Assuming $f_q = f_g$, which is also valid when the kinetic and chemical equilibration of quarks and gluons proceeds identically, the screening mass Eq. (4) becomes

$$m_D^2(\mathbf{x},t) = \frac{2}{3}\pi\,\alpha_s\,N_c \int \frac{d^3p}{(2\pi)^3}\,\frac{1}{p}\,f(\mathbf{x},t,\mathbf{p})\,, \tag{5}$$

which is a factor of 2/3 smaller than the value at the beginning of the expansion, because initially there are only gluons. To make a reasonable description of the early stage, we use instead of Eq. (5)

$$m_D^2(\mathbf{x},t) = \pi\,\alpha_s\,N_c \int \frac{d^3p}{(2\pi)^3}\,\frac{1}{p}\,f(\mathbf{x},t,\mathbf{p}) \tag{6}$$

during the entire parton evolution. Accordingly, m_D^2 is overestimated by a factor of 1.5 at the late stage of the expansion, when partons thermalize. The true screening mass will be changing from Eq. (6) to Eq. (5) in time according to the true chemical equilibration of gluons and quarks, which, however, cannot be demonstrated in the present studies. More discussions will be given in the next section.

As already considered in Refs. [9, 11] for the present BAMPS calculations, the kinetic freeze-out of particles occurs when the local energy density drops below e_c, which is assumed to be the critical value for the occurrence of hadronization. In this paper we set $e_c = 1$ GeV fm^{-3}, which leads to a critical temperature $T_c = 200$ MeV for a pure gluon plasma and $T_c = 160$ MeV for a quark gluon plasma with two quark flavors [26]. After the freeze-out partons are regarded as massless pions according to a simple parton-hadron duality picture. To consider realistic chemical and kinetic freeze-out a hadronization model and the subsequent hadron cascade should be included to BAMPS, which will be done in the future. This, of course, can also have certain influence on the findings in the next section.

III. RESULTS

With the assumptions for the quark dynamics in BAMPS we calculate the space time evolution of the quark and gluon matter produced in Au+Au collisions at $\sqrt{s_{NN}} = 200$ GeV. The coupling is set to be a constant $\alpha_s = 0.6$. We evaluate the elliptic flow parameter v_2 as the average of $(p_x^2 - p_y^2)/(p_x^2 + p_y^2)$ over particles within a certain window of momentum rapidity $y = \frac{1}{2}\ln[(E+p_z)/(E-p_z)]$. Figure 1 shows the buildup of the elliptic flow v_2 at midrapidity $|y| < 1$ in a Au+Au collision with an impact parameter of $b = 8.6$ fm. The solid curve gives the result of a pure gluon matter, which was already obtained from our