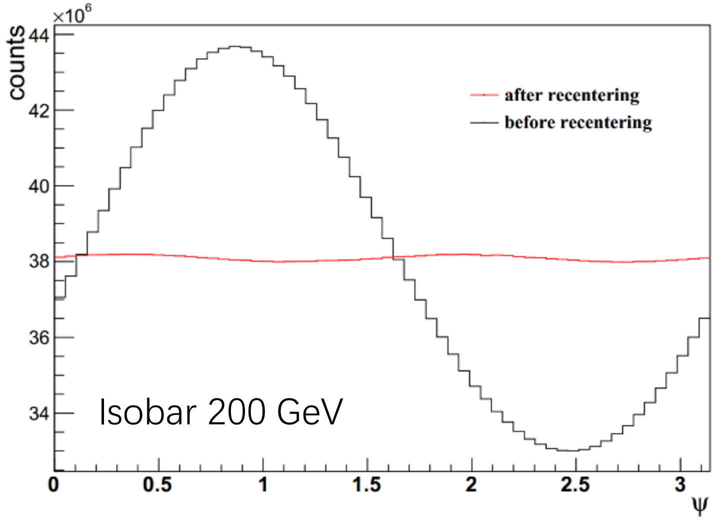


Centrality	$\langle\beta\rangle$	$q-1$
0-10%	0.282±0.018	0.070±0.007
10-40%	0.207±0.030	0.080±0.069
40-80%	0.189±0.031	0.089±0.005

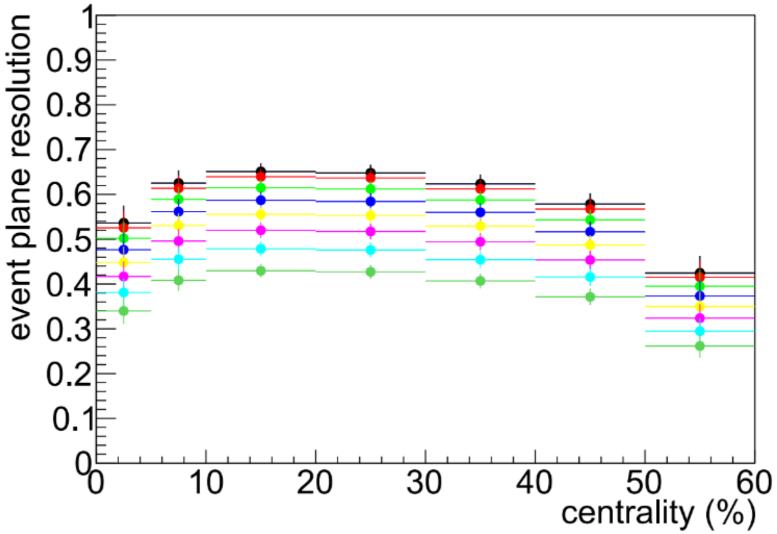


- D^0 invariant yield at mid − rapidity (|y|<1) vs. p_T for different centrality bins fitted with m_T distribution.
- T_{eff} for D^0 in central Isobar collisions is consistent with that of Au + Au results.
- D^0 invariant yield at mid − rapidity (|y|<1) vs. p_T for different centrality bins fitted with blast-wave function.
- D^0 freeze out temperature in Isobar collisions are consistent with that of in Au + Au collisions for the same centrality.
- The average flow velocity increases with central collision, and (q −1) is also found to be close to zero.

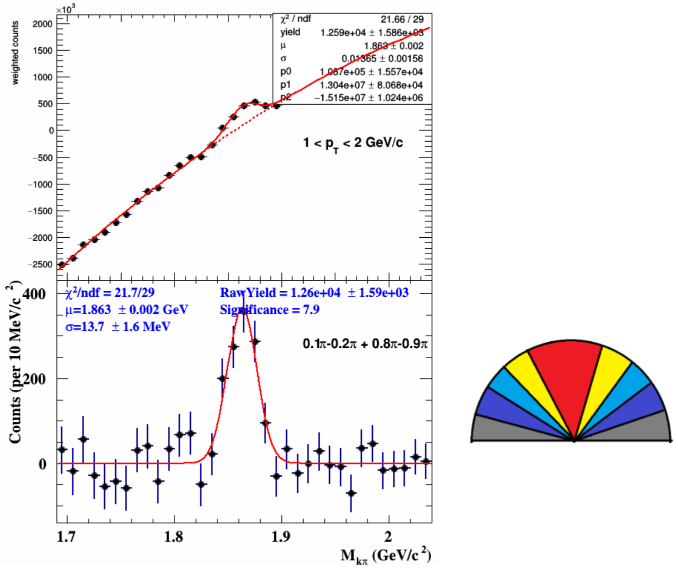
Event plane method to measure D^0 v_2



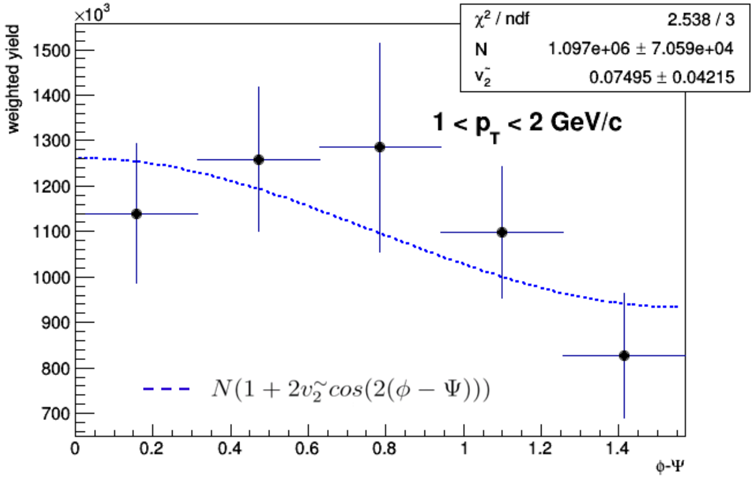
① Event plane reconstruction and recentering



② Event plane resolution



③ Signal reconstruction with 4 p_T bins and 5 Δφ bins (semicircle)

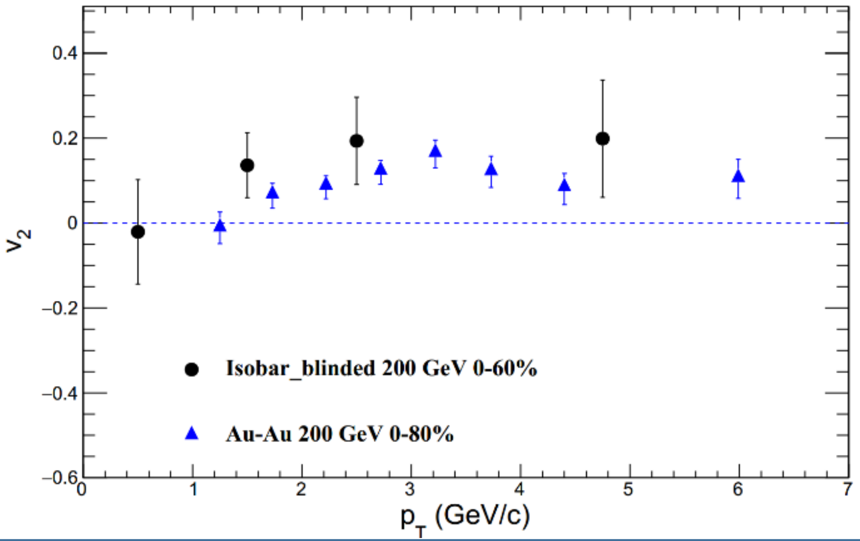


④ Different (φ-ψ) bin D^0 signal at 1.0 < p_T < 2.0 GeV/c

⑤ v_2 correction

- A scale of Δ/sinΔ = 1.01664 is done to correct for finite bin width Δ = 0.1π;
- The $\widetilde{v_2}$ is divided by <1/R>, weighted by the D^0 yield, to get physics v_2.

