Charged and identified ($\pi^{\pm}$, $\mathrm{K}^{\pm}$) hadron spectra in O + O collisions at $\sqrt{s_{NN}} = 6$ GeV using UrQMD model

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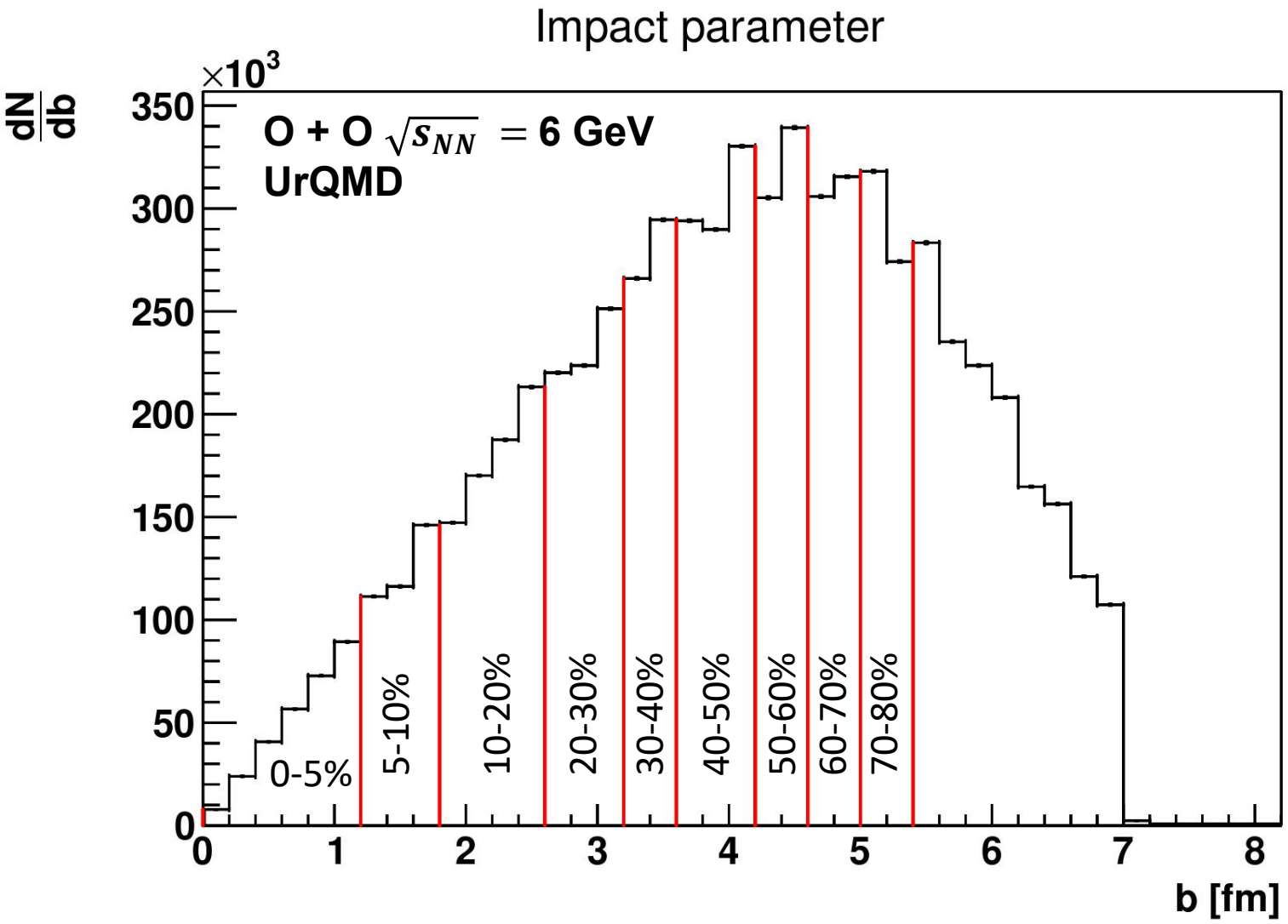
2025-09-01

Collision centrality determiantion using impact parameter

System: O + O $\sqrt{s_{NN}} = 6$ GeV

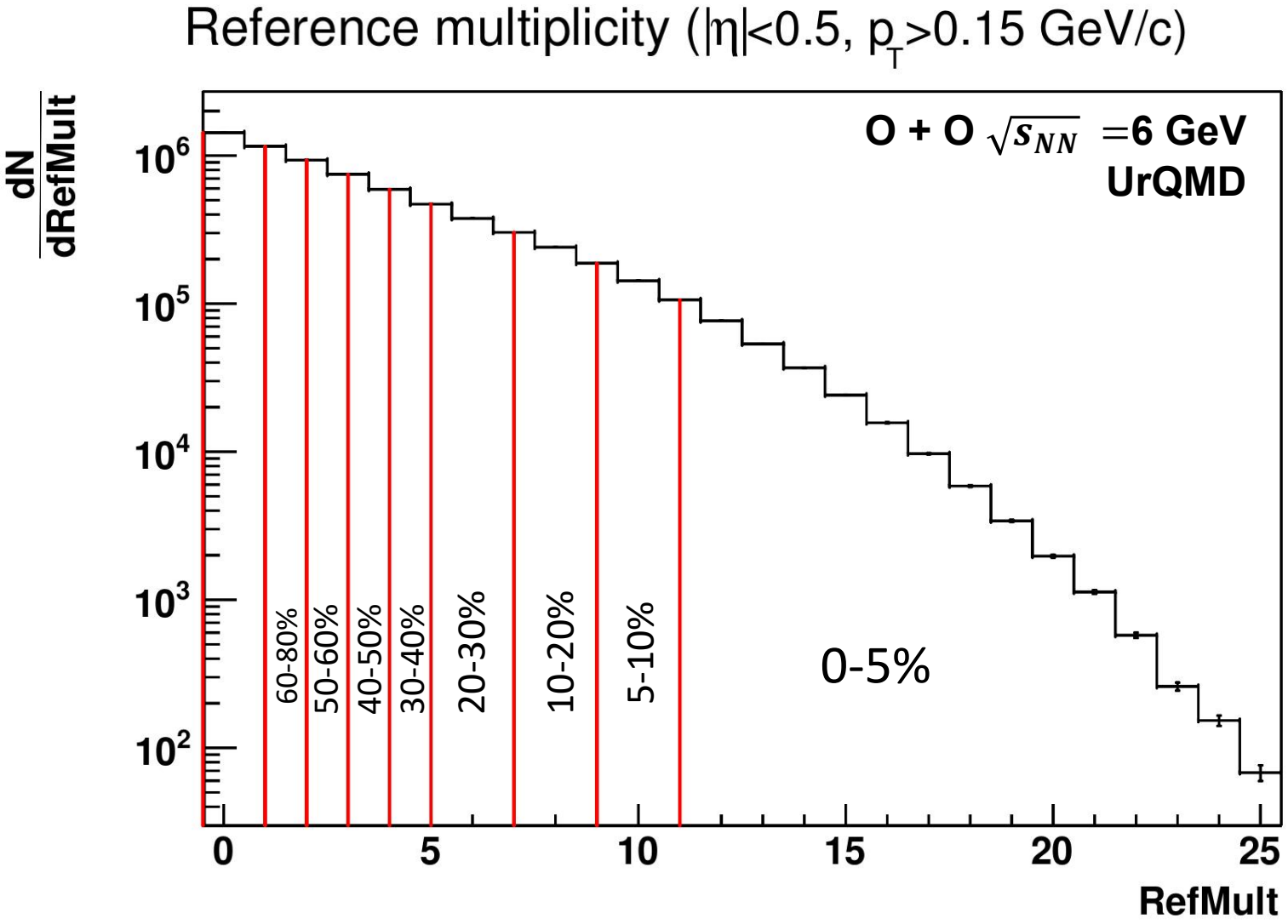


Centrality	Impact parameter b, fm	Fraction
0 - 5%	0 - 1.2	0.04213
5 - 10%	1.2 - 1.8	0.09619
10 - 20%	1.8 - 2.6	0.20008
20 - 30%	2.6 - 3.2	0.30063
30 - 40%	3.2 - 3.6	0.38171
40 - 50%	3.6 - 4.2	0.51394
50 - 60%	4.2 - 4.6	0.60717
60 - 70%	4.6 - 5.0	0.69705
70 - 80%	5.0 - 5.4	0.78271

Collision centrality determiantion using reference multiplicity ($|\eta| < 0.5$)

System: O + O $\sqrt{s_{NN}} = 6$ GeV

Reference multiplicity (RefMult) is calculated as a number of charged particles with **$|\eta| < 0.5$ and $p_T > 0.15$ GeV/c**



Centrality	RefMult	Fraction
0 - 5%	11 - 30	0.04862
5 - 10%	9 - 11	0.09640
10 - 20%	7 - 9	0.17501
20 - 30%	5 - 7	0.29746
30 - 40%	4 - 5	0.38304
40 - 50%	3 - 4	0.49131
50 - 60%	2 - 3	0.62619
60 - 80%	1 - 2	0.79341

Collision centrality determiantion using reference multiplicity ($|\eta| < 0.5$)

