Jet quenching in small systems

a few seculative thoughts

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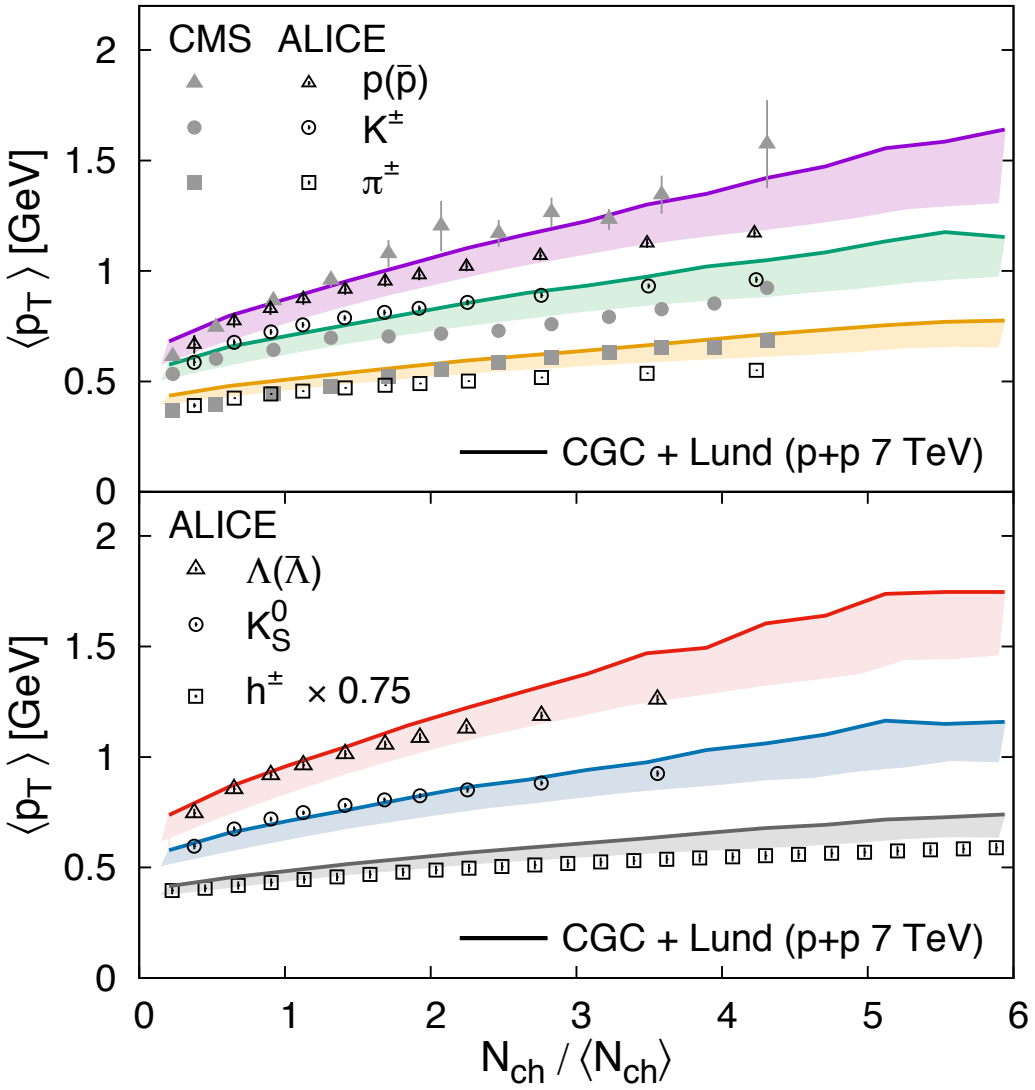
Particle correlations due to initial state?