https://drupal.star.bnl.gov/STAR/system/files/D0_spectra_v2_20211230.pdf



Summary and Next plan

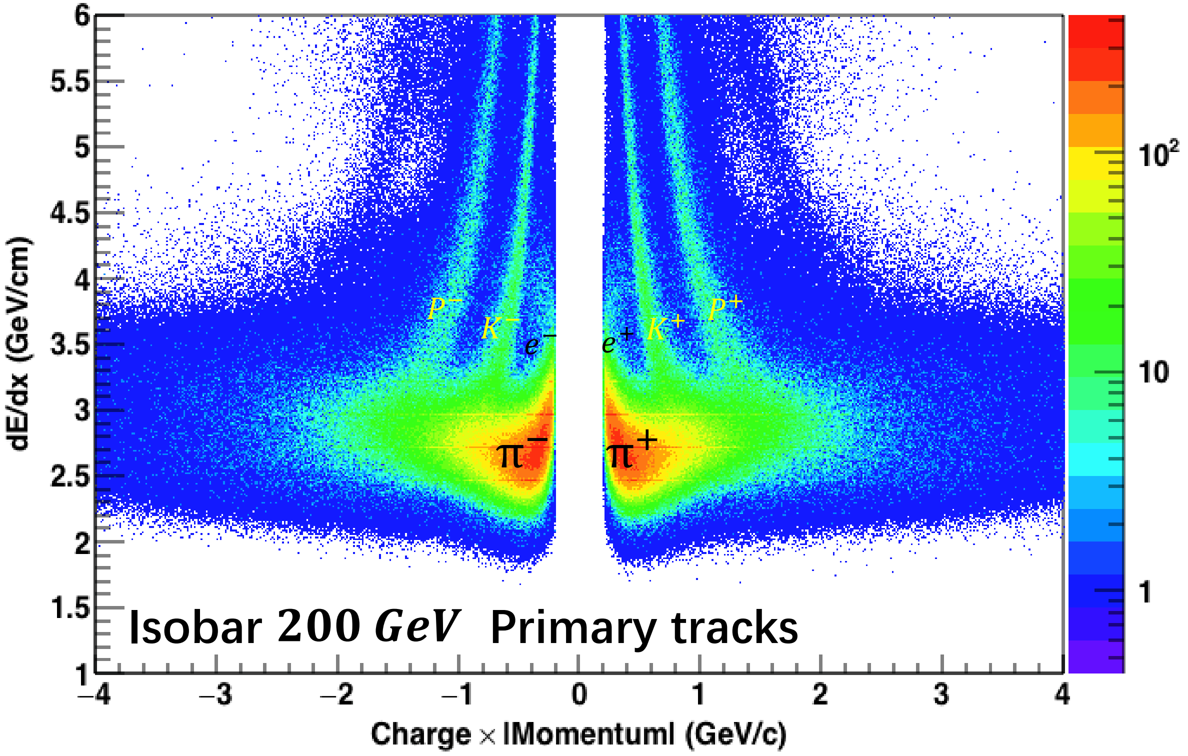
- D^0 p_T spectra, R_{AA} and integrated cross sections are measured in Isobar, and the result is compared to Au+Au collisions at 200 GeV;

- Non-zero D^0 v_2 in Isobar collisions at 200 GeV is observed;

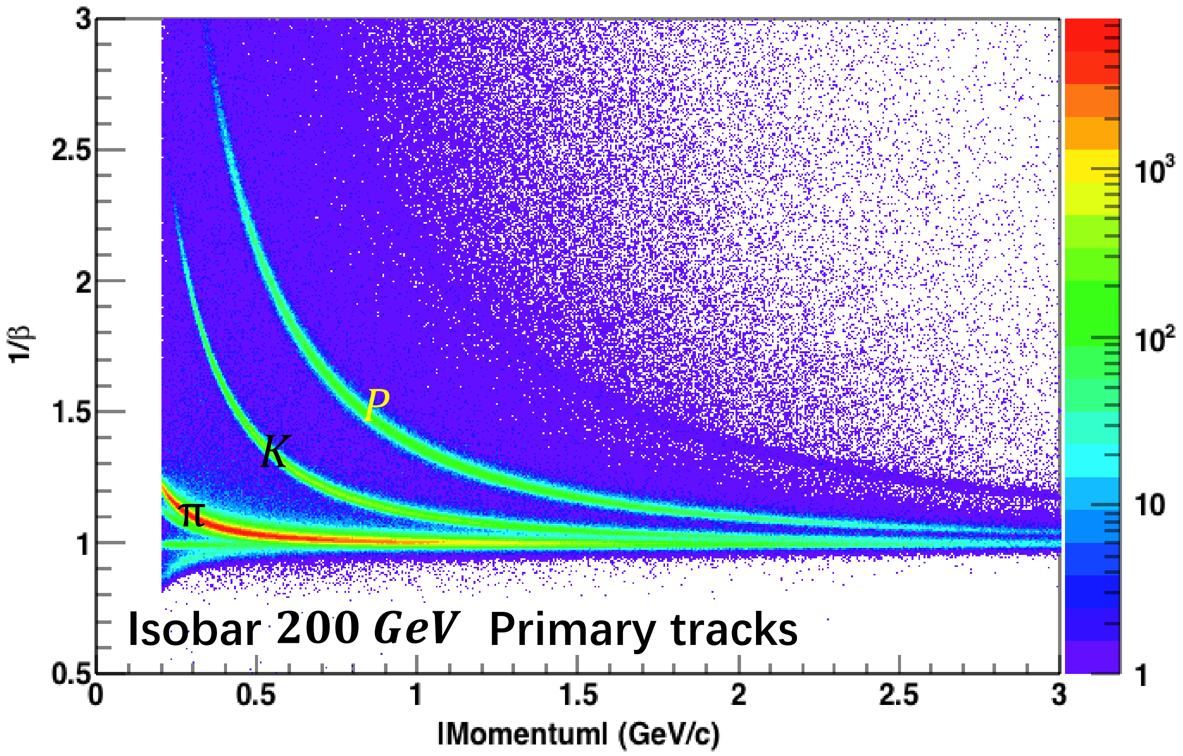
- The next step is to push D^0 R_{AA} result to PWC review.

