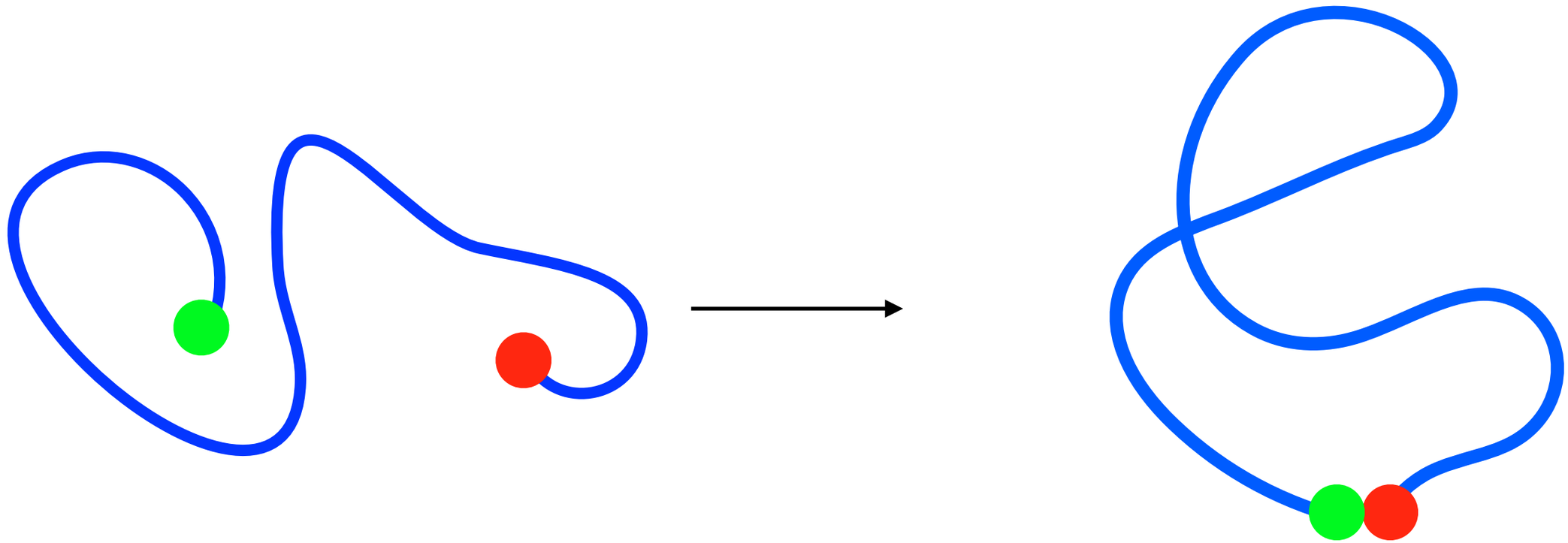
Project 1

Q: Scaling relation of the mean looping time with the length of polymer? (Theory & Simulation ?)



$$\tau \sim N^{\alpha}$$

Project 2

Simulate and obtain

$$C(t) = \langle \mathbf{V}(t) \cdot \mathbf{V}(0) \rangle / \langle \mathbf{V}^2(0) \rangle$$

$$D(\phi) = \frac{1}{3} \int_0^\infty dt \langle \mathbf{V}(t) \cdot \mathbf{V}(0) \rangle (\phi)$$

and show

$$C(t) \to t^{-3/2}$$

(hydrodynamic tail)

and discuss freezing volume fraction

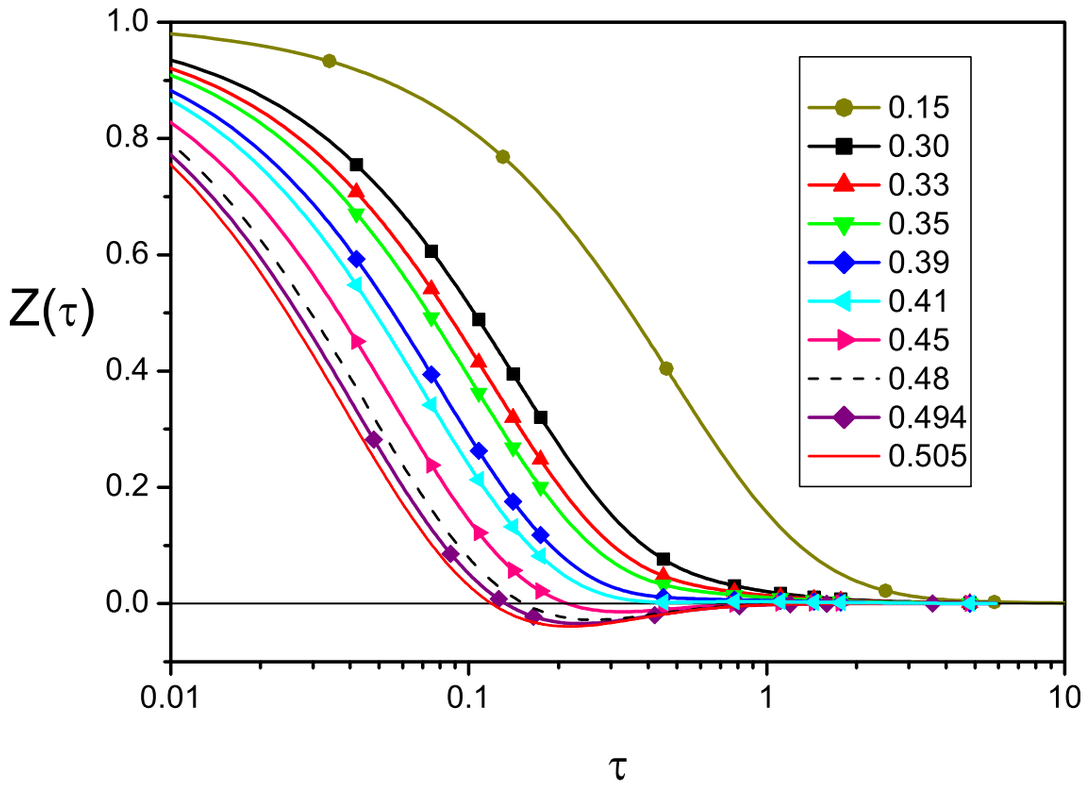


FIG. 1 (color online). A plot of the velocity autocorrelation function $Z(\tau)$ versus $\log\tau$ (symbols are defined in the legend), calculated from one component hard-sphere molecular dynamics simulations of fluids at various volume fractions $\phi =$ (volume of all the spheres divided by the total system volume). For $\phi \geq 0.45$ the VAF becomes negative, so in order to expose the long-time behavior, double logarithmic plots of $|Z(\tau)|$ are needed (see Fig. 2).