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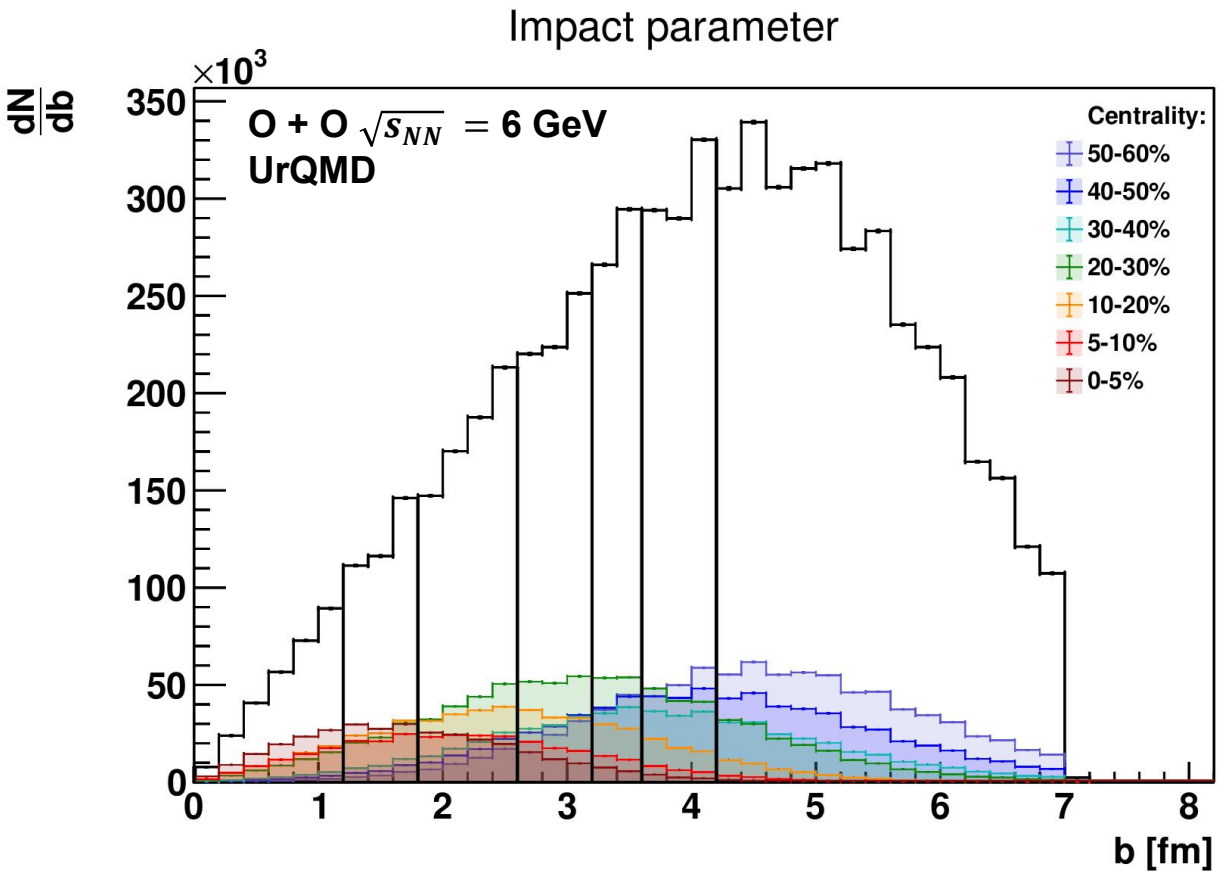
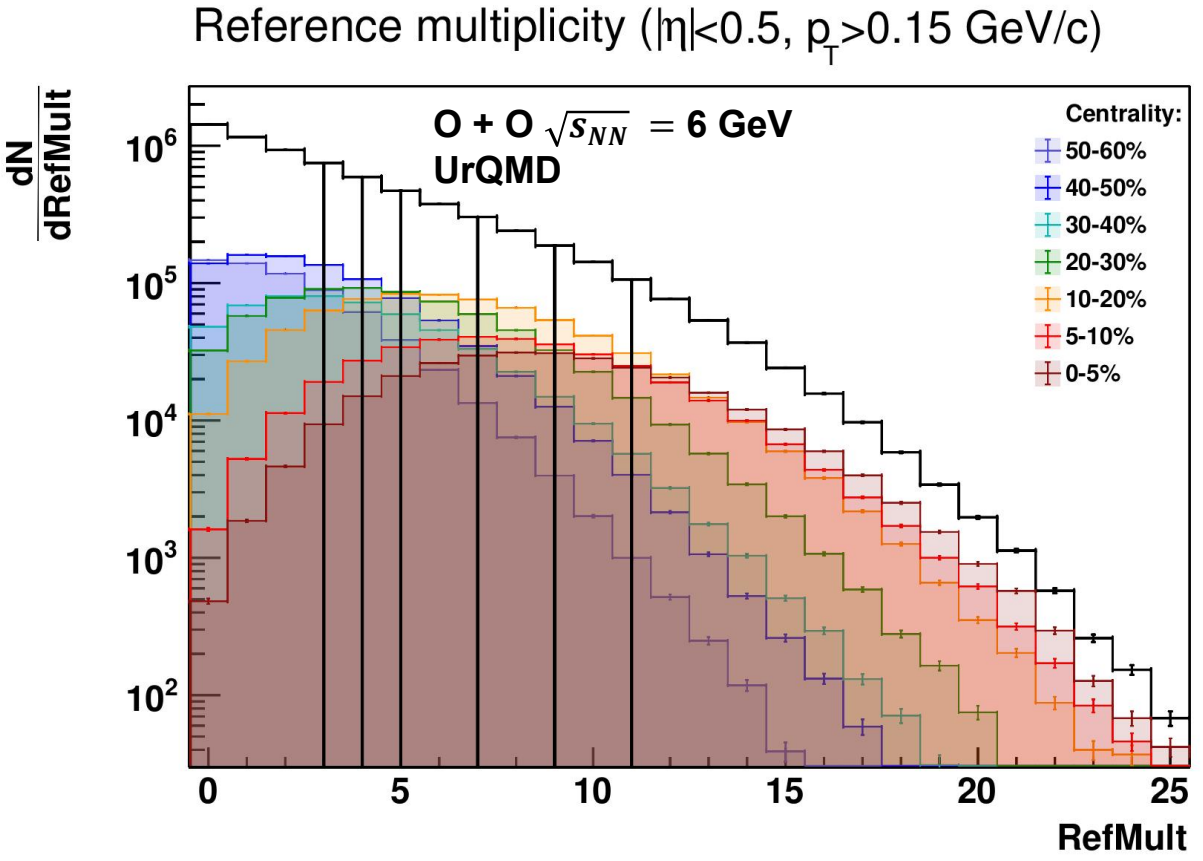
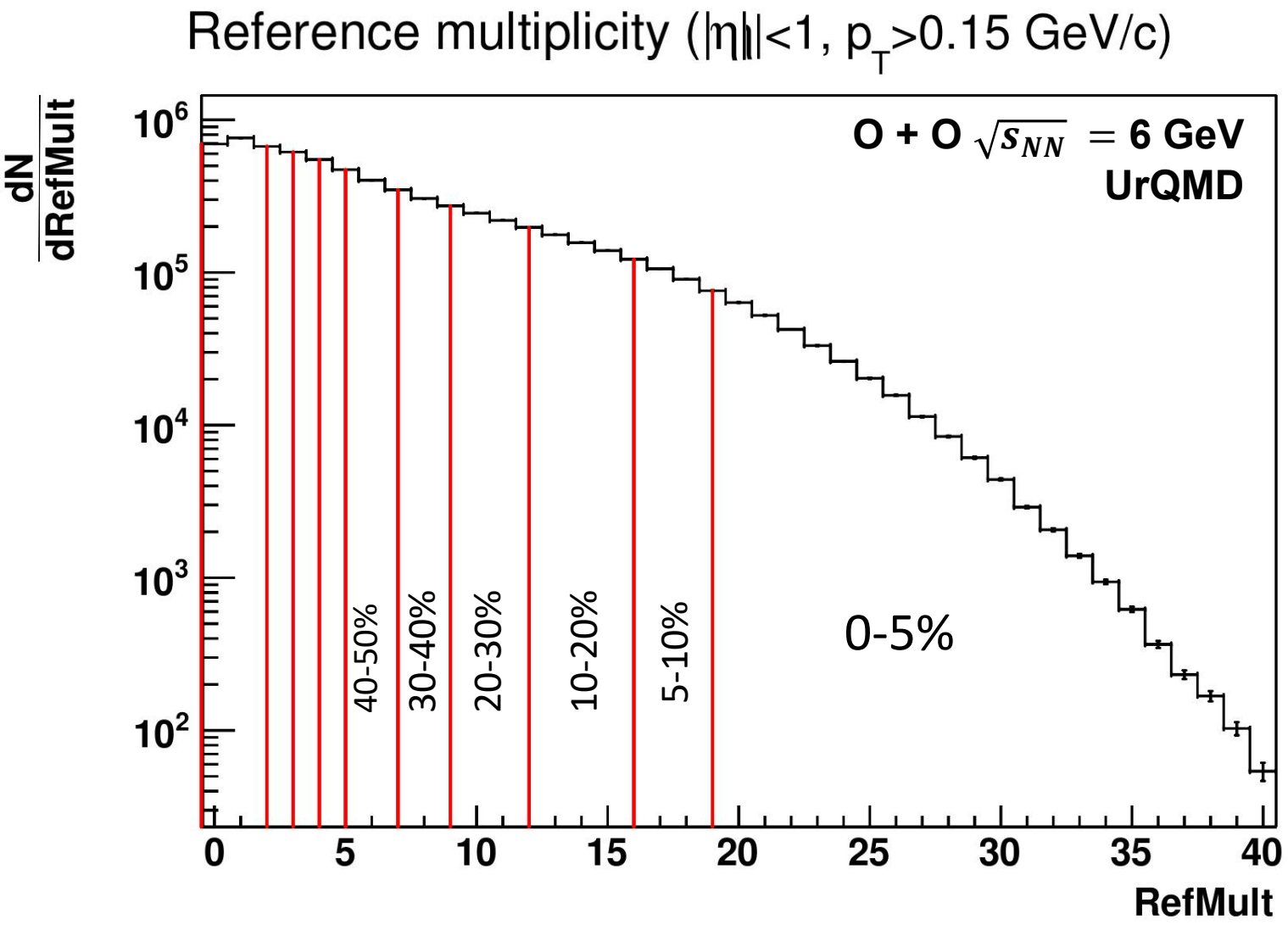




Collision centrality determiantion using reference multiplicity ($|\eta| < 1.0$)

System: O + O $\sqrt{s_{NN}} = 6$ GeV

Reference multiplicity (RefMult) is calculated as a number of charged particles with **$|\eta| < 1.0$ and $p_T > 0.15$ GeV/c**



Centrality	RefMult	Fraction
0 - 5%	19 - 48	0.05333
5 - 10%	16 - 19	0.09935
10 - 20%	12 - 16	0.19625
20 - 30%	9 - 12	0.30292
30 - 40%	7 - 9	0.39747
40 - 50%	5 - 7	0.52390
50 - 60%	4 - 5	0.60342
60 - 70%	3 - 4	0.69244
70 - 80%	2 - 3	0.78930

Collision centrality determiantion using reference multiplicity ($|\eta| < 1.0$)