Back up

Isobar $\sqrt{S_{NN}} = 200\ GeV$ Primary tracks

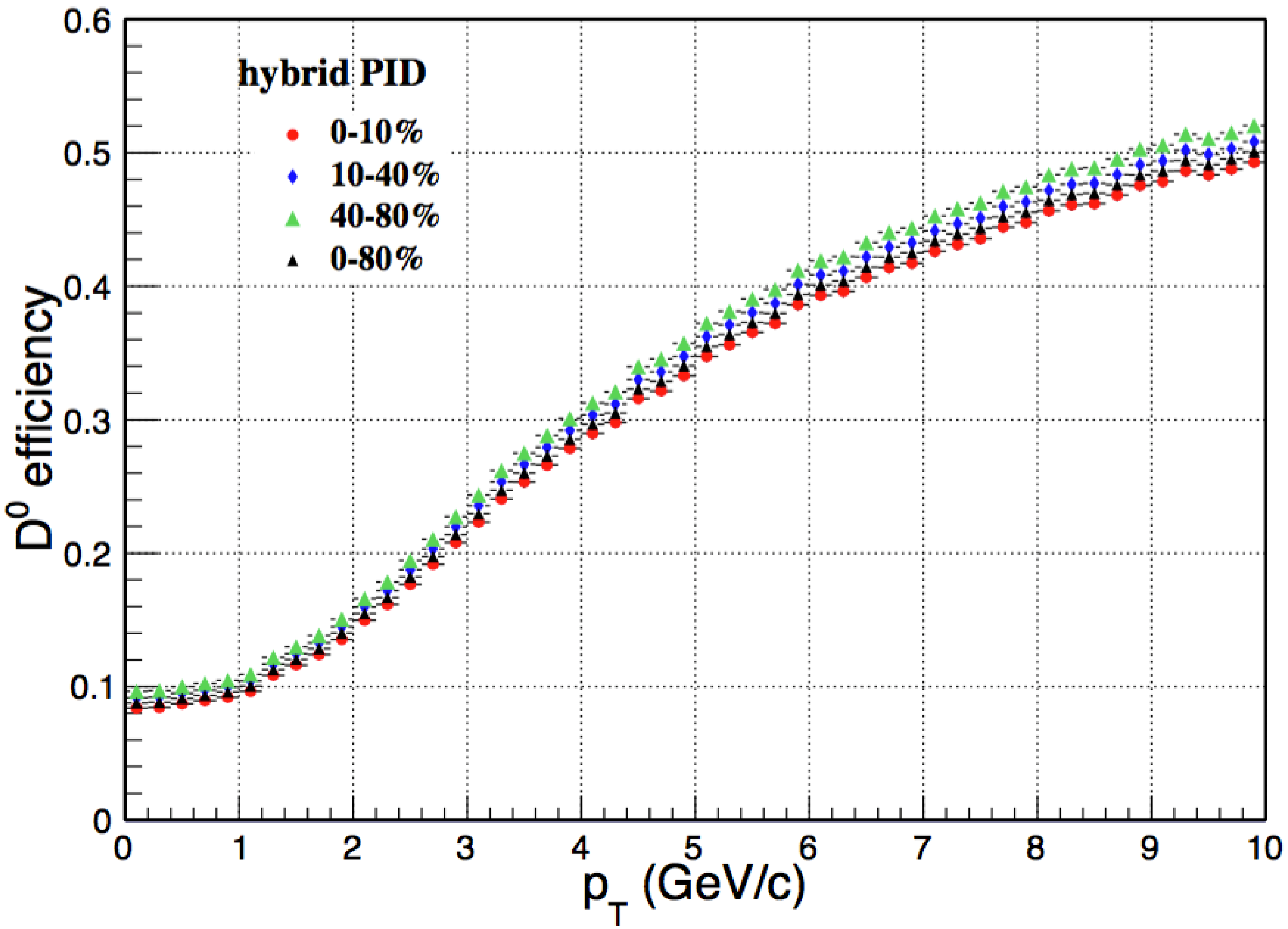


TPC PID



TOF PID: $\beta=\frac{L}{ct}$

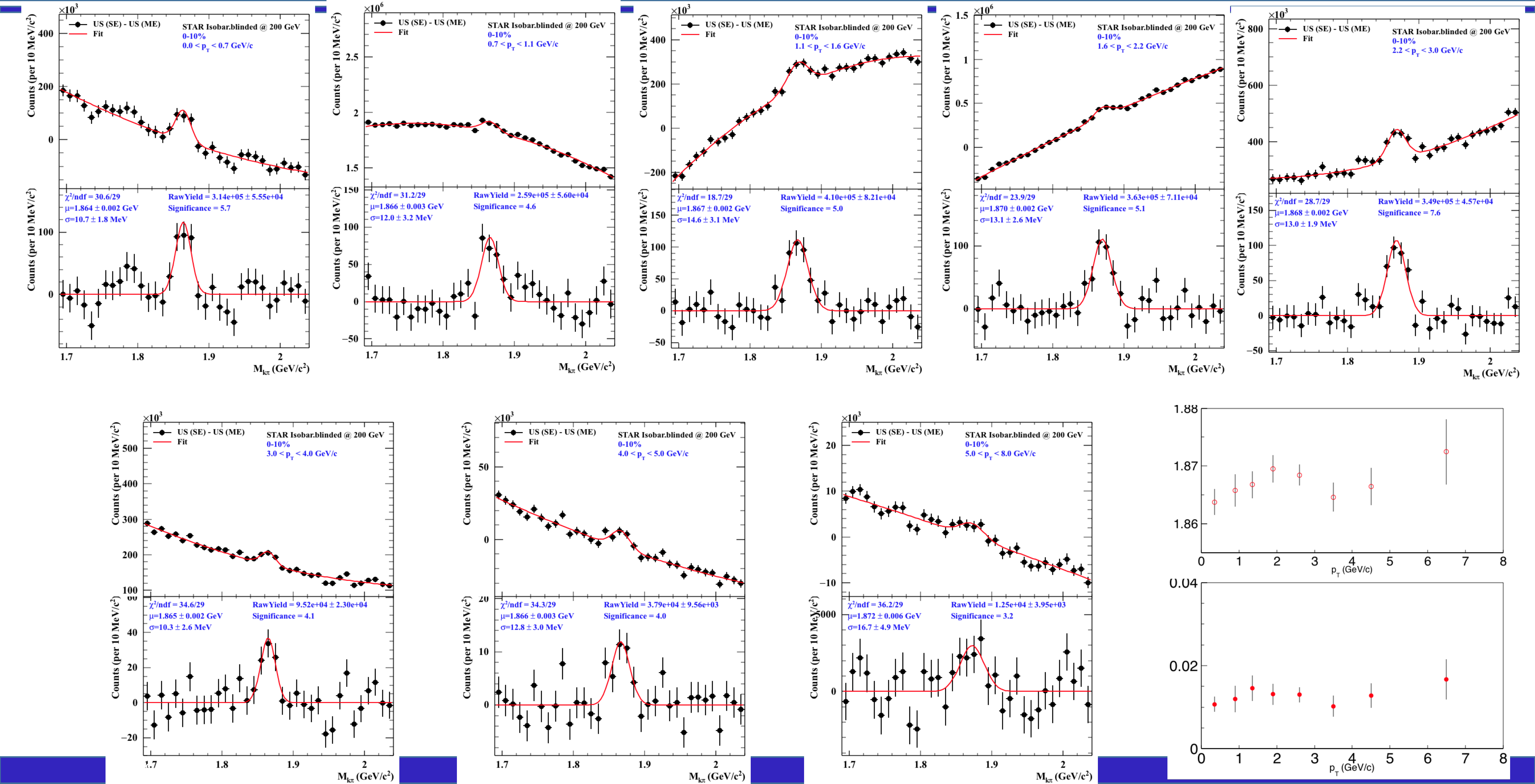
Back up



$p_T > 0.2\ GeV/c$

0-10%

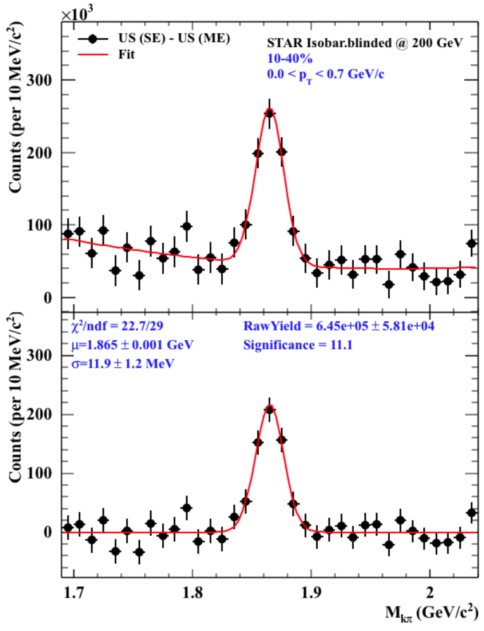
Back up



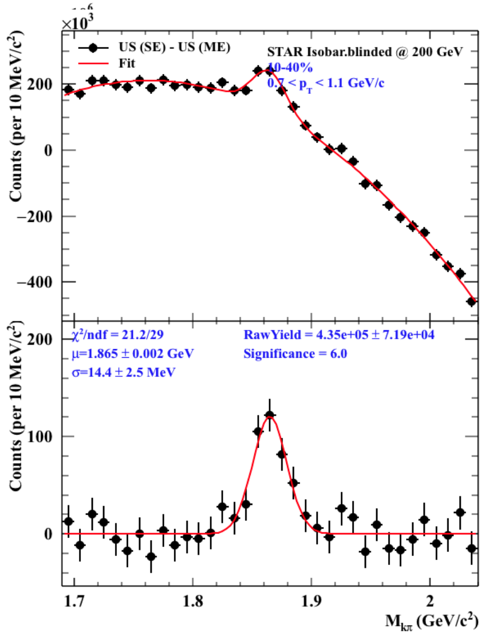
US (SE) - US (ME)
Fit
STAR Isobar.blinded @ 200 GeV
0-10%
0.0 < p_T < 0.7 GeV/c
χ2/ndf = 30.6/29
μ=1.864 ± 0.002 GeV
σ=10.7 ± 1.8 MeV
RawYield = 3.14e+05 ± 5.55e+04
Significance = 5.7
0.7 < p_T < 1.1 GeV/c
χ2/ndf = 31.2/29
μ=1.866 ± 0.003 GeV
σ=12.0 ± 3.2 MeV
RawYield = 2.59e+05 ± 5.60e+04
Significance = 4.6
1.1 < p_T < 1.6 GeV/c
χ2/ndf = 18.7/29
μ=1.867 ± 0.002 GeV
σ=14.6 ± 3.1 MeV
RawYield = 4.10e+05 ± 8.21e+04
Significance = 5.0
1.6 < p_T < 2.2 GeV/c
χ2/ndf = 23.9/29
μ=1.870 ± 0.002 GeV
σ=13.1 ± 2.6 MeV
RawYield = 3.63e+05 ± 7.11e+04
Significance = 5.1
