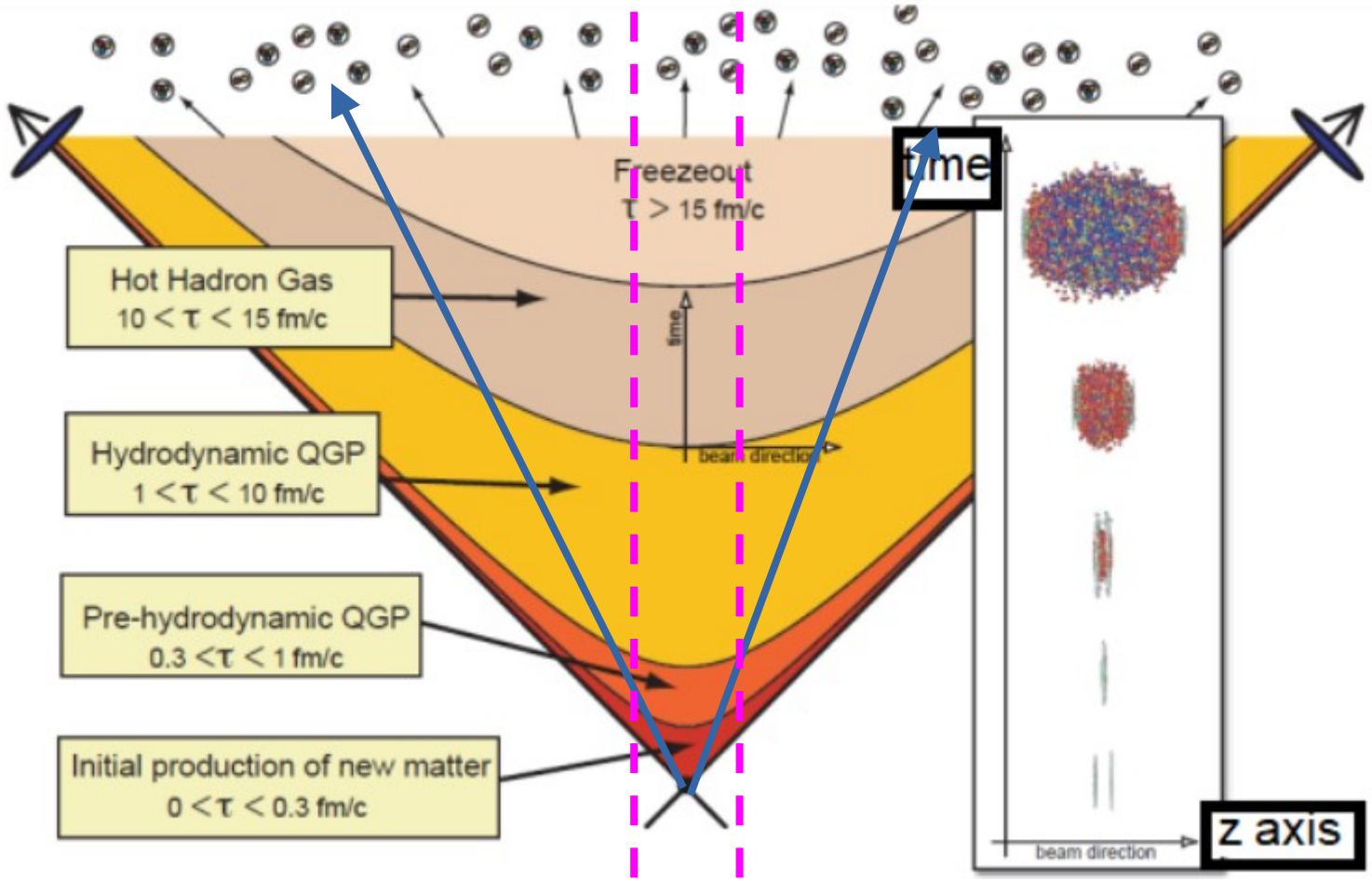
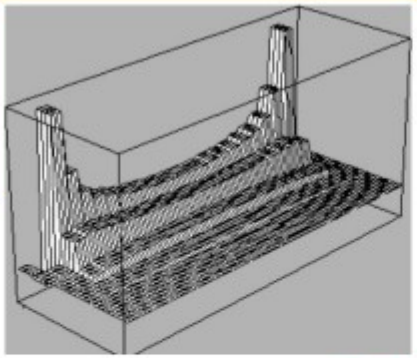
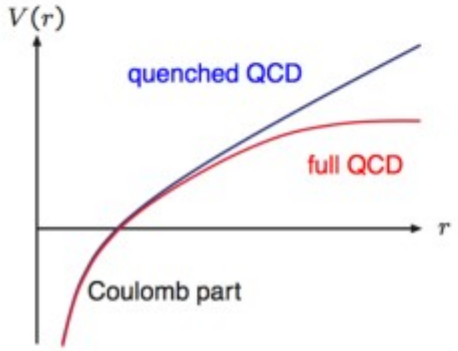
QGP: entropy produced early plus ~free streaming in z

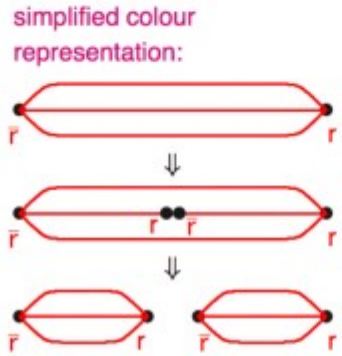


Note that energy for forward particles is deposited early!