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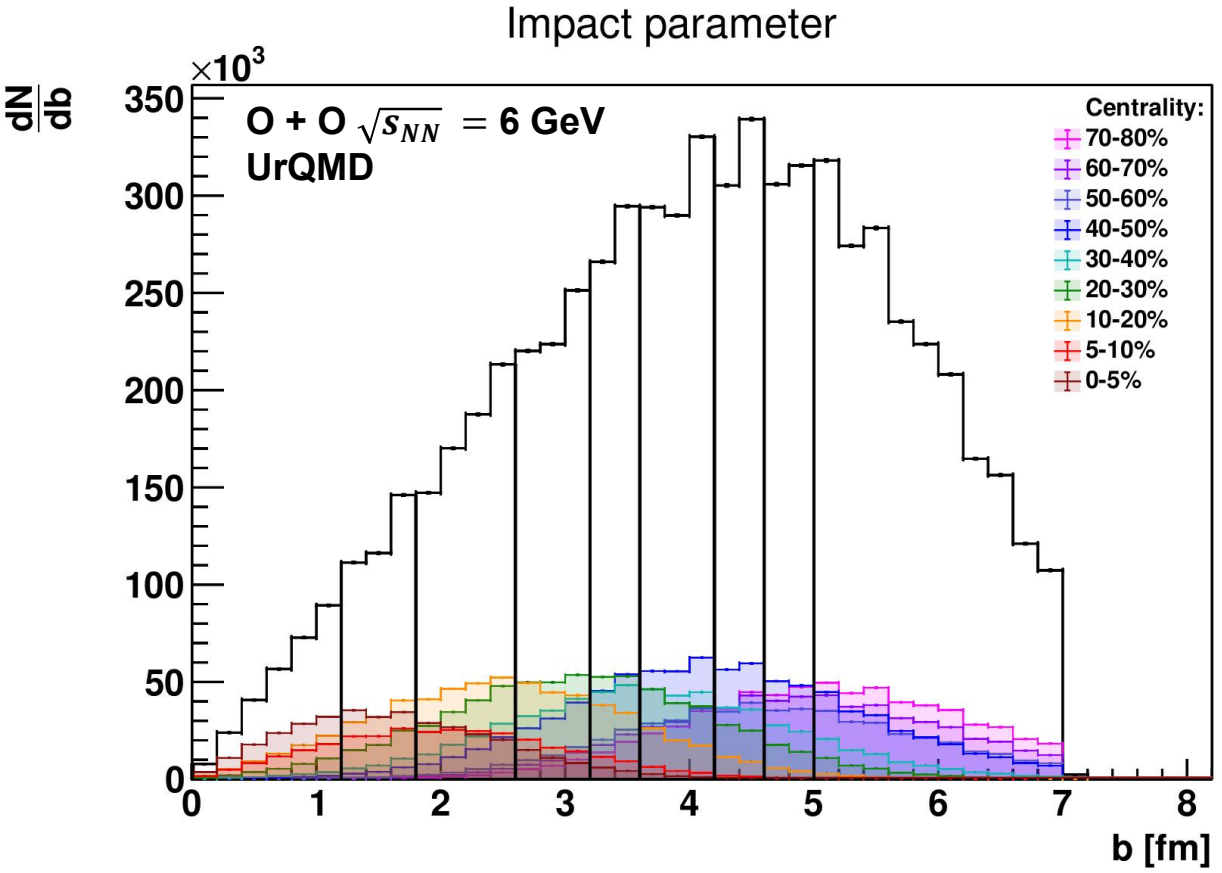
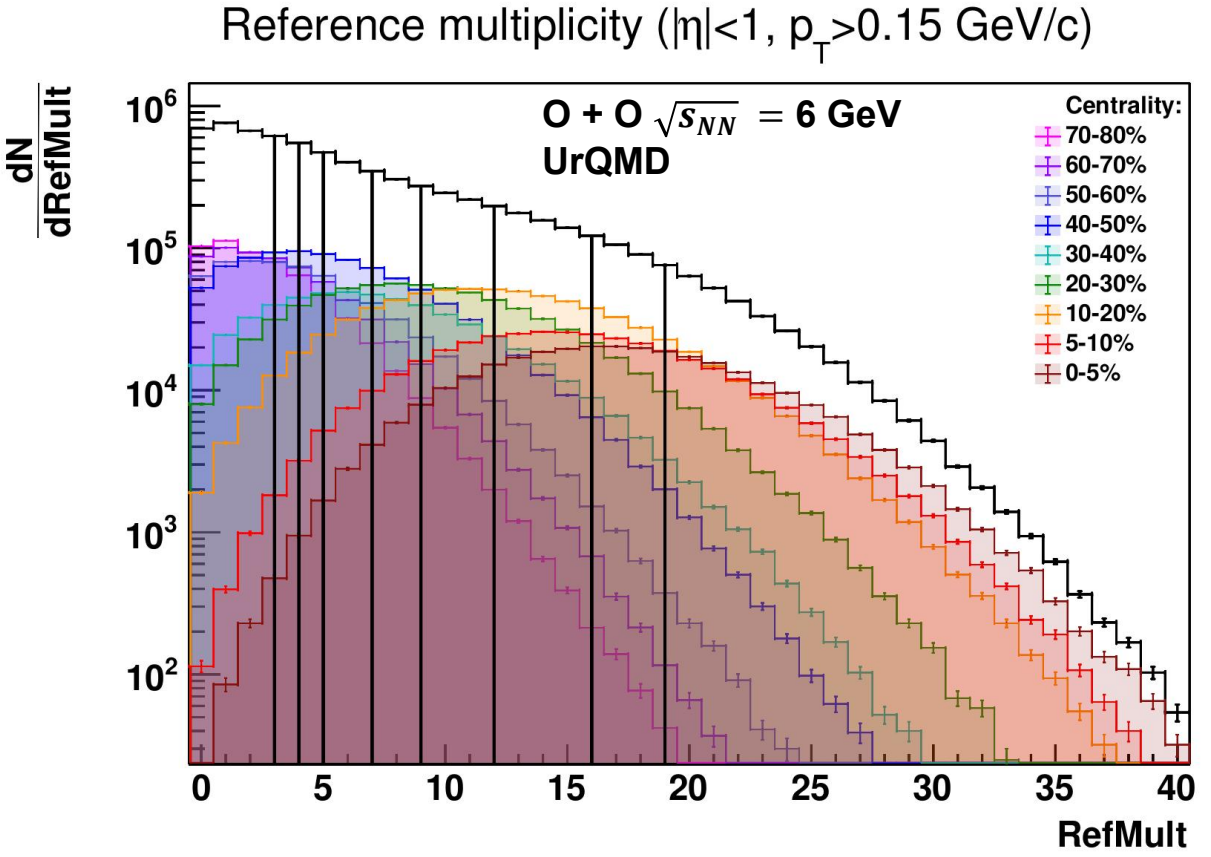
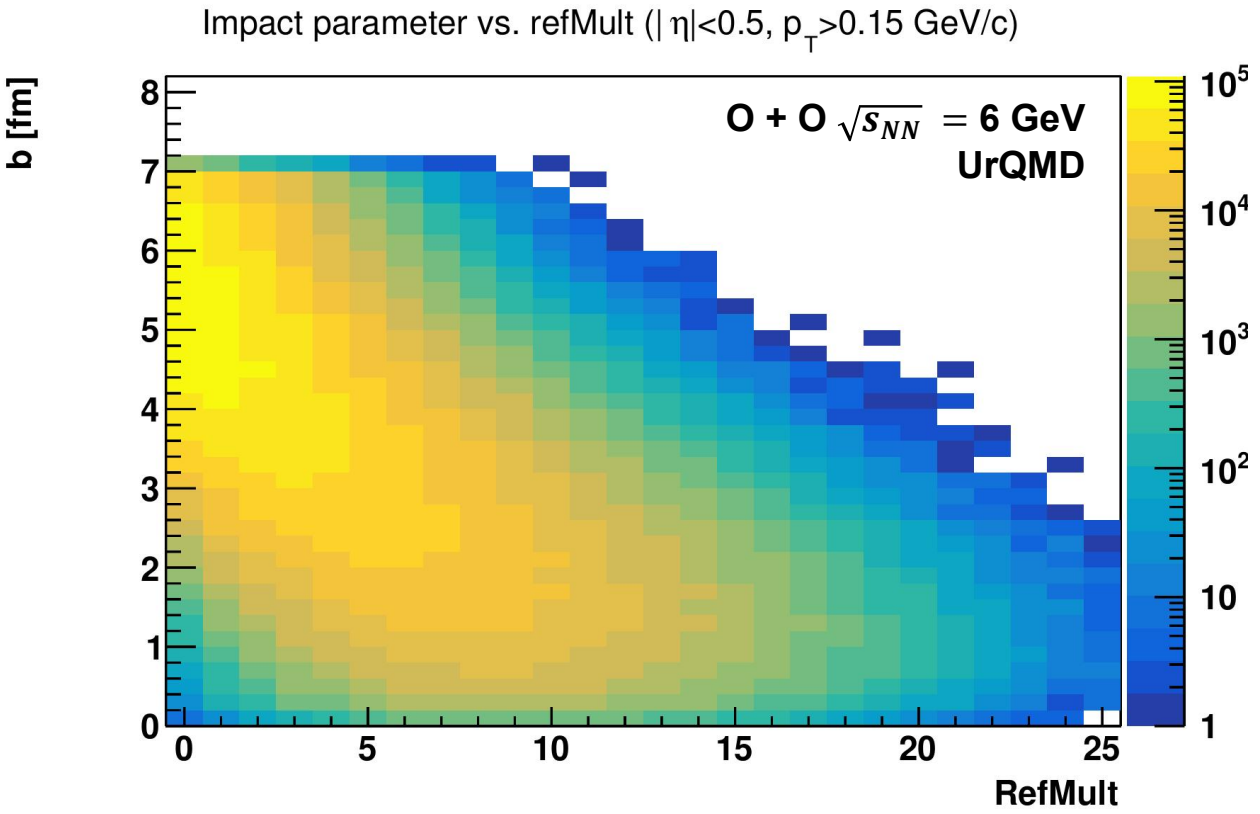


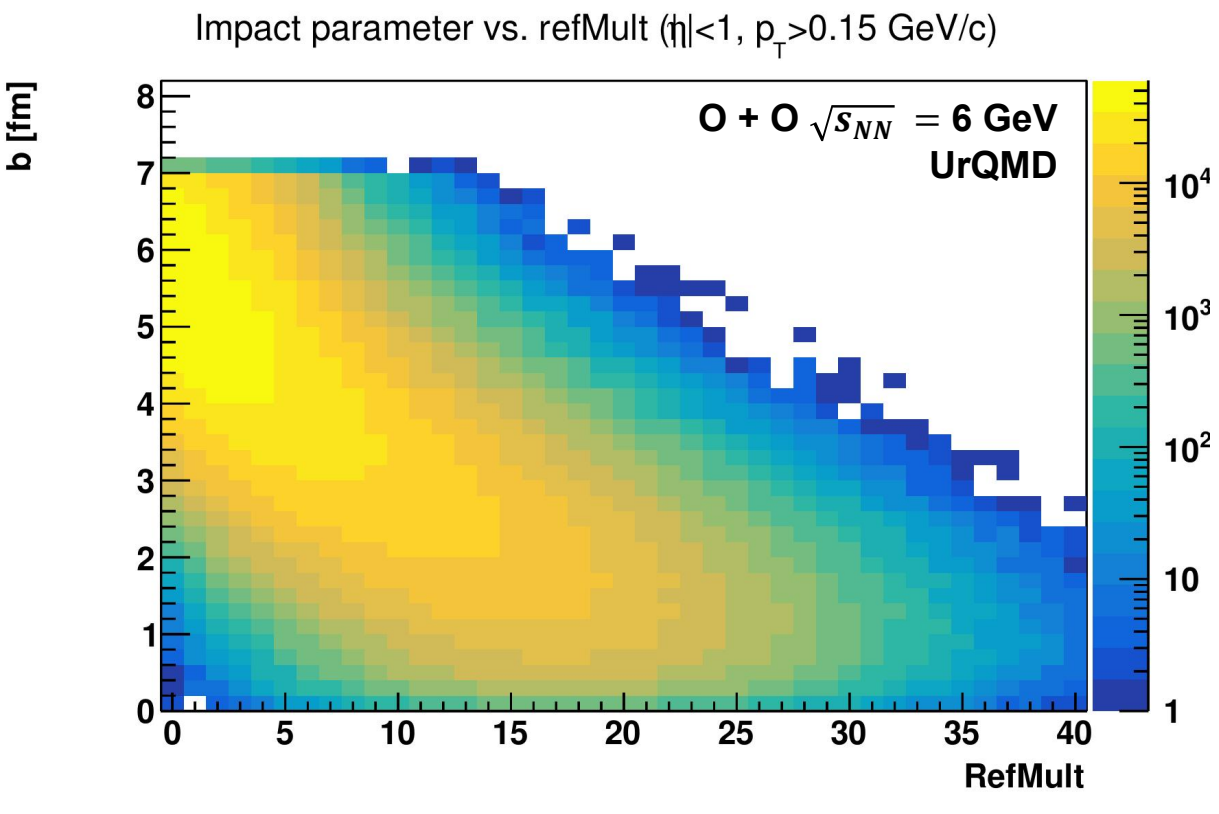


Impact parameter vs RefMult

System: O + O $\sqrt{s_{NN}} = 6$ GeV



Reference multiplicity is calculated as a number of charged particles with **|η| < 0.5 and p_T > 0.15 GeV/c**



Reference multiplicity is calculated as a number of charged particles with **|η| < 1.0 and p_T > 0.15 GeV/c**

