Fitting hadron spectra in Kr + Kr collisions at $\sqrt{s_{NN}} = 6$ GeV using UrQMD model

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Data & Cuts

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

UrQMD, statistics: ~1.7×10^5 events

Track cuts:

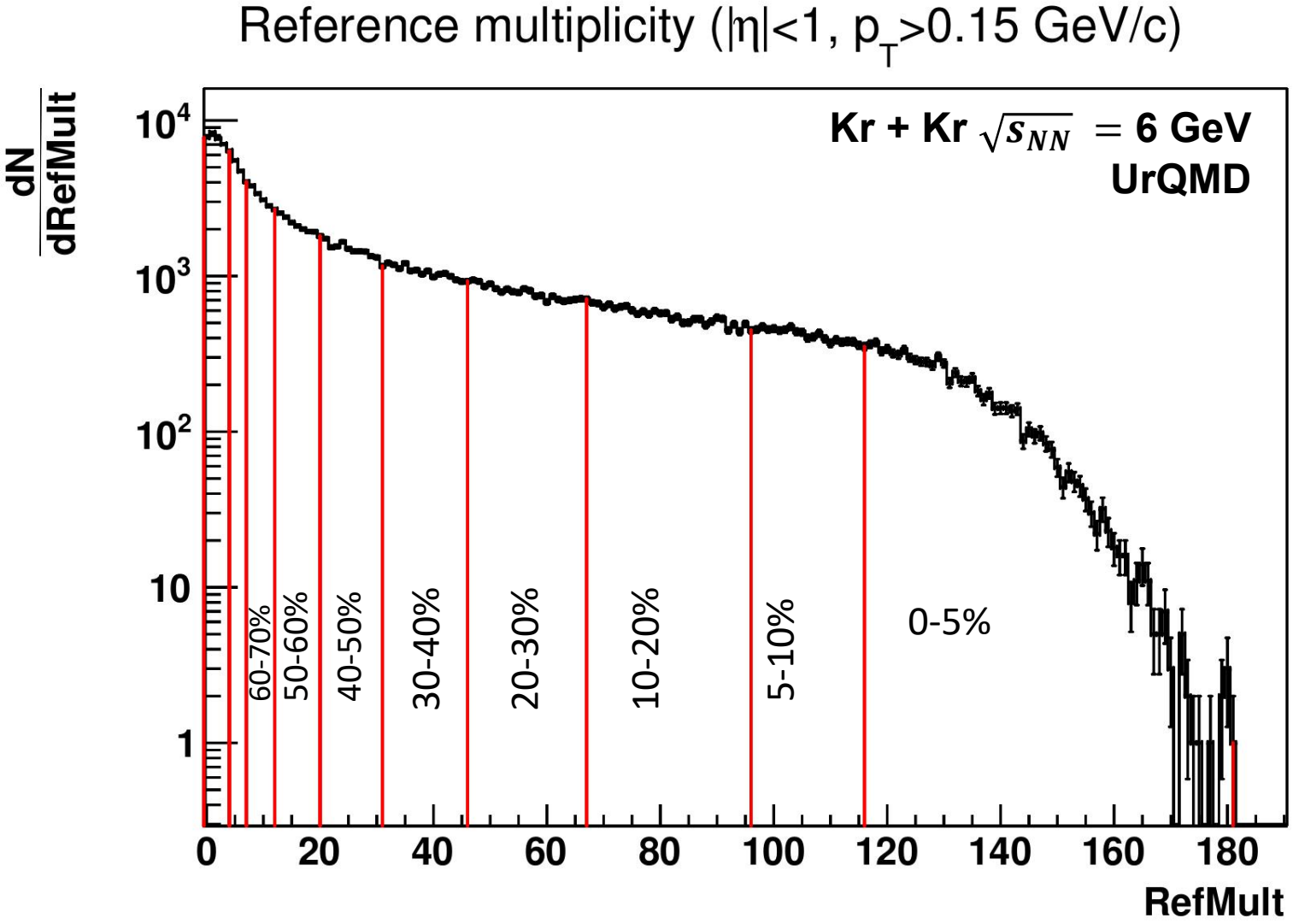
- $|y| < 0.1$
- $|\eta| < 1.0$
- $p_T > 0.15$ GeV/c

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

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

System: Kr + Kr $\sqrt{s_{NN}} = 6$ 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%	116 - 181	0.04918
5 - 10%	96 - 116	0.10029
10 - 20%	67 - 96	0.19986
20 - 30%	46 - 67	0.30084
30 - 40%	31 - 46	0.39844
40 - 50%	20 - 31	0.50015
50 - 60%	12 - 20	0.60801
60 - 70%	7 - 12	0.71200
70 - 80%	4 - 7	0.81301

Fitting spectra using blast wave model

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

m_T - transverse mass of a hadron
$\rho(r) = \tanh^{-1}\beta$
I_0, K_1 - the modified Bessel functions
$\beta = \frac{2}{2+n}\beta_S$, β_S - the surface velocity
n - the exponent of flow velosity profile

p_T fit ranges:
π: 0.5 - 1.3 GeV/c
K: 0.25 - 1.4 GeV/c

Fit results (Kr + Kr $\sqrt{s_{NN}} = 6$ GeV)

Collision centrality	β	T_{kin}, МэВ	χ^2/ndf
0 - 5%	0.38 ± 0.02	104 ± 6	1.49
5 - 10%	0.420 ± 0.007	91 ± 3	1.07
10 - 20%	0.40 ± 0.02	93 ± 7	1.16
20 - 30%	0.42 ± 0.02	85 ± 4	1.54
30 - 40%	0.417 ± 0.007	76 ± 2	1.45
40 - 50%	0.433 ± 0.005	64 ± 3	1.28
50 - 60%	0.419 ± 0.006	70 ± 3	1.43

Fitted hadron spectra for different centrality classes