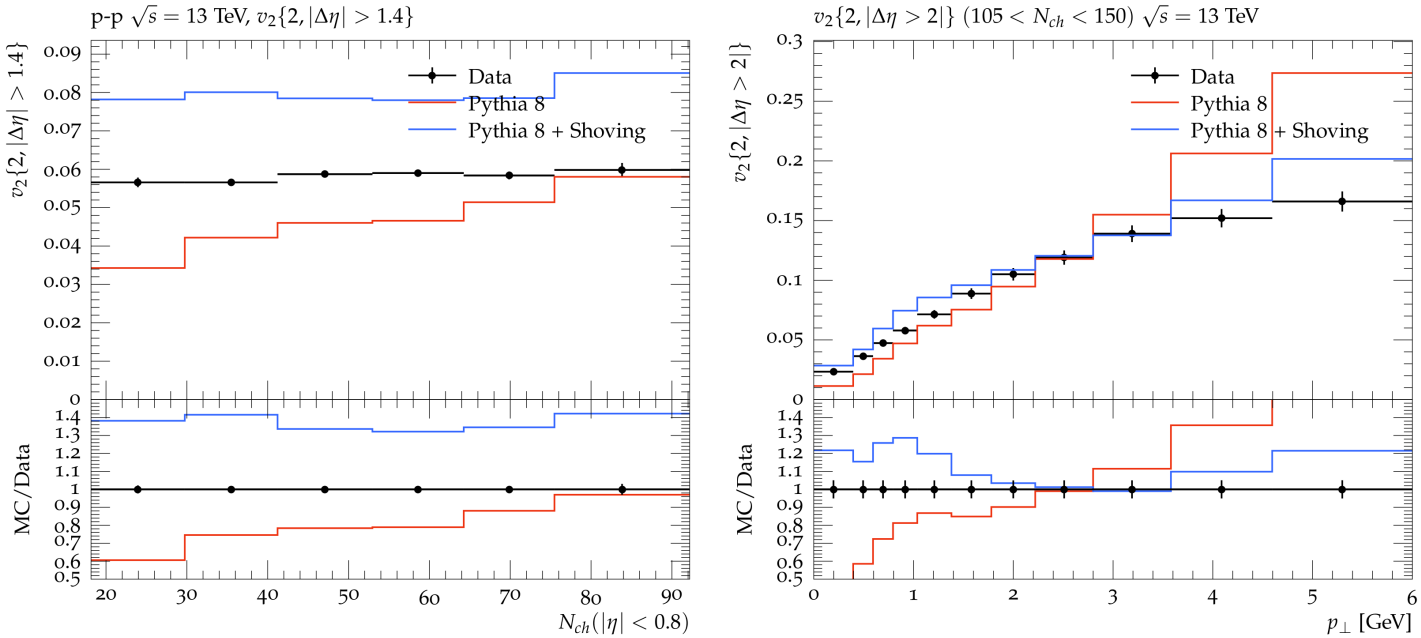
- initial state correlations à la CGC/glasma get imprinted on final state
- IP-Glasma
  + classical YM
  + PYTHIA hadronisation
- mass ordering of $\langle p_\perp \rangle$ comes out right
- sizable v_2 in high multi pp
- no need for final state re-scattering

B. Schenke, S. Schlichting, P. Tribedy and R. Venugopalan,

Particle correlations due to string interactions?

- soft particle correlations from string interactions → ANGANTYR
- e.g. shoving: overlapping strings repel each other
- jets hadronise outside dense region → less affected

according to my naive understanding



Bierlich, Chakraborty, Gustafson, Lönnblad, JHEP 03 (2021), 270 [arXiv:2010.07595]

Particle correlations due to escape mechanism?

- can get sizable v_2 with $\mathcal{O}(1)$ interactions

$\rightarrow$ escape mechanism

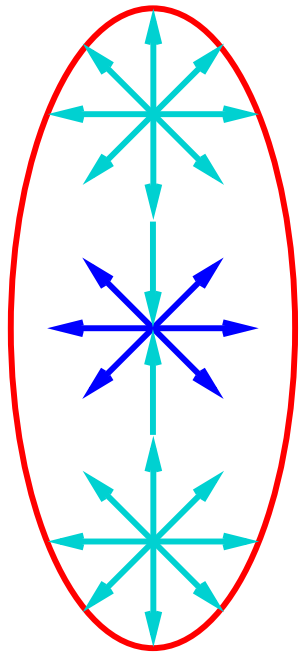
- seen in kinetic theory

Kurkela, Wiedemann, Wu, Phys. Lett. B 783 (2018) 274

Kurkela, Mazeliauskas, Törnkvist, JHEP 11 (2021), 216 [arXiv:2104.08179]

- and AMPT

He, Edmonds, Lin, Liu, Molnar, Wang, Phys. Lett. B 753 (2016) 506

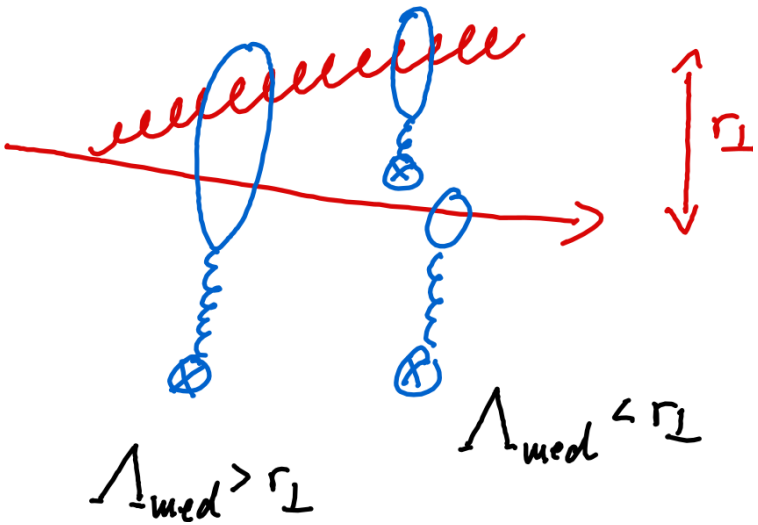


- initially isotropic distribution
- but: locally anisotropic
- scattering: isotropises locally