Data & Cuts

System: O + O $\sqrt{s_{NN}} = 6$ GeV

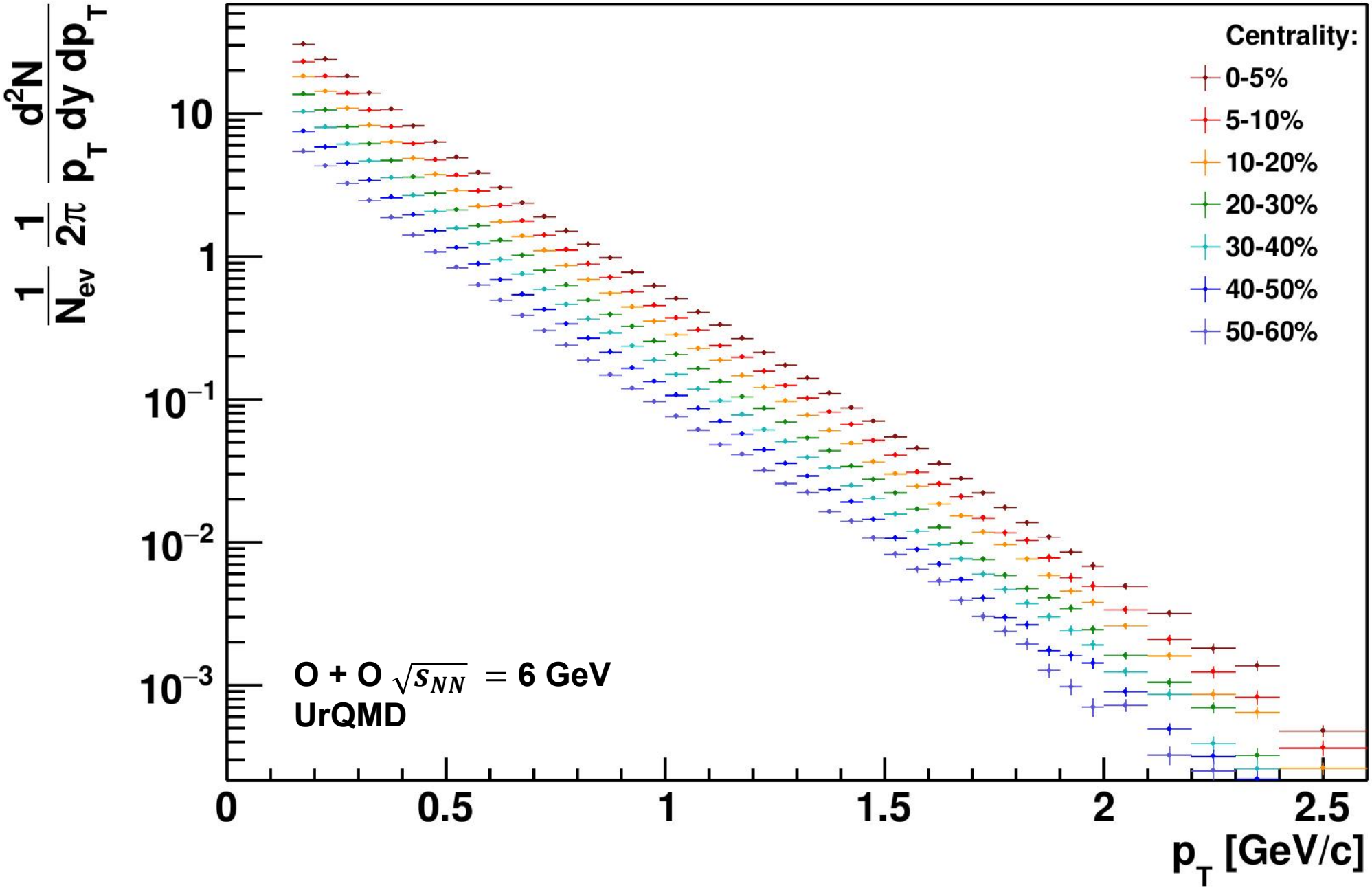
UrQMD, statistics: ~7×10^6 events

Track cuts:

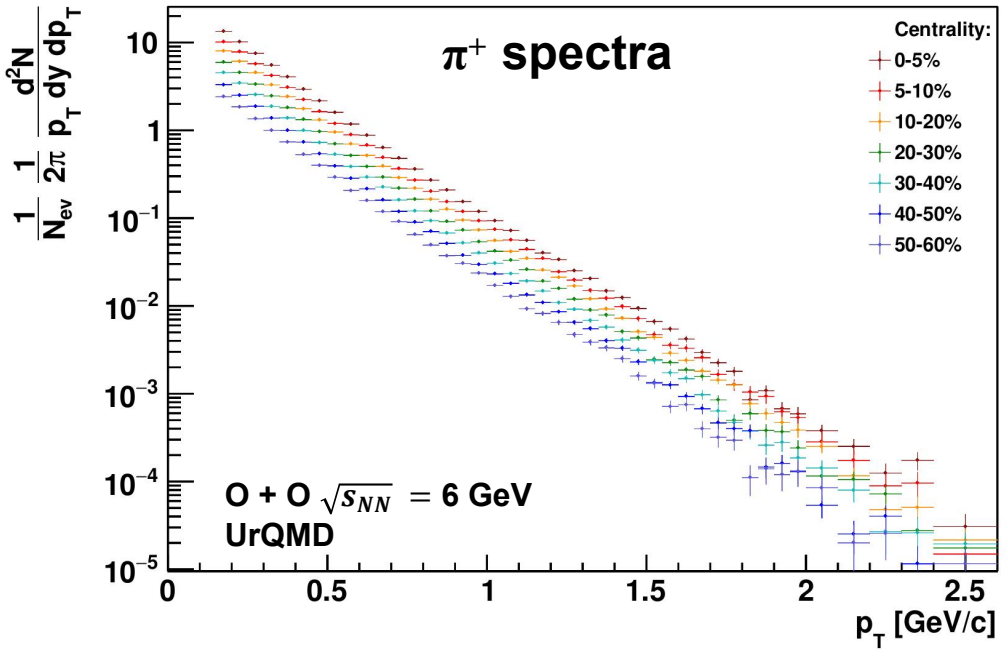
- $|y| < 0.1$
- $|\eta| < 1.0$
- $p_T > 0.15$ GeV/c

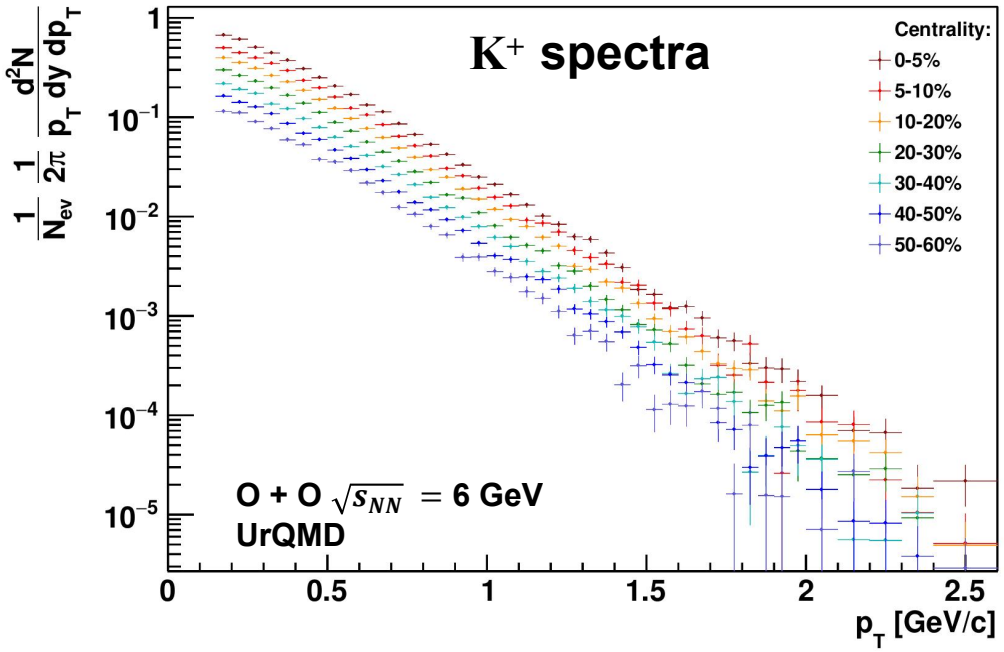
Centrality is calculated using **reference multiplicity** ($|\eta| < 1.0$, $p_T > 0.15$ GeV/c)

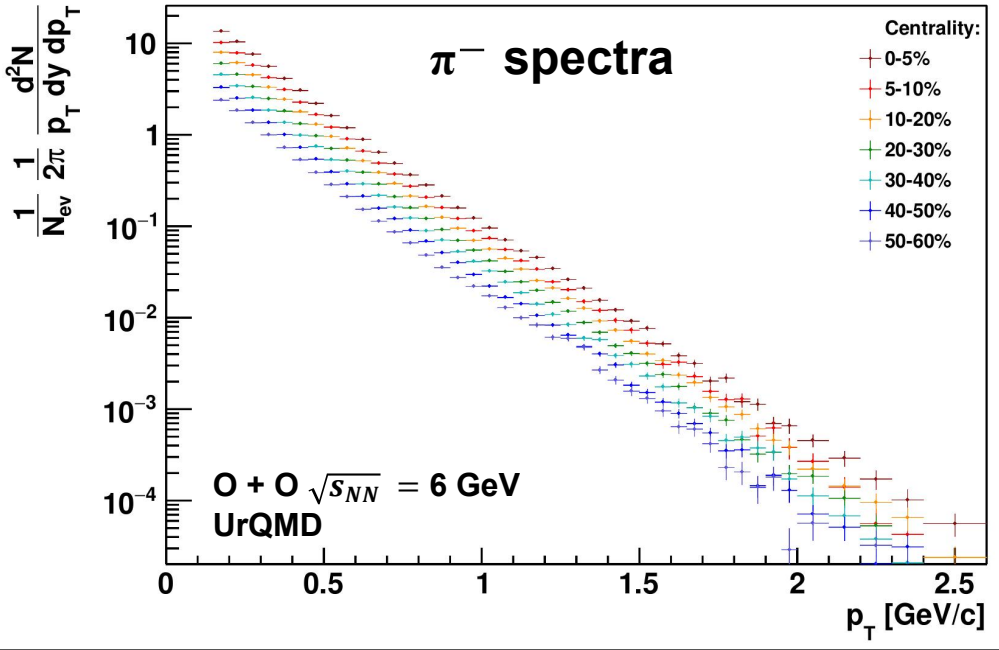
Charged hadron spectra for different centrality classes (RefMult10)

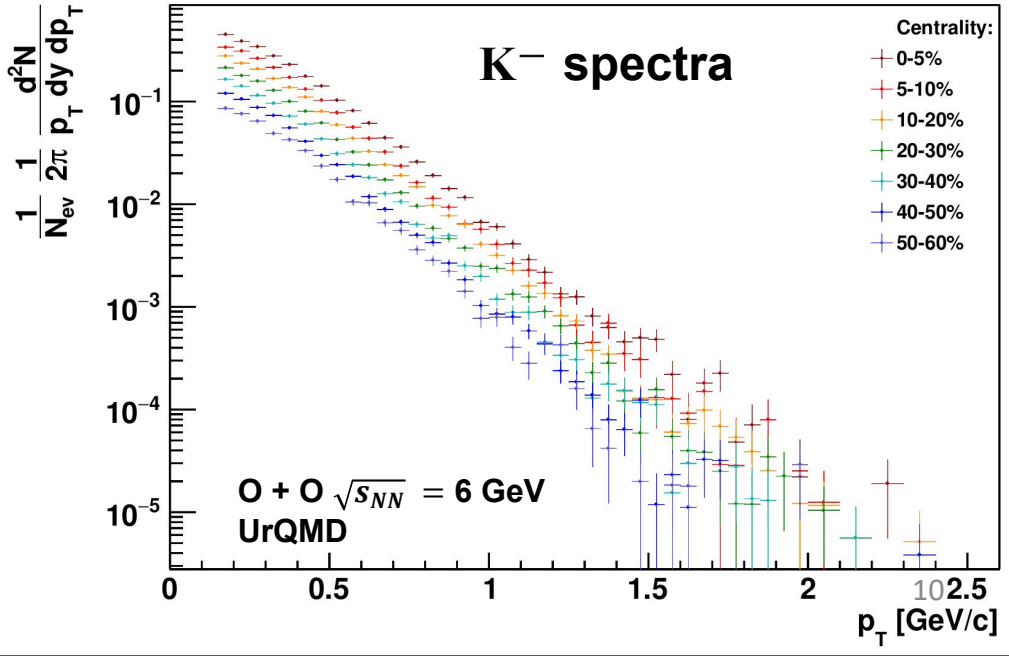


Identified hadron spectra for different centrality classes (RefMult10)