Lund string-model in one slide





Proper treatment: evenly spaced in rapidity y:

$$y = \frac{1}{2} \ln \left(\frac{E + p_z}{E - p_z} \right)$$

Varying z values ⇒ varying spacing, but still on the average flat rapidity plateau + some endpoint corrections:

and total multiplicity grows proportional to $\ln(E_{\mathrm{jet}})$.

- Well motivated from LQCD/confinement, simple picture
- Big question is how to assign strings! (e.g., PYTHIA)

Note that string expansion is reversible!

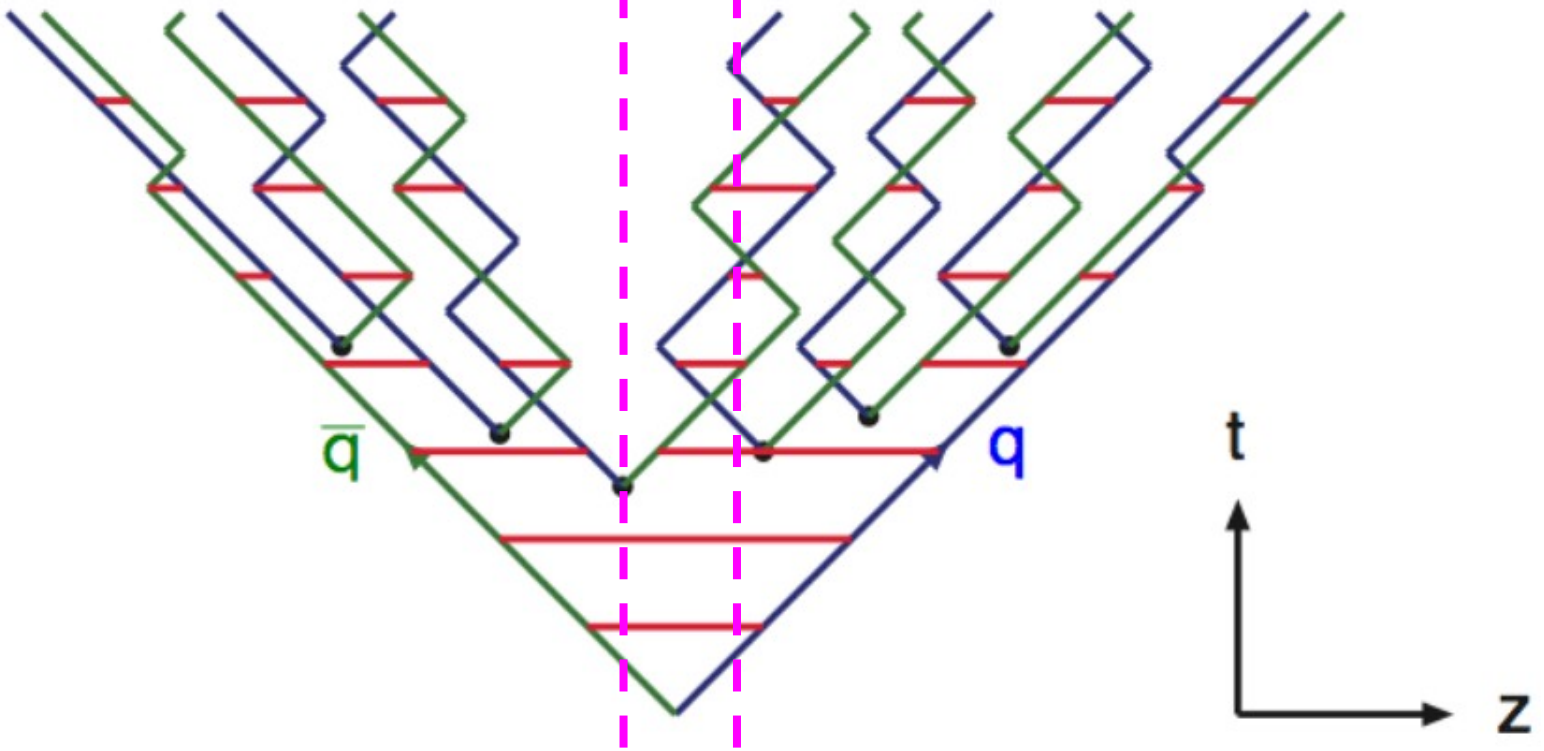
- More details:
  https://www.hep.lu.se/staff/christiansen/teaching/spring_2013/lundString.pdf

The Lund Model

Note that entropy is produced at the end!

Combine yo-yo-style string motion with string breakings!

Motion of quarks and antiquarks with intermediate string pieces:



A q from one string break combines with a $\overline{q}$ from an adjacent one.

Gives simple but powerful picture of hadron production.