Indrani and Ramaswamy Reply: The Comment by Fuchs [1] points out that the self-energies for self and collective motion should be treated independently. In our Letter [2] we state this as well, and simply use it as an approximation. We would worry about this approximation if a "fully self-consistent" treatment gave a quantitatively correct prediction for the suppression of self-diffusion at freezing, as claimed in [1]. An examination of the fitting procedure in [1] shows that it does not, as we demonstrate below.

Note that, in principle, the mode-coupling (MC) [3] approach has *no fitting parameters*. A given input liquid structure factor $S(q)$ yields a definite value for the ratio $r = D_L/D_0$ of the long-time and bare diffusivities. At the experimental freezing volume fraction of 0.494, $S(q)$ has a height of about 2.85; the corresponding value of r predicted by MC is about 0.008 [1], as can be seen in Fig. 1 of [1]. The structure factor used as input for the value of σ corresponding to freezing has a maximum height of about 2.25. Thus, all one can really conclude from the remarks in [1] is that the theory predicts $r \approx 0.085$, when $S(q)$, corresponding to a liquid far from freezing, is used, and gives a value much too small for r when a typical freezing $S(q)$ is used instead.

However, [1] chooses to *identify* the experimental volume fraction at which the extrapolated diffusivity vanishes with the MC glass transition point, and to use the distance from the MC glass transition as a parameter. This procedure, for which there is no justification, simply shifts the predicted curve to larger densities, leading superficially to better agreement with the experiment.

In conclusion, the improved calculation of [1], without the unjustified fitting procedure, only reinforces our point: mode-coupling theory, when properly applied, can explain the universal suppression of self-diffusion at freezing but cannot predict its numerical value. It accounts well for the *shape* but not the magnitude of the mean-square displacement as a function of time.

A. V. Indrani[1,*] and Sriram Ramaswamy[1,2,†,‡]
[1]Department of Physics,
Indian Institute of Science,
Bangalore 560 012, India
[2]Center for Theoretical Studies,
Indian Institute of Science,
Bangalore 560 012, India

Received 12 September 1994
PACS numbers: 82.70.Dd, 05.40.+j, 61.20.Ja, 64.70.Dv

*Electronic address: indrani@physics.iisc.ernet.in
†Electronic address: sriram@physics.iisc.ernet.in
Current address: sriram@physics.ucsb.edu
‡Also at Jawaharlal Nehru Center for Advanced Scientific Research, IISc Campus, Bangalore 560 012, India. Present address: Materials Department, Engineering II, University of California, Santa Barbara, CA 93106.

[1] M. Fuchs, preceding Comment, Phys. Rev. Lett. **74**, 1490 (1995).
[2] A. V. Indrani and S. Ramaswamy, Phys. Rev. Lett. **73**, 360 (1994).
[3] For reviews of mode coupling theories, see B. Kim and G. Mazenko, Adv. Chem. Phys. **78**, 129 (1990); W. Götze and L. Sjögren, in *Dynamics of Disordered Materials,* edited by D. Richter, A. J. Dianoux, W. Petry, and J. Teixeira (Springer-Verlag, Berlin, 1989).

0031-9007/95/74(8)/1491(1)$06.00