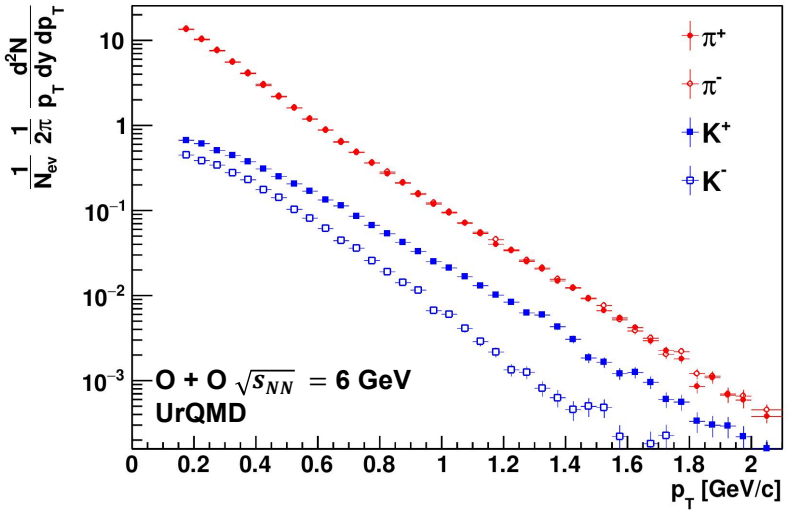




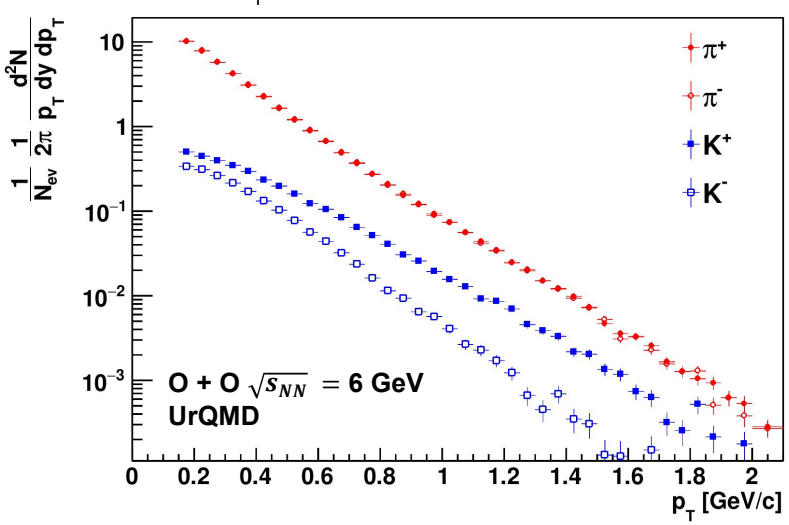


Identified hadron spectra for different centrality classes (RefMult10)