2.2 < p_T < 3.0 GeV/c
χ2/ndf = 28.7/29
μ=1.868 ± 0.002 GeV
σ=13.0 ± 1.9 MeV
RawYield = 3.49e+05 ± 4.57e+04
Significance = 7.6
3.0 < p_T < 4.0 GeV/c
χ2/ndf = 34.6/29
μ=1.865 ± 0.002 GeV
σ=10.3 ± 2.6 MeV
RawYield = 9.52e+04 ± 2.30e+04
Significance = 4.1
4.0 < p_T < 5.0 GeV/c
χ2/ndf = 34.3/29
μ=1.866 ± 0.003 GeV
σ=12.8 ± 3.0 MeV
RawYield = 3.79e+04 ± 9.56e+03
Significance = 4.0
5.0 < p_T < 8.0 GeV/c
χ2/ndf = 36.2/29
μ=1.872 ± 0.006 GeV
σ=16.7 ± 4.9 MeV
RawYield = 1.25e+04 ± 3.95e+03
Significance = 3.2
Counts (per 10 MeV/c2)
Mkπ (GeV/c2)
p_T (GeV/c)

10-40%

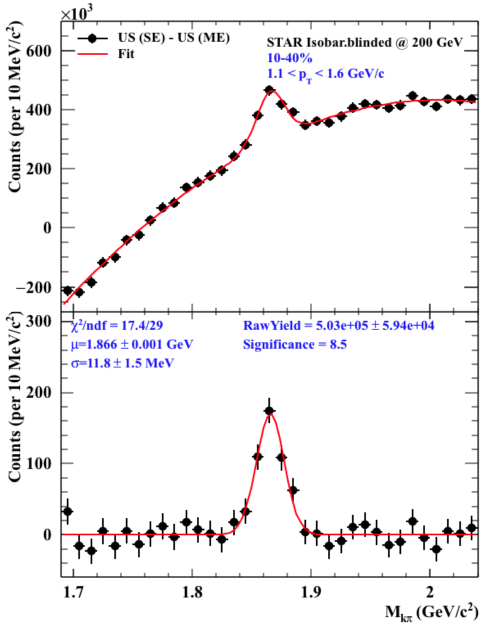
Back up



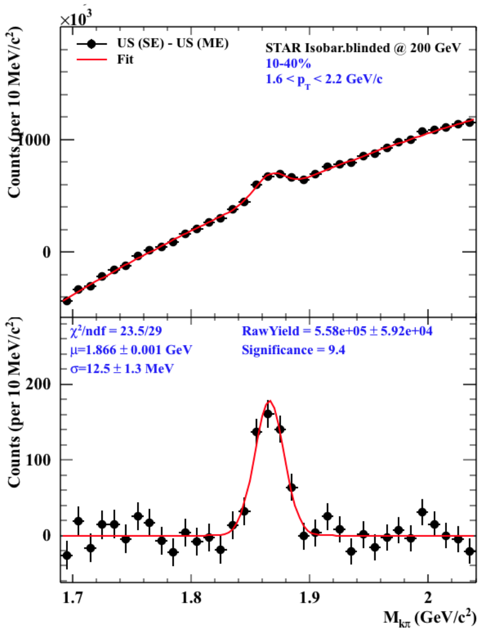
US (SE) - US (ME)
Fit
STAR Isobar.blinded @ 200 GeV
10-40%
0.0 < p_T < 0.7 GeV/c
χ²/ndf = 22.7/29
μ=1.865 ± 0.001 GeV
σ=11.9 ± 1.2 MeV
RawYield = 6.45e+05 ± 5.81e+04
Significance = 11.1
Counts (per 10 MeV/c²)
M_kπ (GeV/c²)



