The aim of the analysis

- Pair source distribution: $D(r,K) = \int \mathrm{S}\left(\rho + \frac{r}{2}, K\right) \mathrm{S}\left(\rho - \frac{r}{2}, K\right) \mathrm{d}^4\rho$
- Shape of the source function?
- Lévy-stable distribution: generalization of Gaussian
- Shown in many experiments: the shape deviates from Gaussian ($\alpha < 2$)

Why?

One possible reason:

Elastic scattering dominated anomalous diffusion:

smaller cross-section → larger mean free path → heavier power-law tail → $\alpha(\mathrm{K}) < \alpha(\pi)$

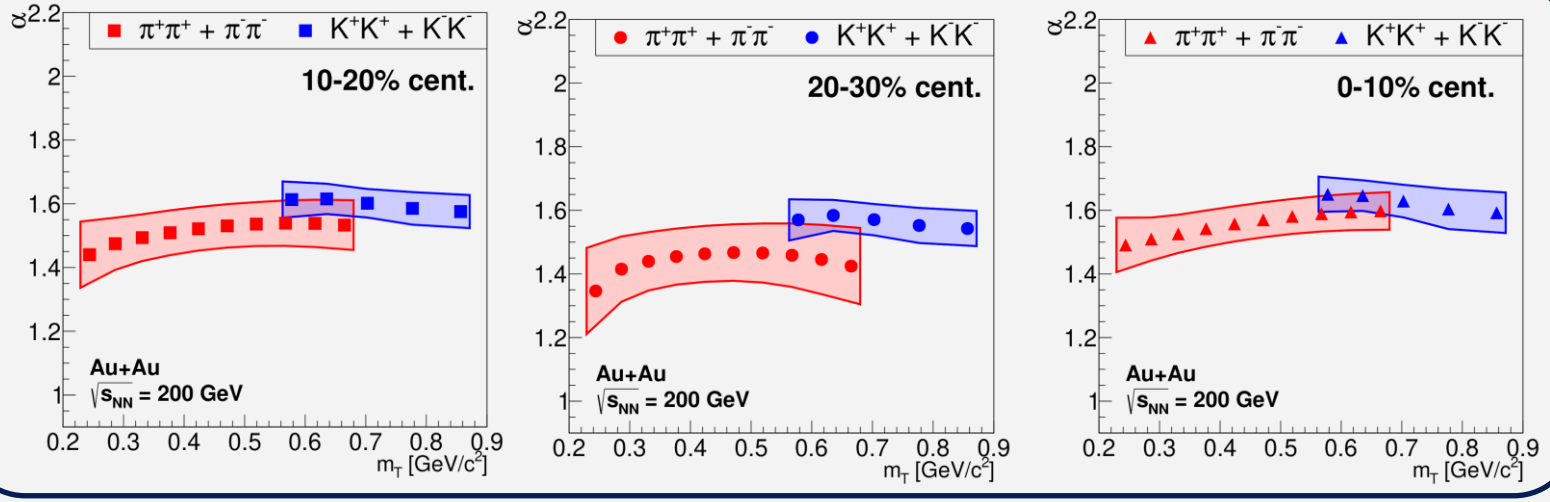
M. Csanád, T. Csörgő, M. Nagy, Braz.J.Phys. 37 (2007) 1002
Humanic, Int.Jour.Mod.Phys. E 15 (2006) 197

Relation?

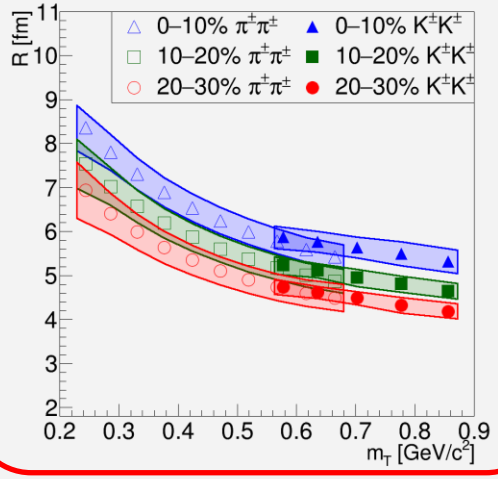
$\alpha(\mathrm{K}^{\pm}) \Longleftrightarrow \alpha(\pi^{\pm})$

EPOS results

Parameter α



Parameter R



Conclusion

- Observation: $\alpha(\pi) \leq \alpha(K)$; approximately species-independent
- Unlike expectation for elastic scattering dominated Lévy walk
- Likely due to resonance decays
- Usual decrease with mT due to collective flow
- Approximate m_T scaling holds
- Same source for pions and kaons, even after decays and scattering?

α

R