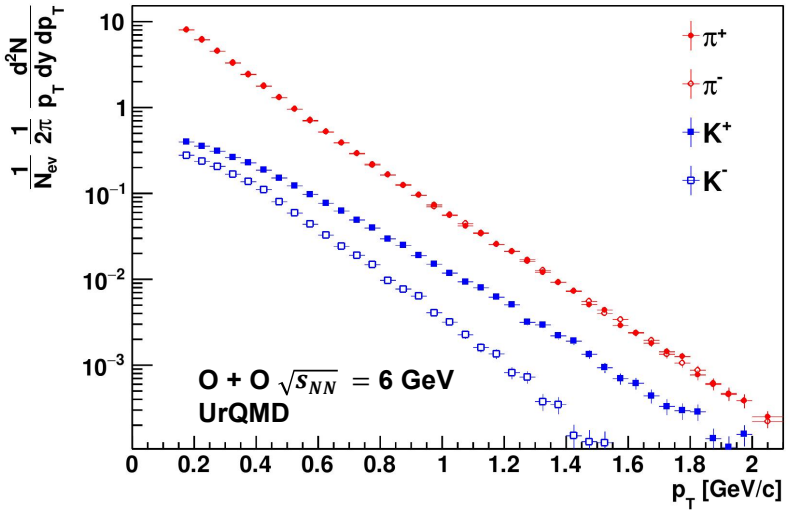
p_T spectra for centrality 0-5%



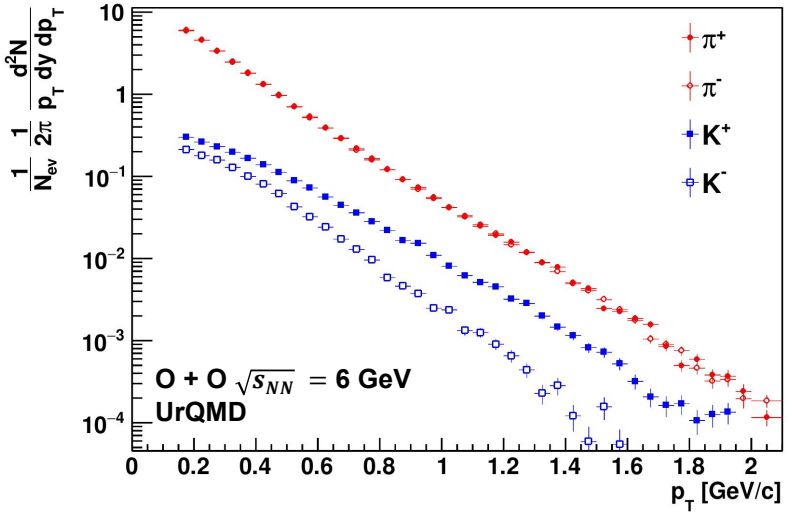
p_T spectra for centrality 5-10%



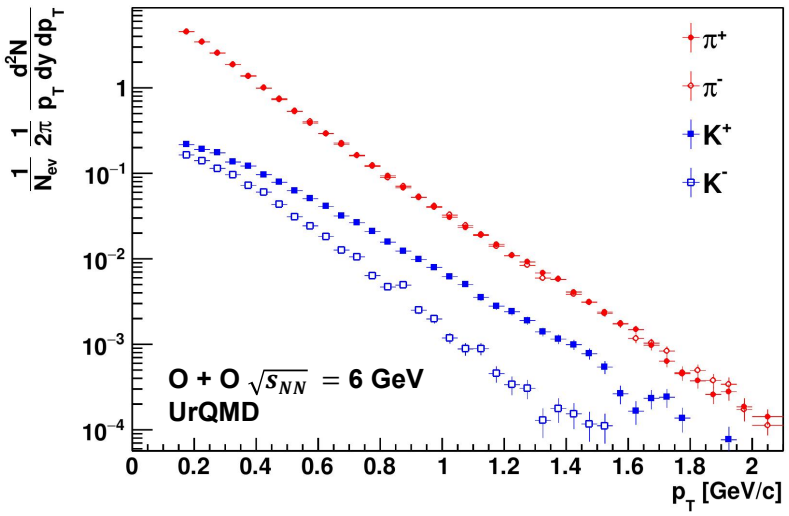
p_T spectra for centrality 10-20%



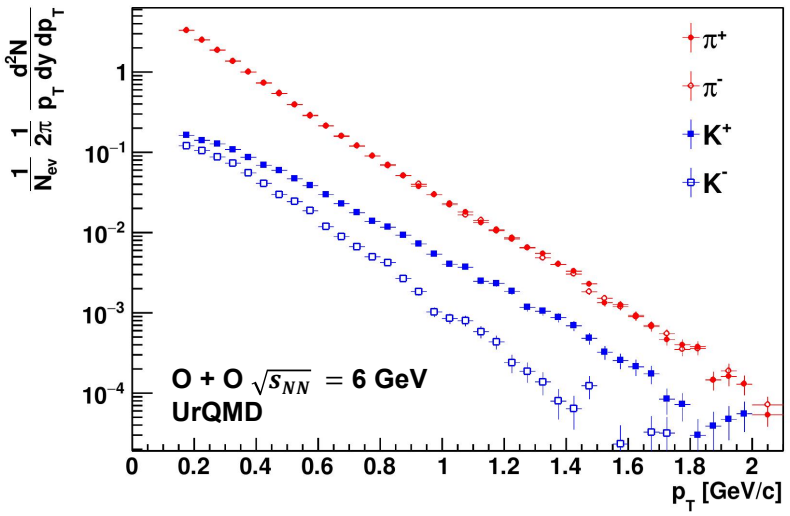
p_T spectra for centrality 20-30%



p_T spectra for centrality 30-40%



p_T spectra for centrality 40-50%



Data & Cuts

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Сейчас пойдут спектры, полученные при определении центральности столкновений другими способами:
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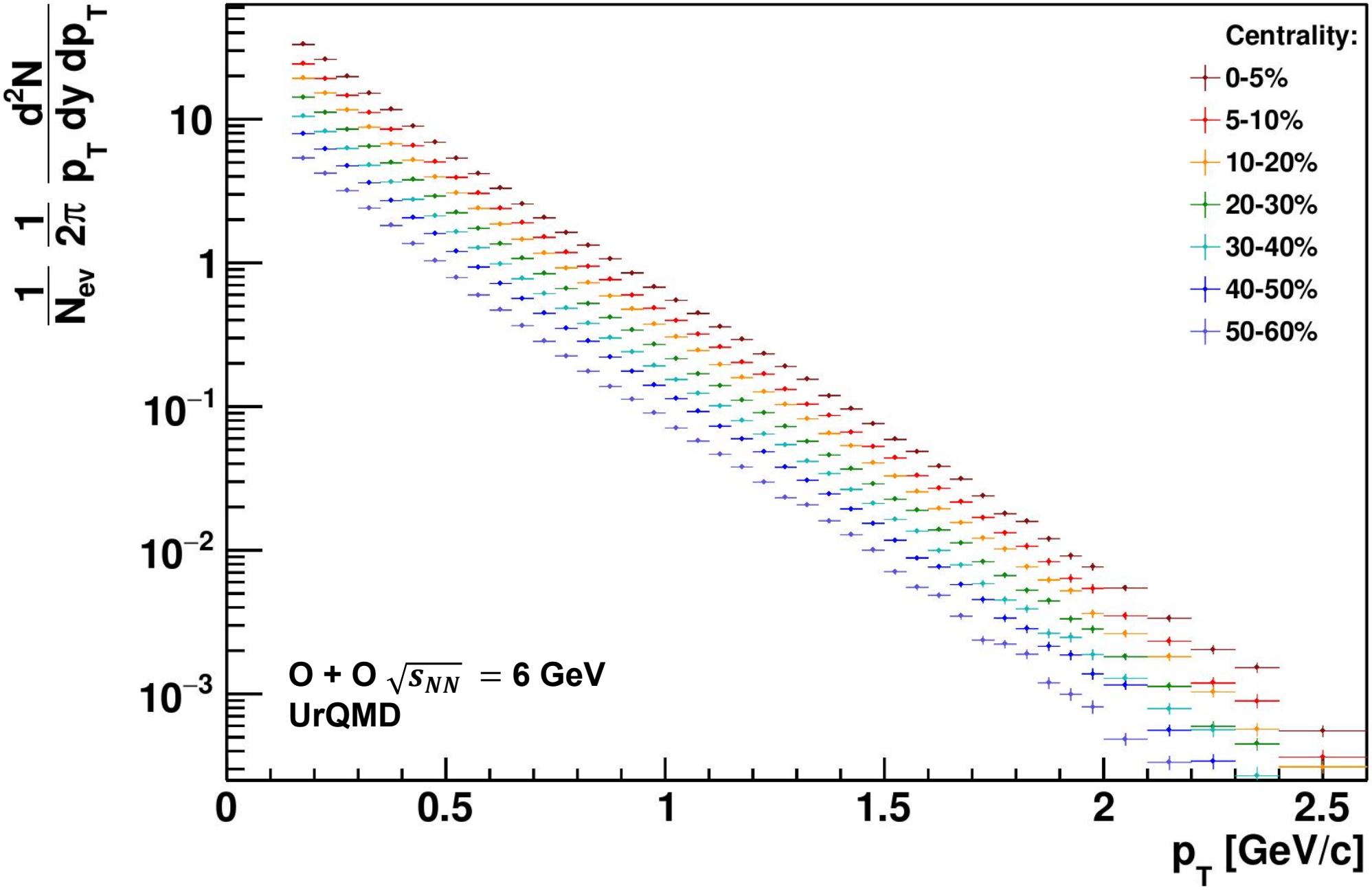
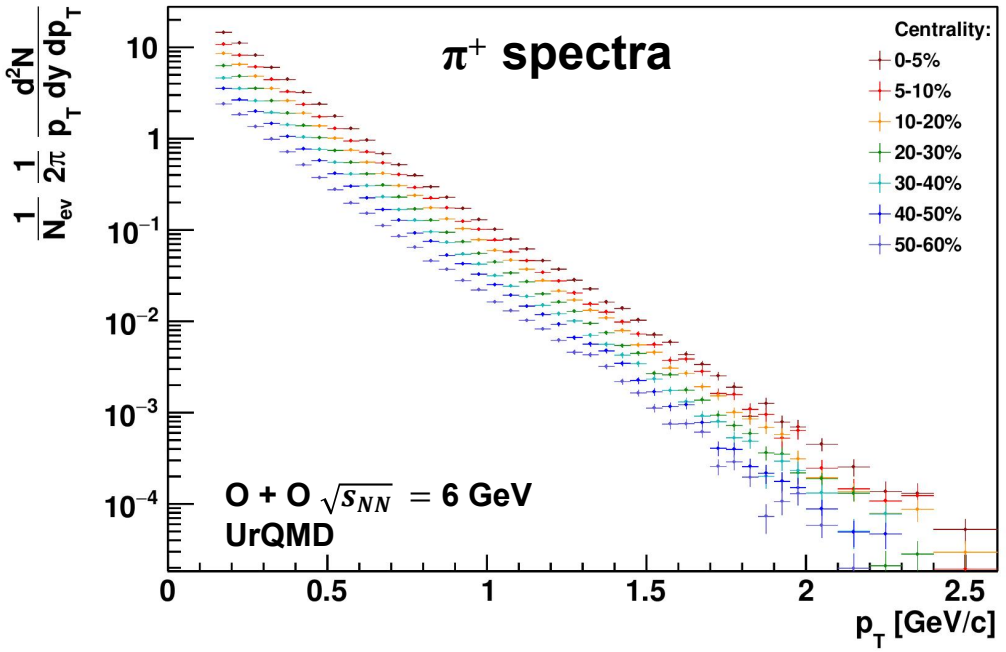
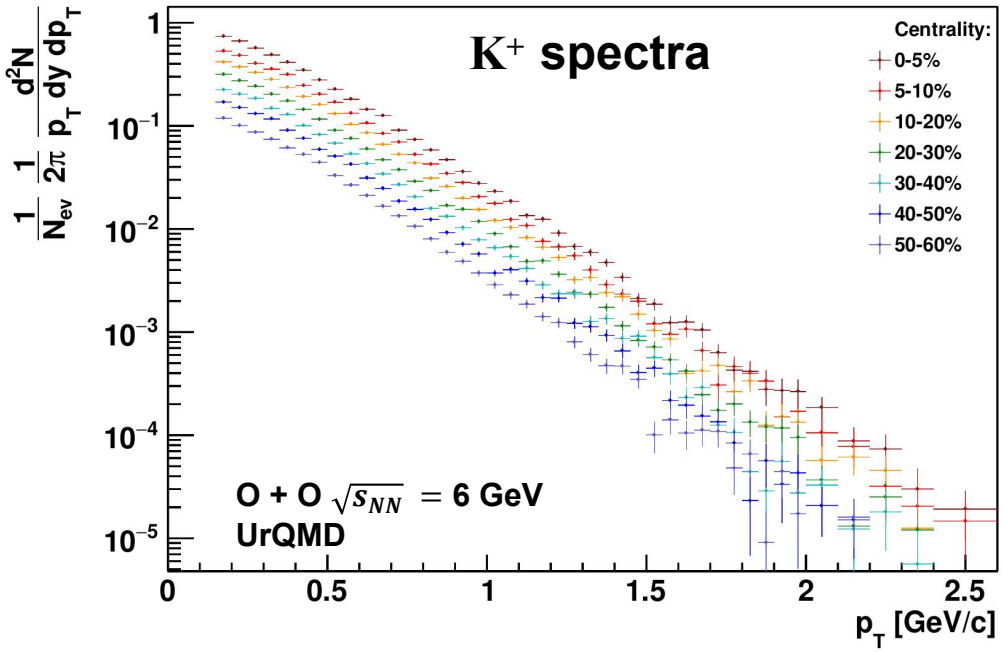
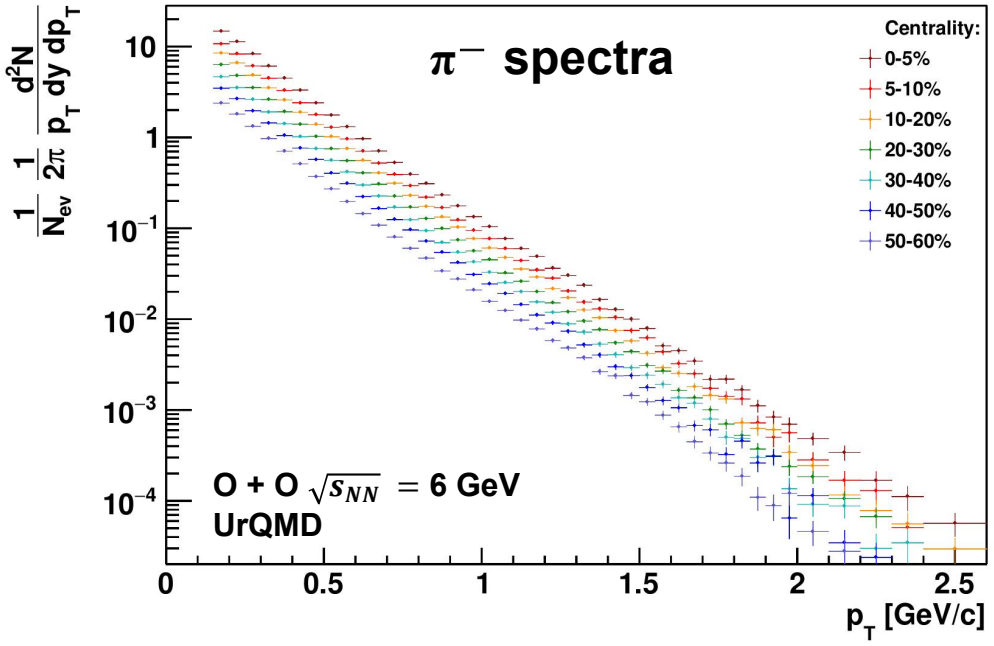
Charged hadron spectra for different centrality classes (RefMult05)

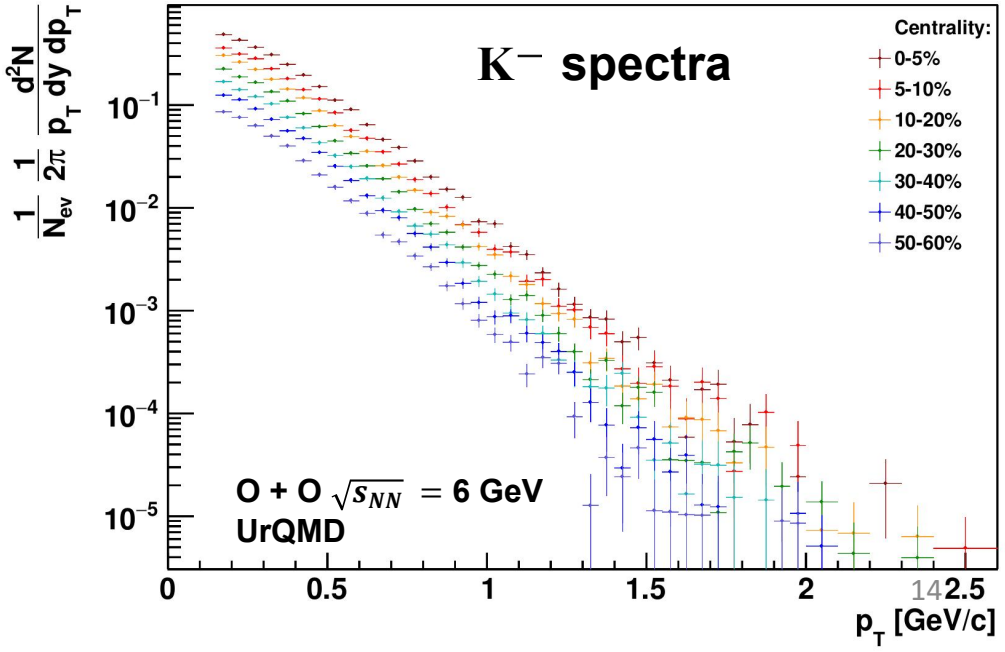


Identified hadron spectra for different centrality classes (RefMult05)



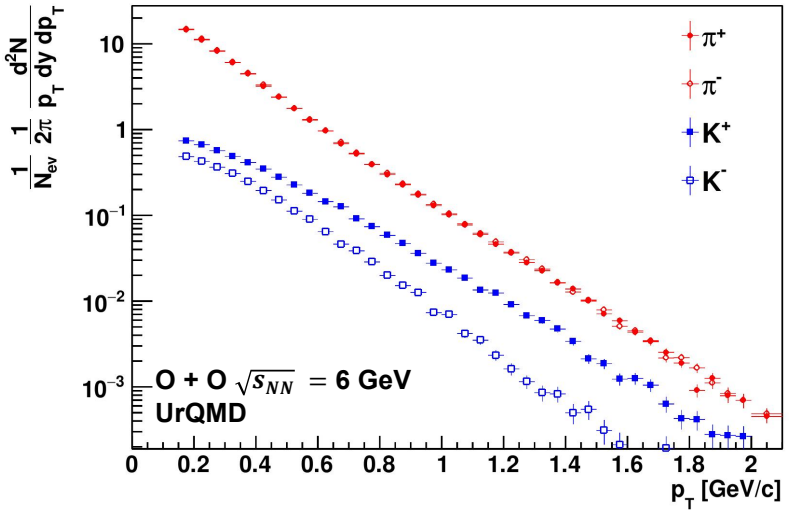






Identified hadron spectra for different centrality classes

p_T spectra for centrality 0-5%



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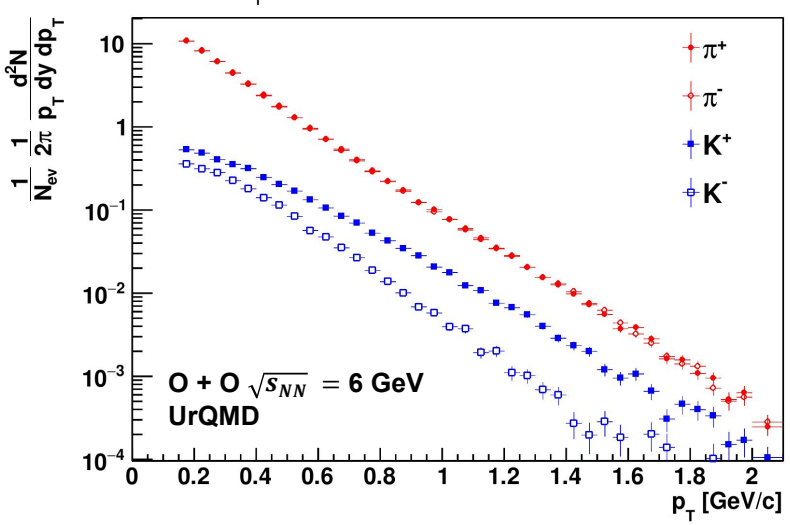