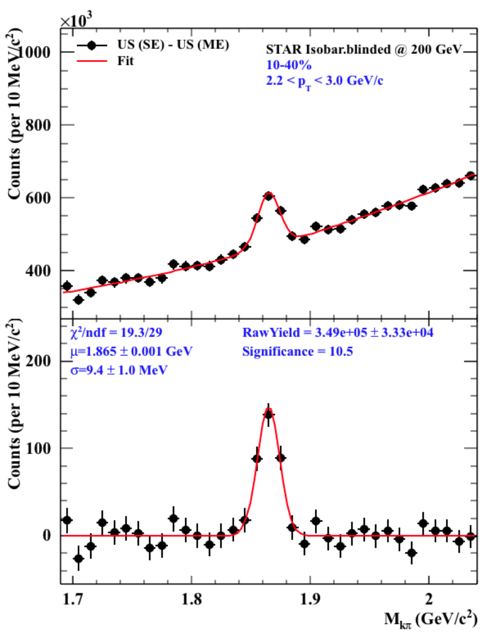
US (SE) - US (ME)
Fit
STAR Isobar.blinded @ 200 GeV
10-40%
0.7 < p_T < 1.1 GeV/c
χ²/ndf = 21.2/29
μ=1.865 ± 0.002 GeV
σ=14.4 ± 2.5 MeV
RawYield = 4.35e+05 ± 7.19e+04
Significance = 6.0
Counts (per 10 MeV/c²)
M_kπ (GeV/c²)



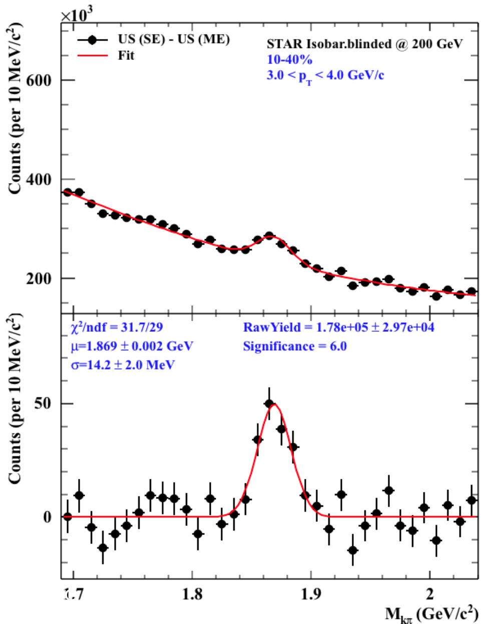
US (SE) - US (ME)
Fit
STAR Isobar.blinded @ 200 GeV
10-40%
1.1 < p_T < 1.6 GeV/c
χ²/ndf = 17.4/29
μ=1.866 ± 0.001 GeV
σ=11.8 ± 1.5 MeV
RawYield = 5.03e+05 ± 5.94e+04
Significance = 8.5
Counts (per 10 MeV/c²)
M_kπ (GeV/c²)



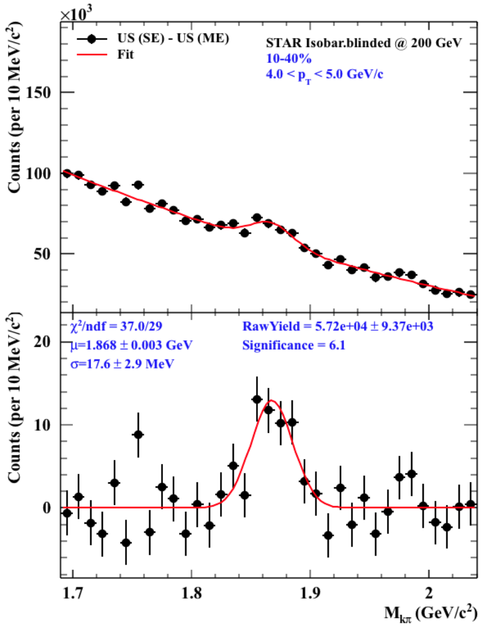
US (SE) - US (ME)
Fit
STAR Isobar.blinded @ 200 GeV
10-40%
1.6 < p_T < 2.2 GeV/c
χ²/ndf = 23.5/29
μ=1.866 ± 0.001 GeV
σ=12.5 ± 1.3 MeV
RawYield = 5.58e+05 ± 5.92e+04
Significance = 9.4
Counts (per 10 MeV/c²)
M_kπ (GeV/c²)



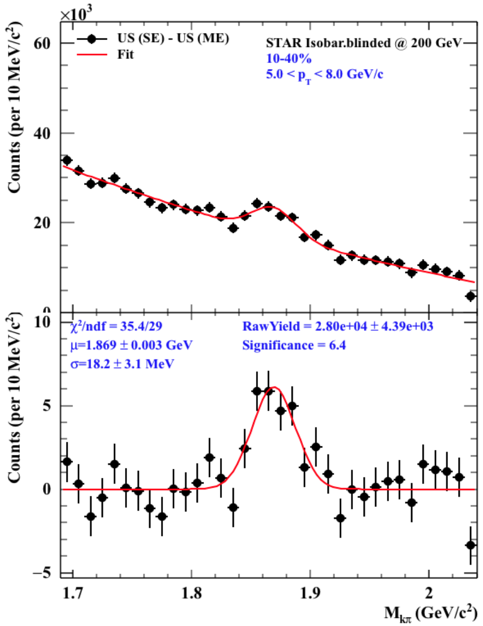
US (SE) - US (ME)
Fit
STAR Isobar.blinded @ 200 GeV
10-40%
2.2 < p_T < 3.0 GeV/c
χ²/ndf = 19.3/29
μ=1.865 ± 0.001 GeV
σ=9.4 ± 1.0 MeV
RawYield = 3.49e+05 ± 3.33e+04
Significance = 10.5
Counts (per 10 MeV/c²)
M_kπ (GeV/c²)



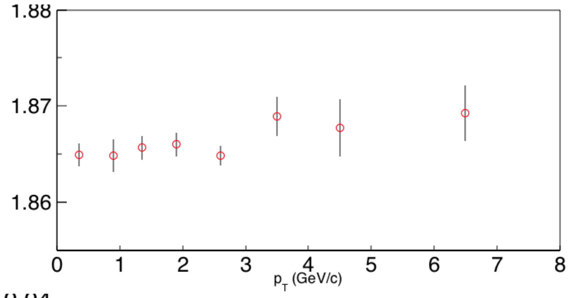
US (SE) - US (ME)
Fit
STAR Isobar.blinded @ 200 GeV
10-40%
3.0 < p_T < 4.0 GeV/c
χ²/ndf = 31.7/29
μ=1.869 ± 0.002 GeV
σ=14.2 ± 2.0 MeV
RawYield = 1.78e+05 ± 2.97e+04
Significance = 6.0
Counts (per 10 MeV/c²)
M_kπ (GeV/c²)



