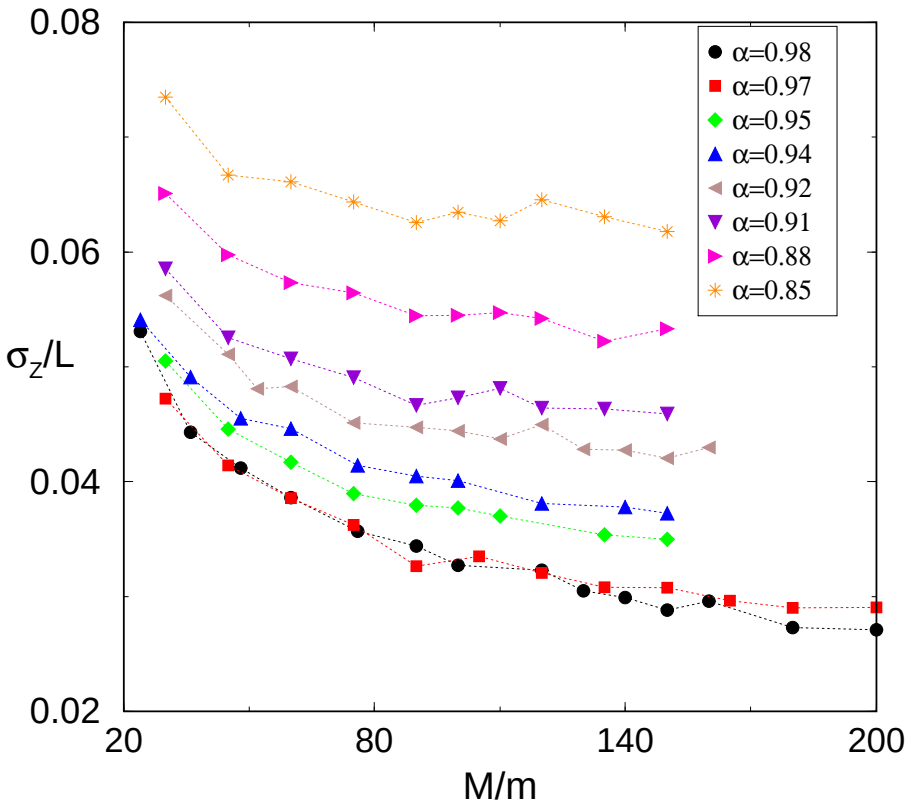

FIG. 3: (Color online) Dimensionless relative standard deviation σ_Z/L of the position of the movable piston as a function of the mass ratio M/m, for several values of the coefficient of normal restitution of the gas α, as indicated in the insert. The curves are guides for the eye. In all the cases, the coefficient of restitution for the gas-movable piston collisions is $\alpha_P = 0.99$.

III. COMPRESSIBILITY AND EFFECTIVE TEMPERATURE

To measure the facility of the system to be compressed, define a coefficient of compressibility k by

$$k \equiv -\frac{1}{< V >}\left(\frac{\partial < V >}{\partial p_L}\right)_{v_W}, \tag{7}$$

where p_L is the pressure of the granular gas in the vicinity of the movable piston and V is the volume (area) of the system. The derivative in the above equation is computed at constant value of all the parameters defining the system, α, α_P, N_z and v_W, except $p_L = Mg_0/W$, as it follows from the definition of the pressure. In the following, p_L will be modified by changing the mass of the piston M, keeping g_0 and W unchanged. The reason for this choice is twofold. First, changing g_0 is equivalent to modifying v_W and, second, increasing