in Fig. 2, as L increases, the changing form of $\mathcal{V}(L)$ is characterized by three distinct length scales: $L = L_\chi$, the point when partons begin to convert, $L = L_c$, when the pressures of partons and pre-hadronic clusters equal each other, and $L = L_0$, when the transition is completed.

We will fix B and χ_0, which have well-defined physical interpretations, and then determine L_χ, L_c and L_0. Although the values of B and χ_0 are not precisely known, there is agreement of various phenomenological determinations about their ranges: one expects [14] $B^{1/4} = (150 - 250)$ MeV and $\chi_0 = (50 - 200)$ MeV. In the following we adopt two representative parameter combinations:

$$\begin{aligned} B^{1/4} &= 230 \text{ MeV} \qquad & \chi_0 &= 200 \text{ MeV} \\ B^{1/4} &= 180 \text{ MeV} \qquad & \chi_0 &= 100 \text{ MeV}\ . \end{aligned} \tag{79}$$

Then, with the potential $\mathcal{V}$ specified, we can determine the values of L_χ, L_c, L_0 from the Monte Carlo simulation of the evolution of the system as the scale L changes due to the particles' diffusion in phase space. The most interesting quantity is L_c, the point which is characterized by the equality of partonic and hadronic pressures. As explained in Sec. 4.6, we can compute the corresponding pressures P_{qg} and P_χ from the phase-space densities of partons and clusters, respectively. In analogy to Ref. [14], we represent (on dimensional grounds)

$$\begin{aligned} P_{qg}(r,L) &= a_{qg}(r,L)\ L^{-4} \ - \ B \\ P_\chi(r,L) &= a_\chi(r,L)\ L^{-4} \ - \ \mathcal{V}(L)\ , \end{aligned} \tag{80}$$

and, because $\mathcal{V}(\chi, L)|_{L=L_c} = \mathcal{V}(\chi_c, L_c) = 0$ (c.f. Fig. 2), we have

$$L_c \ = \ \left[\frac{a_{qg}(r,L_c) \ - \ a_\chi(r,L_c)}{B}\right]^{1/4} \ . \tag{81}$$

The dimensionless functions a_{qg} and a_χ are obtained from the numerical simulation and are shown in Fig. 8 as a function of time for the above two choices of B and χ_0 in the cases of $q\bar{q}$ and gg jet evolution with $Q = 10$ GeV and $Q = 100$ GeV. Plotted are the kinetic pressures $P(t,L) := a(t,L)L^{-4}$ (where $t \simeq \sqrt{L^2 + z^2}$) along the "shock front" of the jet profile which is seen in the previous Fig. 7. From Figs. 8a and 8b one observes that (i) the pressure evolution obviously depends on the type of the two jet-initiating partons: it