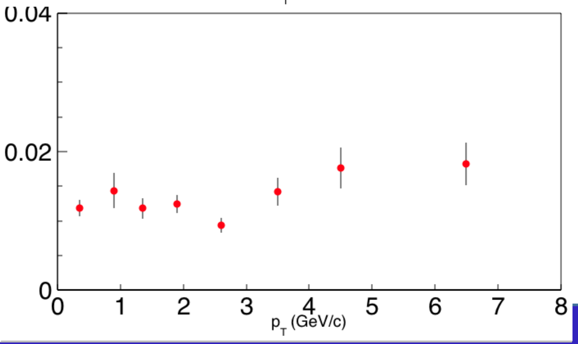
US (SE) - US (ME)
Fit
STAR Isobar.blinded @ 200 GeV
10-40%
4.0 < p_T < 5.0 GeV/c
χ²/ndf = 37.0/29
μ=1.868 ± 0.003 GeV
σ=17.6 ± 2.9 MeV
RawYield = 5.72e+04 ± 9.37e+03
Significance = 6.1
Counts (per 10 MeV/c²)
M_kπ (GeV/c²)



US (SE) - US (ME)
Fit
STAR Isobar.blinded @ 200 GeV
10-40%
5.0 < p_T < 8.0 GeV/c
χ²/ndf = 35.4/29
μ=1.869 ± 0.003 GeV
σ=18.2 ± 3.1 MeV
RawYield = 2.80e+04 ± 4.39e+03
Significance = 6.4
Counts (per 10 MeV/c²)
M_kπ (GeV/c²)



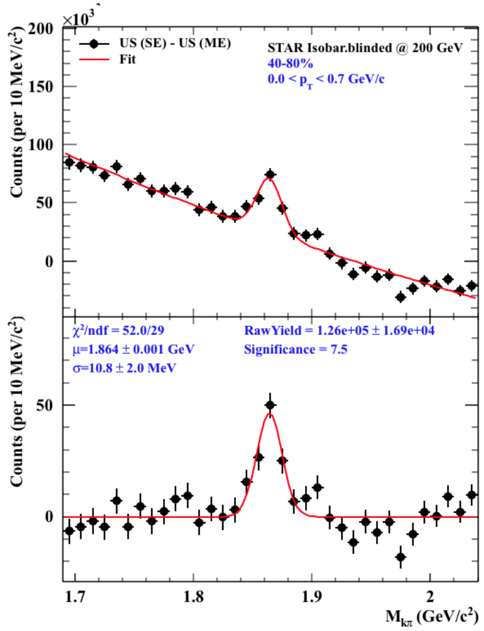
p_T (GeV/c)

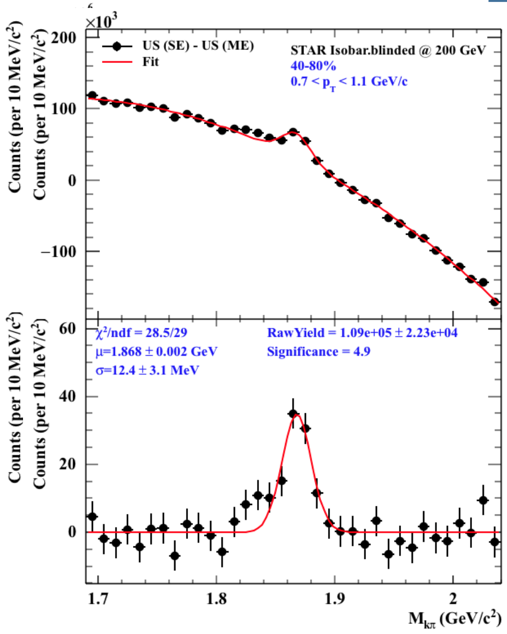


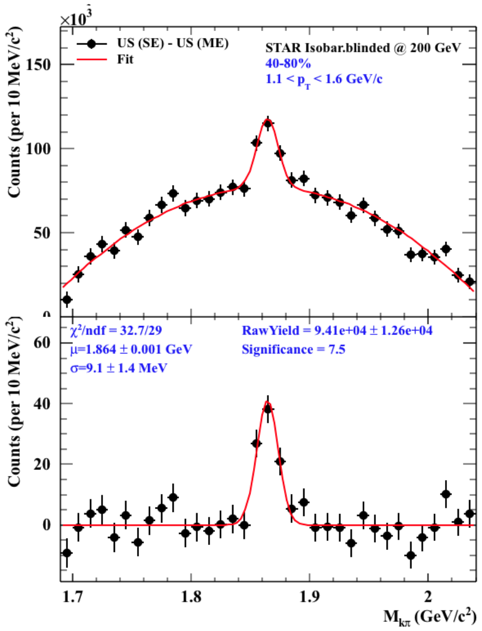
p_T (GeV/c)

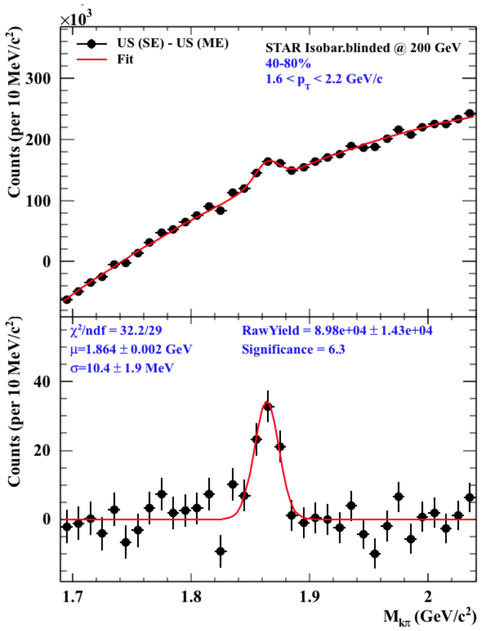
40-80%

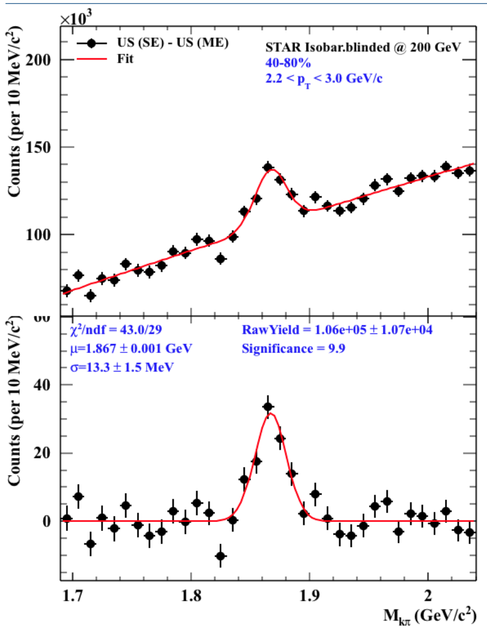
Back up

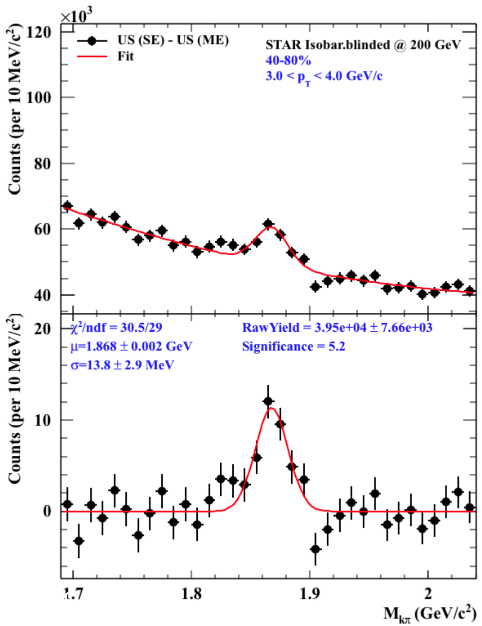

US (SE) - US (ME)
Fit
STAR Isobar.blinded @ 200 GeV
40-80%
$0.0 < p_T < 0.7$ GeV/c
χ^2/ndf = 52.0/29
μ=1.864 ± 0.001 GeV
σ=10.8 ± 2.0 MeV
RawYield = 1.26e+05 ± 1.69e+04
Significance = 7.5
Counts (per 10 MeV/c²)
$M_{k\pi}$ (GeV/c²)