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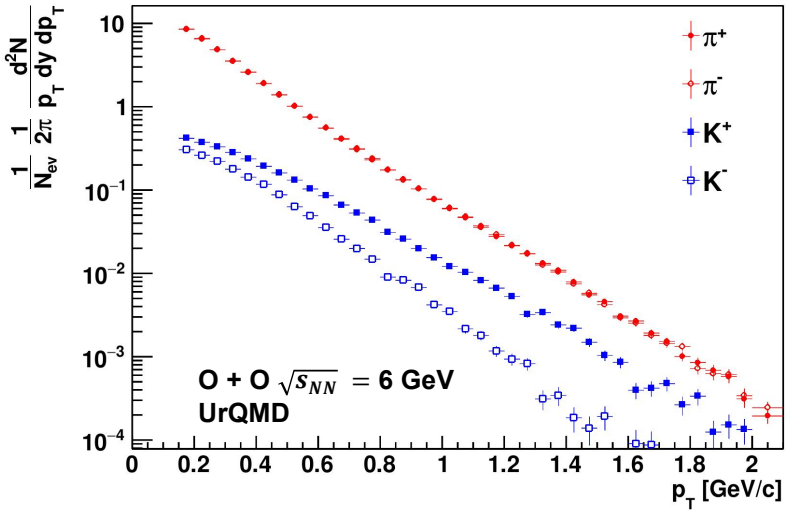
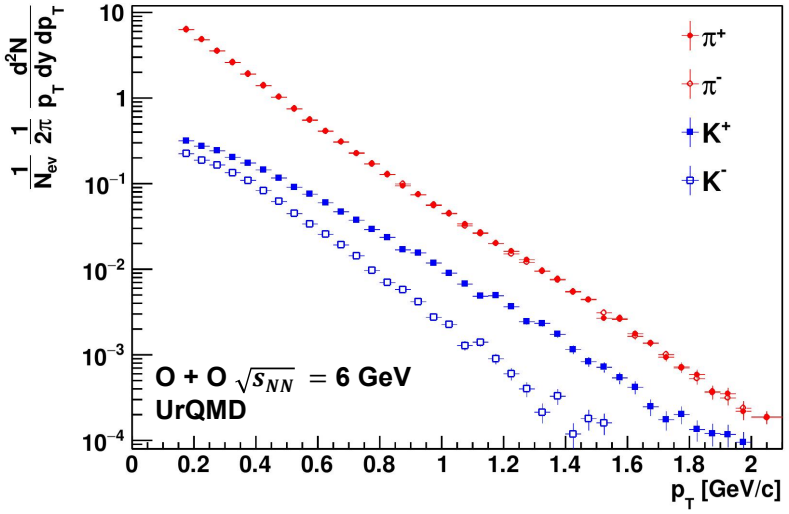
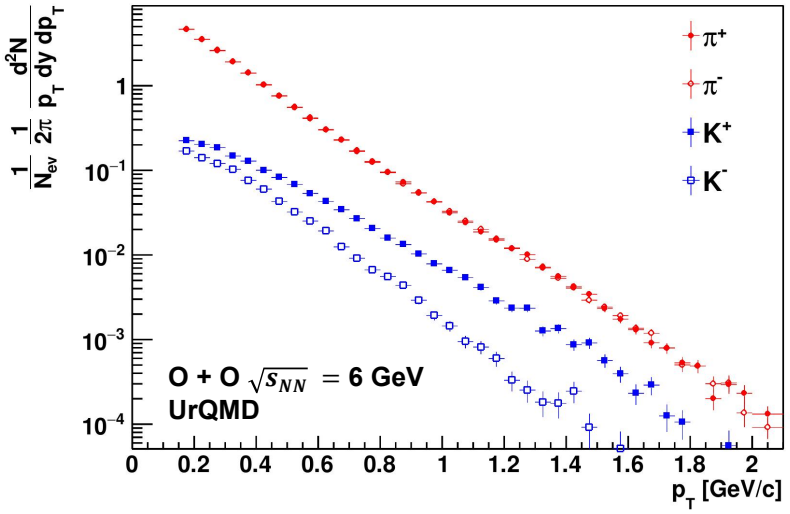


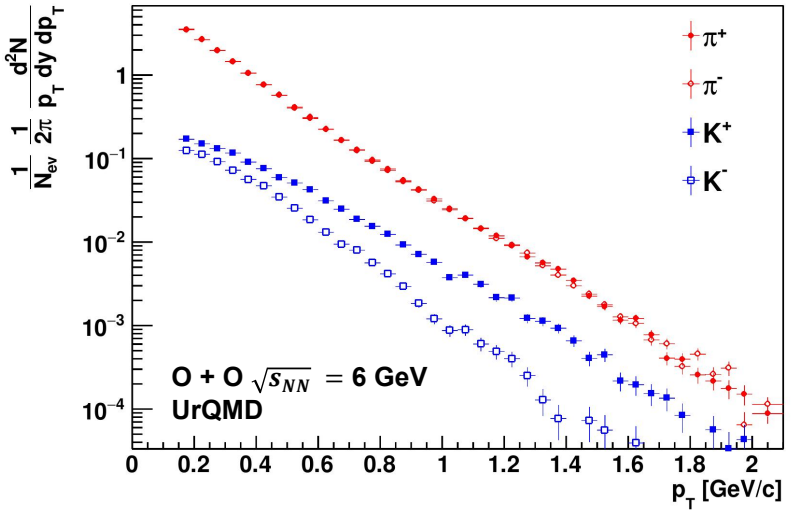
p_T spectra for centrality 20-30%



p_T spectra for centrality 30-40%



p_T spectra for centrality 40-50%



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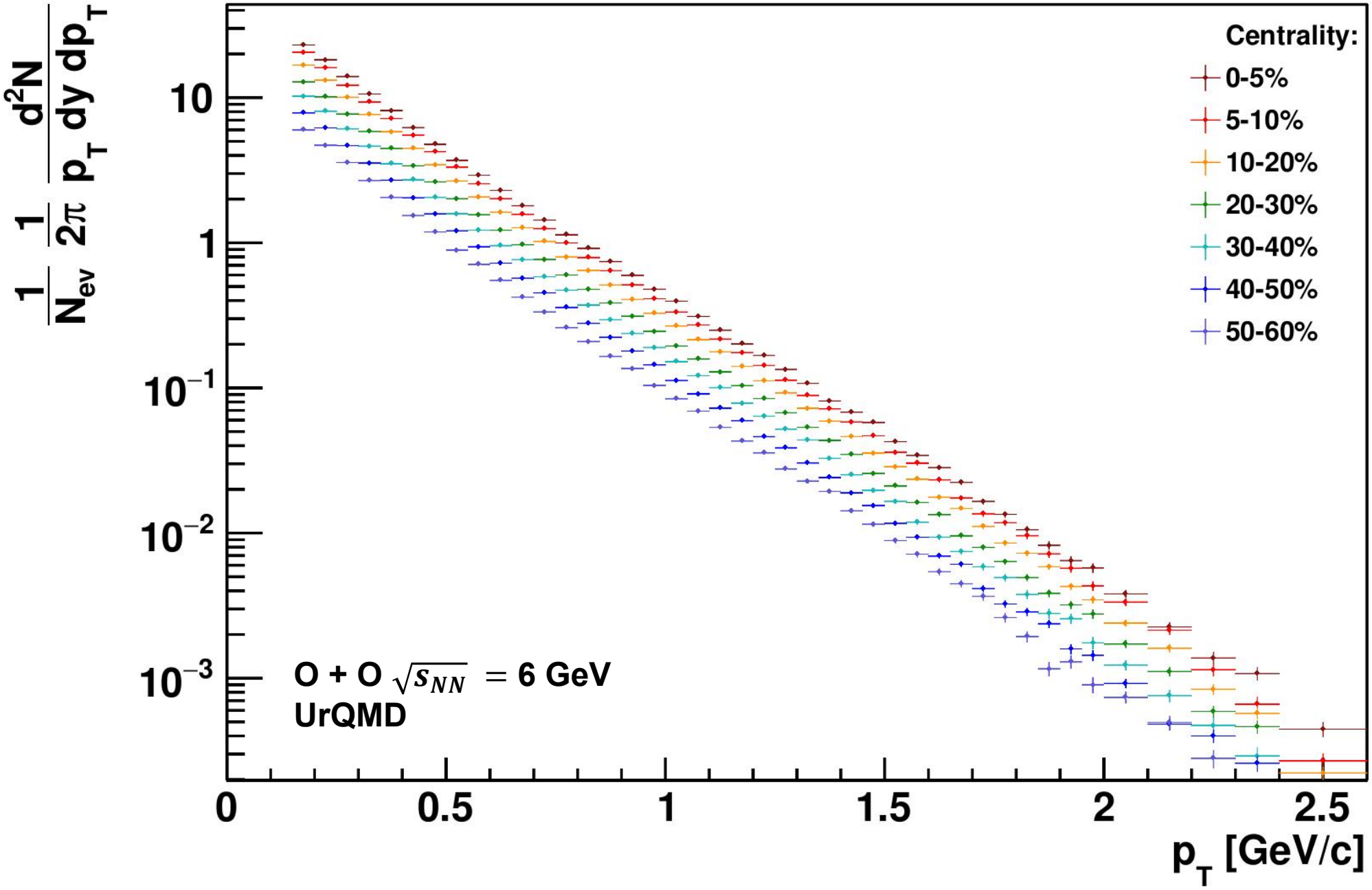
Charged hadron spectra for different centrality classes (ImpactPar)



