Argon gas $m = 6.63 \times 10^{-26}$ kg, $d = 3.658 \text{ Å}$

$$\lambda = \frac{1}{\sqrt{2}\pi n d^2} = \frac{1.682 \times 10^{18}}{n} \quad ; \quad v_{mps} = \sqrt{\frac{2k_B T}{M}} \quad ; \quad T_C = 223.15 \text{ K}$$

$$T_H = 323.15 \text{ K}$$

$$v_{mps} = 337.208 \text{ m/s} \qquad T = \frac{T_C + T_H}{2}$$

$L_x = 10^{-3}$ m; $kn = \frac{\lambda}{L} = \frac{1.682 \times 10^{21}}{n} \rightarrow$ for $kn = 0.1$, $n = 1.682 \times 10^{22}$

$\lambda = 10^{-4}$; t_0 = mean collision time $= \frac{\lambda}{v_{mps}} \approx 71 \times 10^{-9} \text{ s} = 71 \text{ ns}$

$\therefore \Delta t = 10^{-8}$ s

$L_y = \frac{L_x}{100} = 10^{-5}$; $L_z = 1$ [2D simulation]

$N = nV = 1.682 \times 10^{22} \times 10^{-8} = 1.682 \times 10^{14}$

Let there be $100 \times 1 \times 1$ grid cells & 20 particles per grid cell (ppgc)

$N = F_N \times mp \Rightarrow F_N = \frac{1.682 \times 10^{14}}{2000} = 8.41 \times 10^{10}$