Abstract Submitted for the MAR07 Meeting of The American Physical Society

Geodesic path picture for slow dynamics in supercooled liquids CHENGJU WANG, RICHARD M. STRATT, Department of Chemistry, Brown University, Providence, RI 02912 — How does dynamics dramatically slow down with decreasing temperature in supercooled liquids? We suggest that the answer can be deduced from the geometry of the potential energy landscape. Instead of looking at real dynamical processes associated with barriers hoping, the landscape is characterized by the geodesic (shortest) paths in the *energy landscape ensemble*, which was defined to include all the configurations with a potential energy less than a given value. Within our geodesic path theory, the diffusion constants depend on the typical ratio of the Euclidean distance to the geodesic path length. Computer simulations show that using only this geometric property of the landscape, one can reproduce the dramatic slow down in diffusion constants for the Kob-Andersen model, a typical glassy system.

> Chengju Wang Department of Chemistry, Brown University, Providence, RI 02912

Date submitted: 16 Nov 2006

Electronic form version 1.4