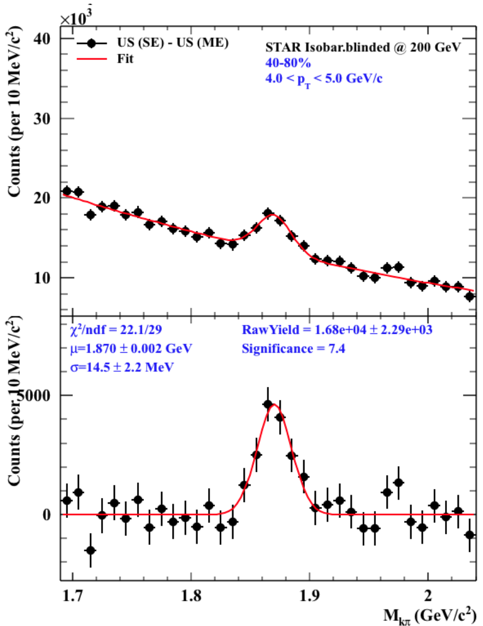

US (SE) - US (ME)
Fit
STAR Isobar.blinded @ 200 GeV
40-80%
$0.7 < p_T < 1.1$ GeV/c
χ^2/ndf = 28.5/29
μ=1.868 ± 0.002 GeV
σ=12.4 ± 3.1 MeV
RawYield = 1.09e+05 ± 2.23e+04
Significance = 4.9
Counts (per 10 MeV/c²)
$M_{k\pi}$ (GeV/c²)

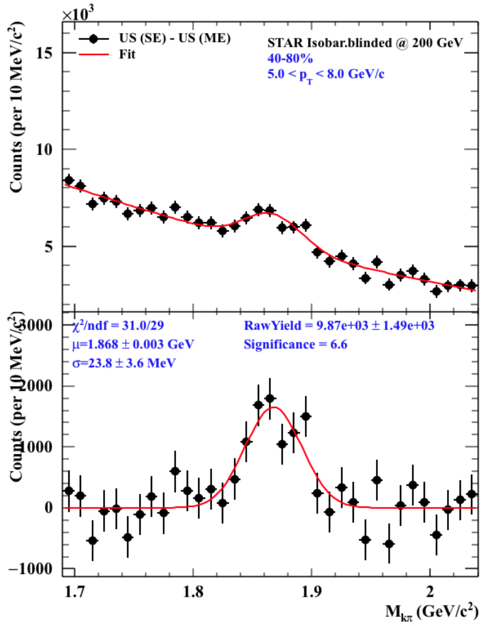

US (SE) - US (ME)
Fit
STAR Isobar.blinded @ 200 GeV
40-80%
$1.1 < p_T < 1.6$ GeV/c
χ^2/ndf = 32.7/29
μ=1.864 ± 0.001 GeV
σ=9.1 ± 1.4 MeV
RawYield = 9.41e+04 ± 1.26e+04
Significance = 7.5
Counts (per 10 MeV/c²)
$M_{k\pi}$ (GeV/c²)

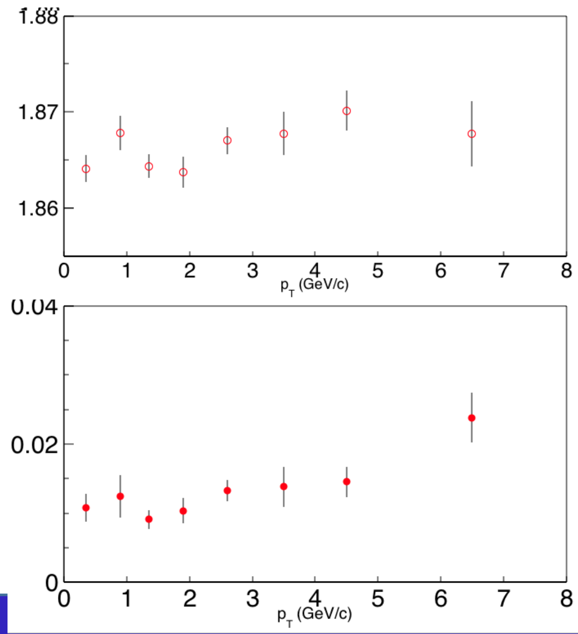

US (SE) - US (ME)
Fit
STAR Isobar.blinded @ 200 GeV
40-80%
$1.6 < p_T < 2.2$ GeV/c
χ^2/ndf = 32.2/29
μ=1.864 ± 0.002 GeV
σ=10.4 ± 1.9 MeV
RawYield = 8.98e+04 ± 1.43e+04
Significance = 6.3
Counts (per 10 MeV/c²)
$M_{k\pi}$ (GeV/c²)


US (SE) - US (ME)
Fit
STAR Isobar.blinded @ 200 GeV
40-80%
$2.2 < p_T < 3.0$ GeV/c
χ^2/ndf = 43.0/29
μ=1.867 ± 0.001 GeV
σ=13.3 ± 1.5 MeV
RawYield = 1.06e+05 ± 1.07e+04
Significance = 9.9
Counts (per 10 MeV/c²)
$M_{k\pi}$ (GeV/c²)