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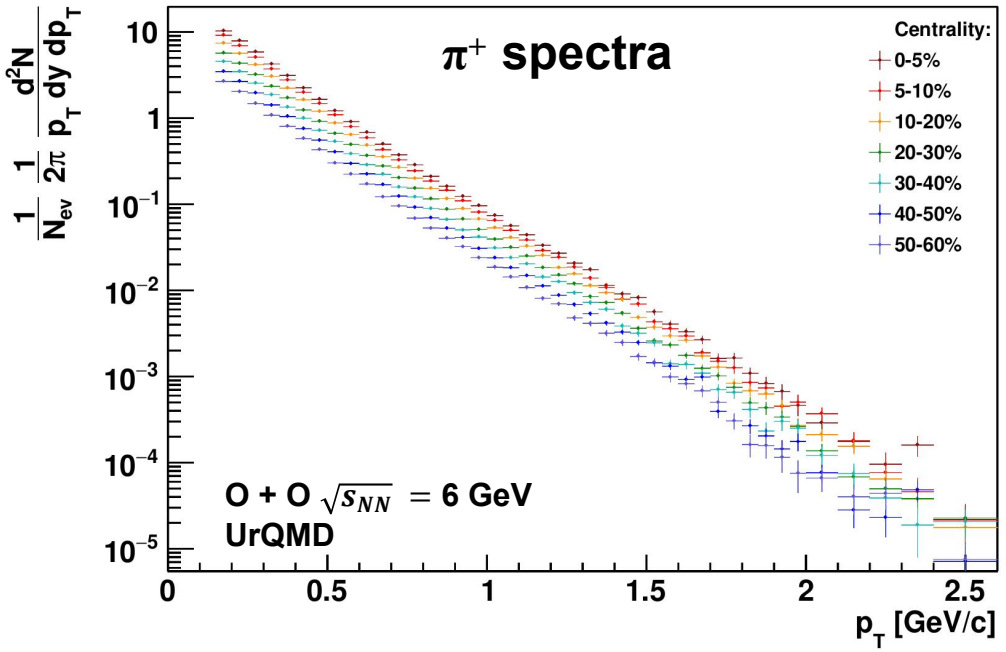
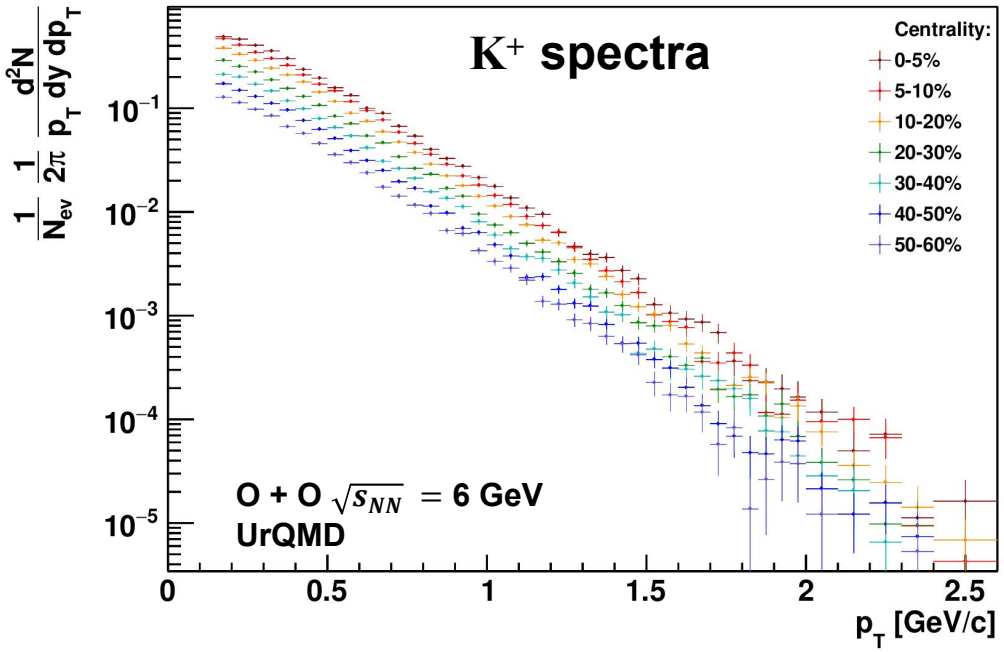
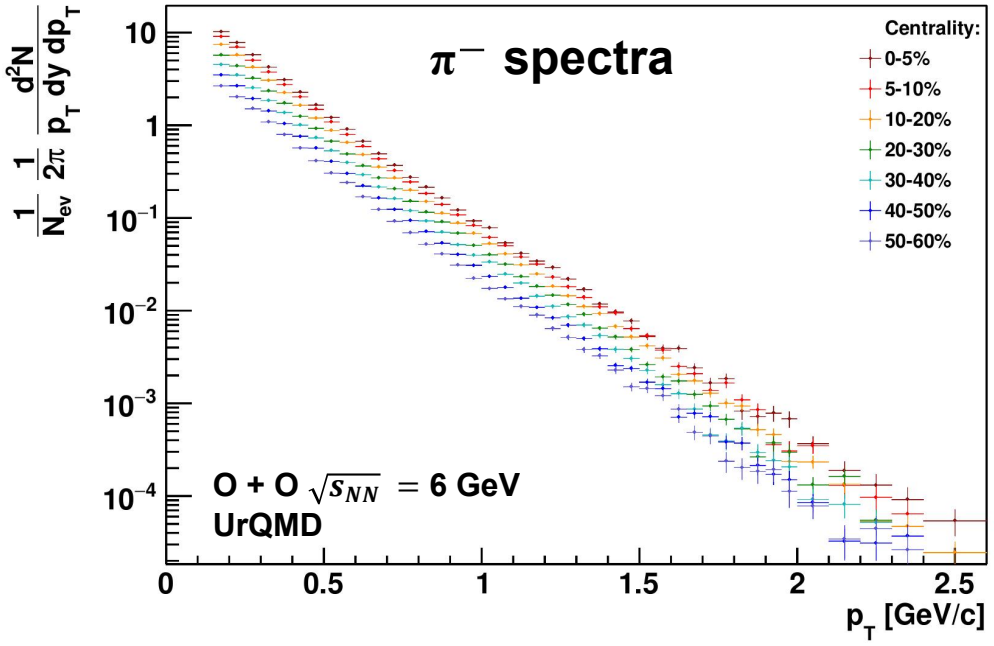
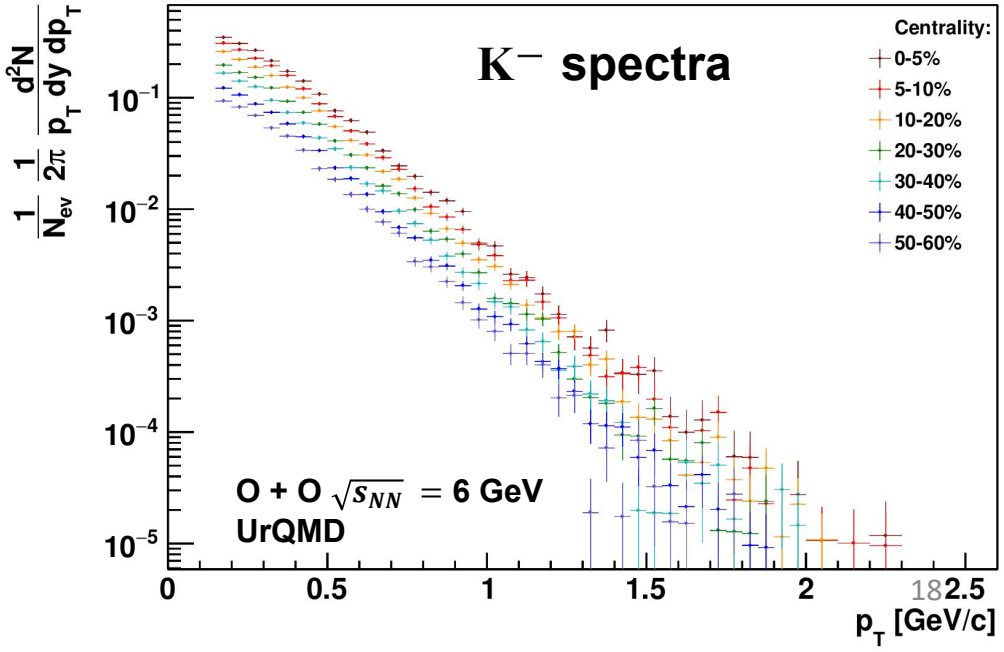


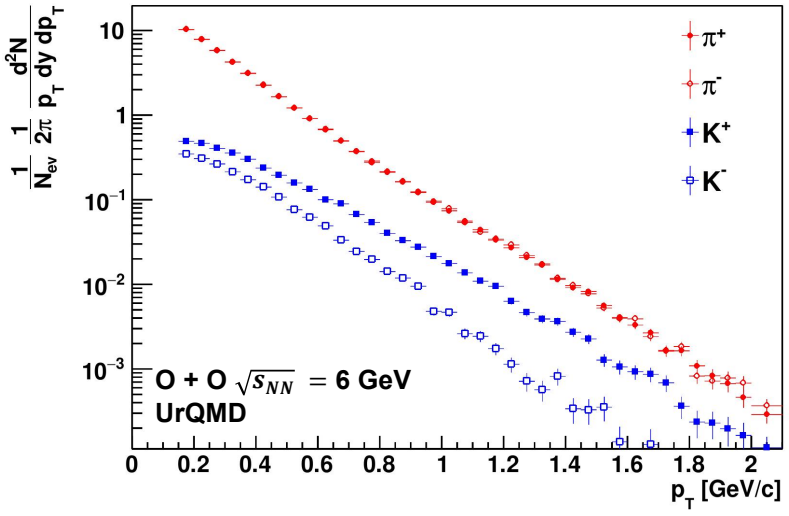






Identified hadron spectra for different centrality classes

p_T spectra for centrality 0-5%



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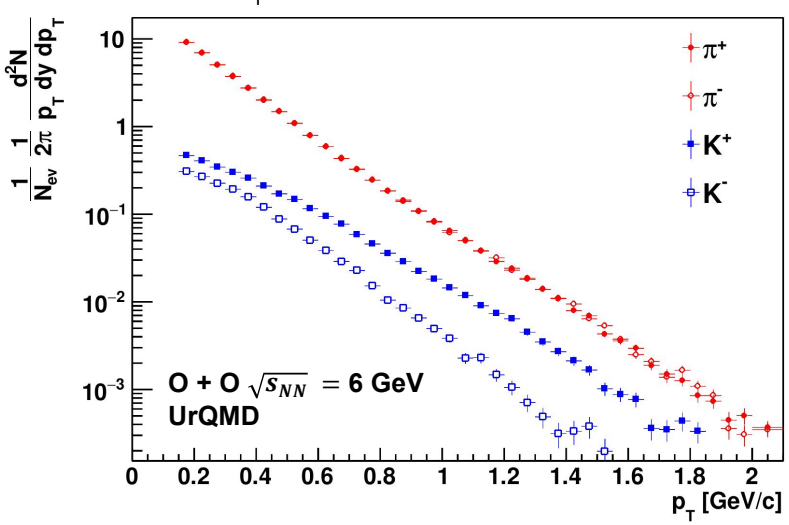

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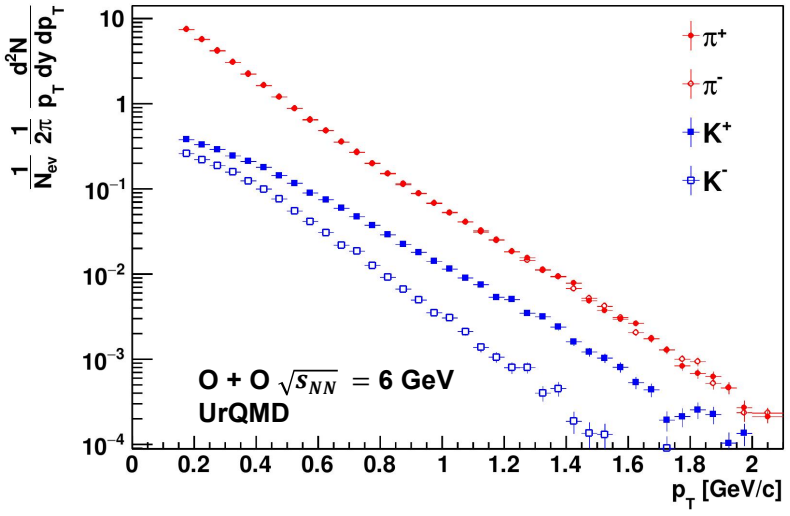
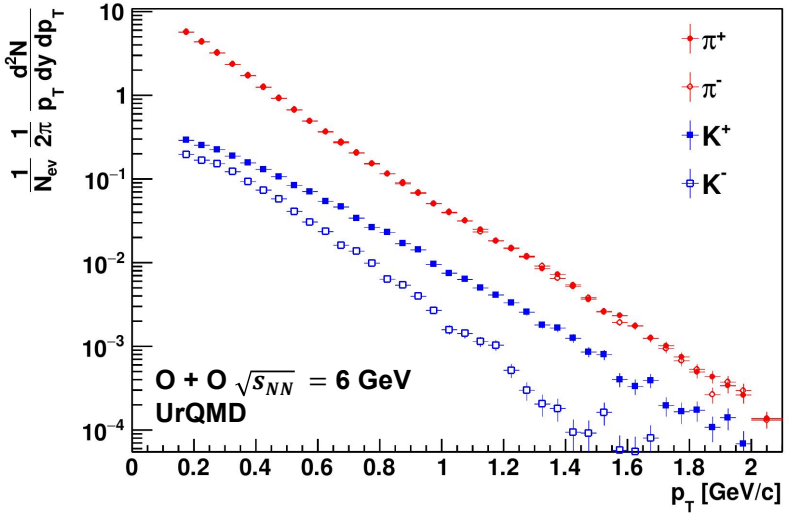
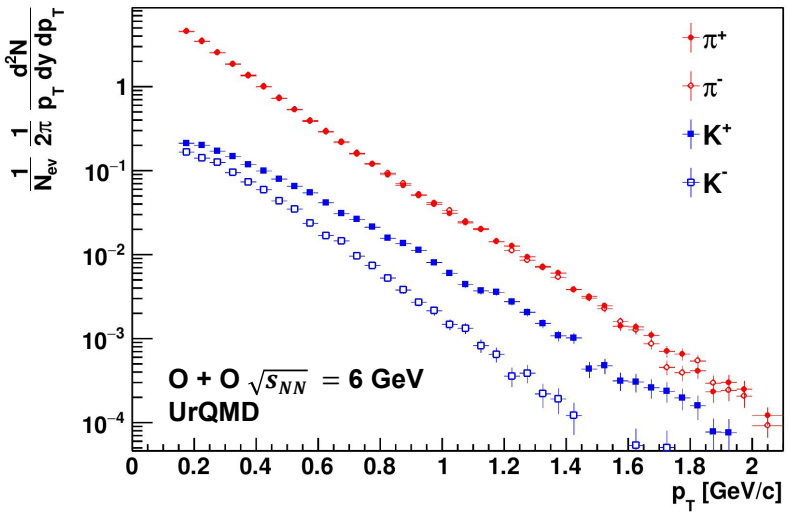


p_T spectra for centrality 20-30%



p_T spectra for centrality 30-40%



p_T spectra for centrality 40-50%