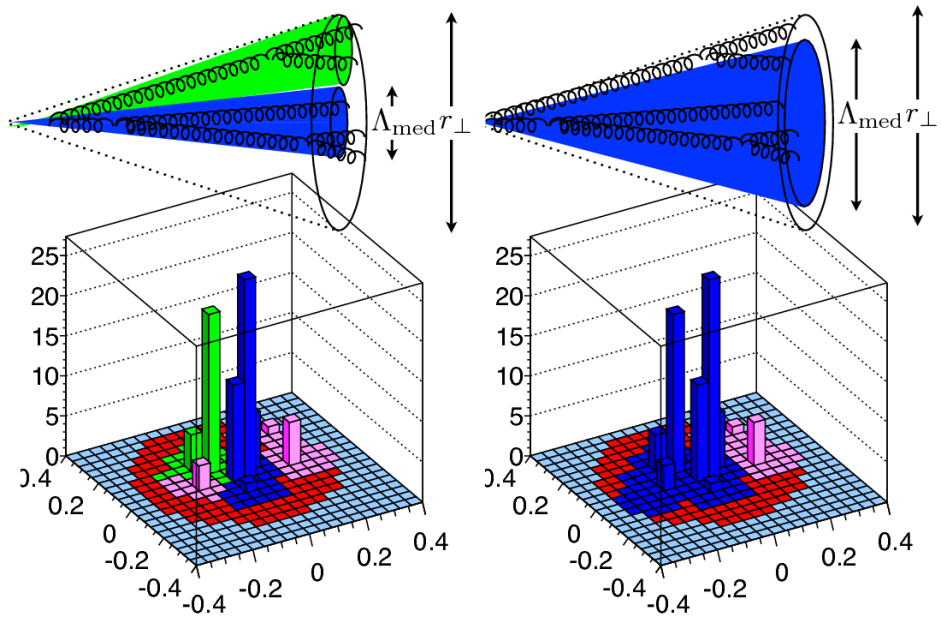
$\rightarrow$ global anisotropy

- opacity for jets too low for sizable modifications?

Jet quenching suppressed by colour coherence?

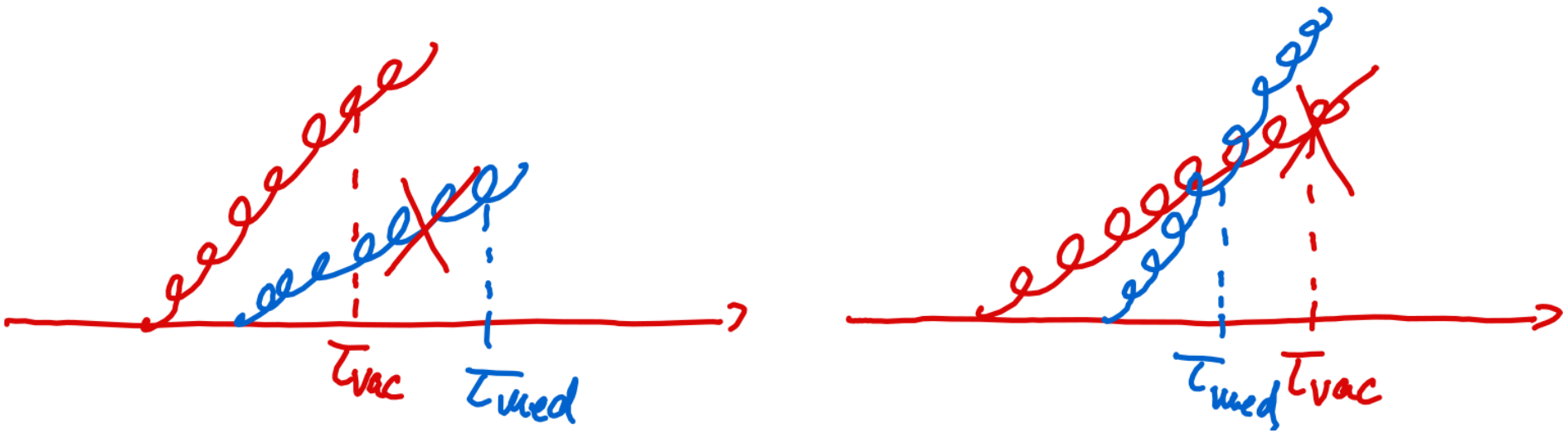


- medium cannot resolve small structures
- unresolved case: only total colour charge matters
- early times: $r_\perp$ small
- suppresses medium effects at early times



J. Casalderrey-Solana, Y. Mehtar-Tani, C. A. Salgado and K. Tywoniuk, Phys. Lett. B 725 (2013), 357-360 [arXiv:1210.7765]

Jet quenching suppressed by vacuum evolution?



- only emission with shorter formation time is realised
- at early times: vacuum like emissions have short formation time
- also suppresses energy loss at early times elastic energy loss still possible
- implemented in JEWEL