Thermalization of gluons in spatially homogeneous systems

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- The inelastic kernel has the usual shape, but is computed using the Landau-Pomeranchuk-Migdal (LPM) splitting rate.

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- The soft thermal sector has a characteristic momentum scale

$$p_* \equiv \left(\hat{q} m_D^4 t^2\right)^{\frac{1}{5}}$$

Initially under-populated systems ($f_0 \ll 1$)

For an under-populated system, the thermalized state is achieved in 3 steps.

1. Soft gluon radiation and overheating,

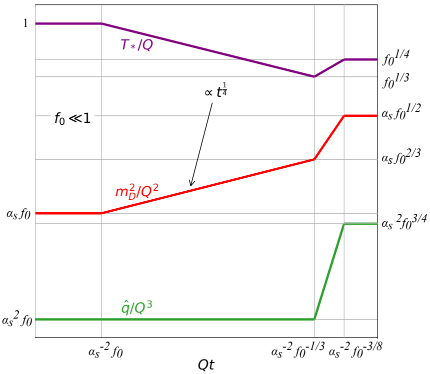
$$0 \ll Qt \ll \alpha_s^{-2} f_0.$$

2. The cooling and overcooling of soft gluons,

$$\alpha_s^{-2} f_0 \ll \; Qt \ll \alpha_s^{-2} f_0^{-\frac{1}{3}}.$$

3. Reheating of soft gluons and mini-jet quenching:

$$\alpha_s^{-2} f_0^{\frac{1}{3}} \ll \; Qt \ll \alpha_s^{-2} f_0^{-\frac{3}{8}}.$$



Initially over-populated systems ($f_0 \gg 1$)

There are only two steps to achieve thermalization:

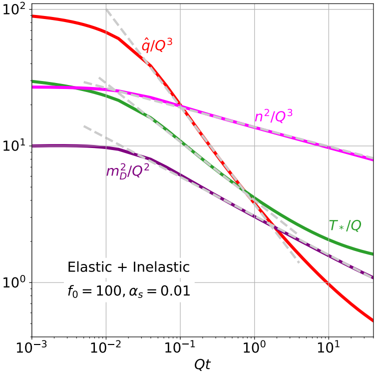
1. Soft gluon radiation and overheating:

$$0 \ll Qt \ll (\alpha_s f_0)^{-2}.$$

2. Momentum broadening and cooling:

$$(\alpha_s f_0)^{-2} \ll Qt \ll \alpha_s^{-\frac{7}{4}} (\alpha_s f_0)^{-\frac{1}{4}}.$$

We confirm the already known non-thermal fixed point (dashed lines).



Thanks for your attention!!