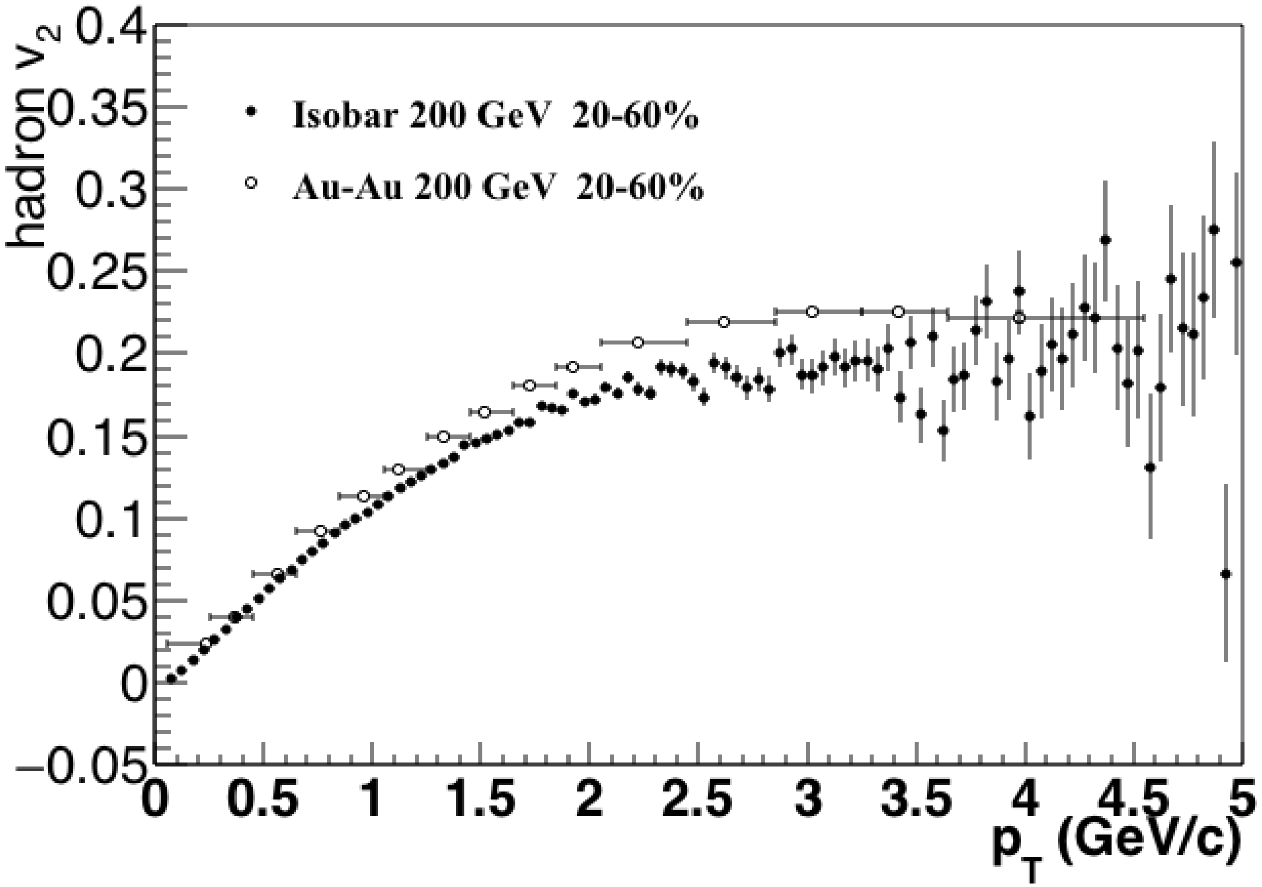

US (SE) - US (ME)
Fit
STAR Isobar.blinded @ 200 GeV
40-80%
$3.0 < p_T < 4.0$ GeV/c
χ^2/ndf = 30.5/29
μ=1.868 ± 0.002 GeV
σ=13.8 ± 2.9 MeV
RawYield = 3.95e+04 ± 7.66e+03
Significance = 5.2
Counts (per 10 MeV/c²)
$M_{k\pi}$ (GeV/c²)


US (SE) - US (ME)
Fit
STAR Isobar.blinded @ 200 GeV
40-80%
$4.0 < p_T < 5.0$ GeV/c
χ^2/ndf = 22.1/29
μ=1.870 ± 0.002 GeV
σ=14.5 ± 2.2 MeV
RawYield = 1.68e+04 ± 2.29e+03
Significance = 7.4
Counts (per 10 MeV/c²)
$M_{k\pi}$ (GeV/c²)


US (SE) - US (ME)
Fit
STAR Isobar.blinded @ 200 GeV
40-80%
$5.0 < p_T < 8.0$ GeV/c
χ^2/ndf = 31.0/29
μ=1.868 ± 0.003 GeV
σ=23.8 ± 3.6 MeV
RawYield = 9.87e+03 ± 1.49e+03
Significance = 6.6
Counts (per 10 MeV/c²)
$M_{k\pi}$ (GeV/c²)


p_T (GeV/c)
p_T (GeV/c)

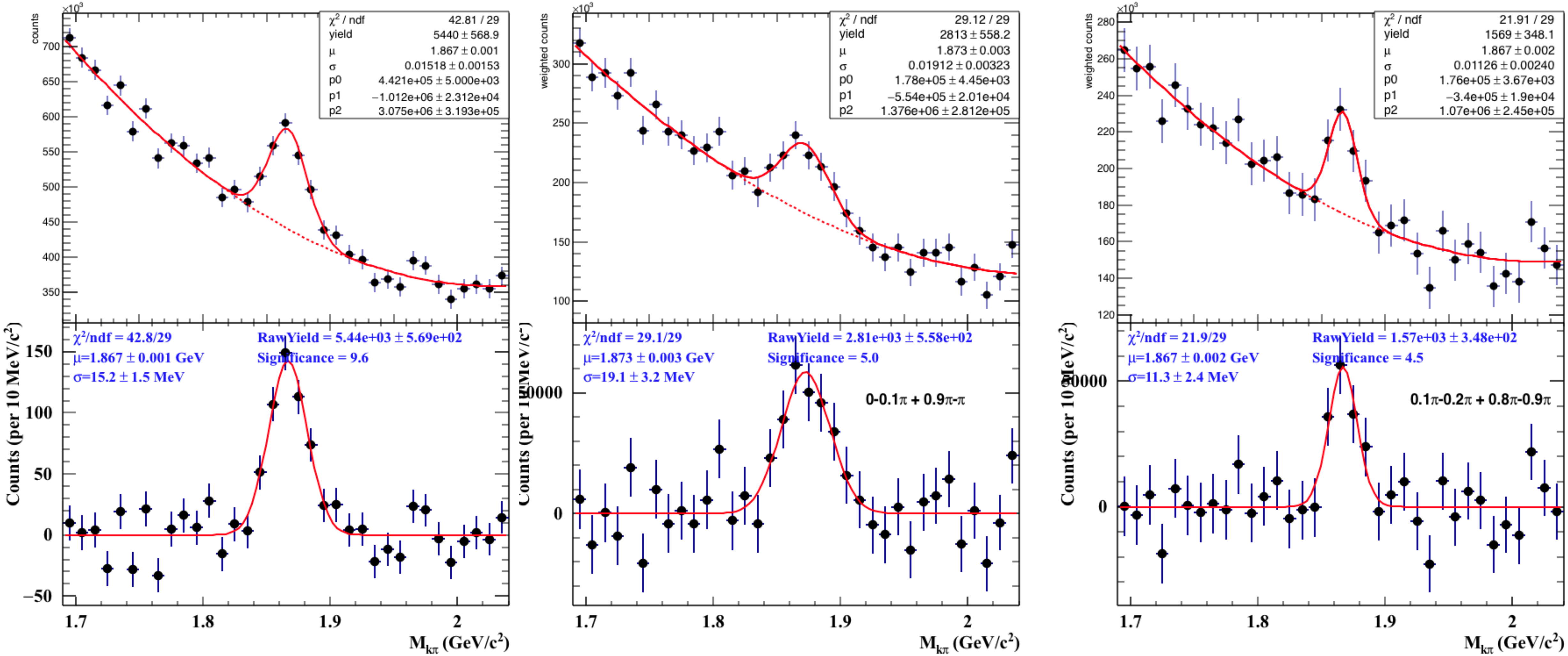
Back up



- Less than 1.7 M events are used to provide analysis method check;
- A more precise comparison is needed with published hadron v_2 result in Isobar.

Backup

$3. < p_T < 6.5$



Backup

$3. < p_T < 6.5$