Pion emission source from UrQMD at STAR energies ranging from 3 to 27 GeV

The Lévy-type source function

- Momentum correlation $C(q)$ related to source $S(r)$

$$C(q) \cong 1 + \left|\int S(r) e^{iqr} dr\right|^2$$

- Can be expressed with distance distribution $D(r)$:

$$C(q) \cong 1 + \int D(r) e^{iqr} dr$$

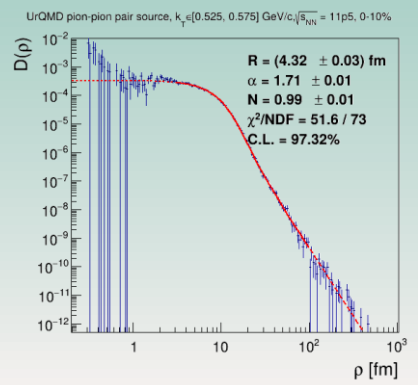
- **Spatial distribution can be assumed of Lévy shape:**

$$S \coloneqq L(\boldsymbol{x}, \alpha, R)$$

$$L = \frac{1}{(2\pi)^2} \int \mathrm{d}^3 q e^{iqr} e^{-\frac{1}{2}|\mathrm{qR}|^\alpha}$$

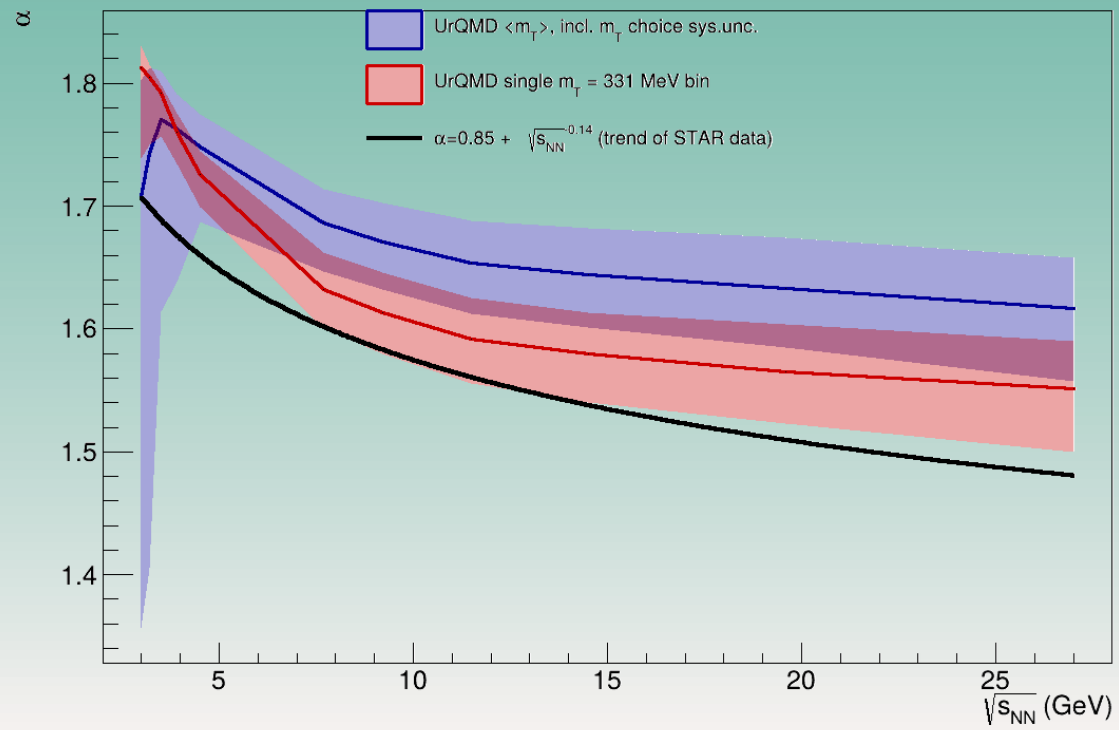
$$D(\boldsymbol{r}) = L(\boldsymbol{r}, \alpha, 2^{\frac{1}{\alpha}} R)$$

- In UrQMD: $D(\rho_{LCMS})$ directly obtained
  - Q_{LCMS}, η, p_T cuts as in the experiment
  - Lévy-stable distributions fitted
  - Systematics checked



Results

- m_T-averaging and single-m_T bin data selection done
- $\sqrt{s_{NN}}$-dependence of Lévy parameters from UrQMD
- Comparison possible with preliminary STAR data (see on poster session!)



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