Abstract Submitted for the MAR14 Meeting of The American Physical Society

Dynamical Heterogeneities in Glasses from Fluctuating Mobility Generation and Transport: Two Equilibration Mechanisms in Glasses APIWAT WISITSORASAK, PETER G. WOLYNES, Rice University — In the random first order transition theory, fluctuating mobility generation and transport are explored from an extended mode coupling theory of the glass transition that includes activated events. We numerically solve the continuum equations of mobility and temperature fields and find that the fluctuations which account for spatiotemporal structure in aging and rejuvenating glasses lead for dynamical heterogeneity in glass. Non-Gaussian distribution of free energy, stretch exponent β , and growing characteristic length are presented along with the four-point correlation function. Our results demonstrate that two equilibration mechanisms that have been observed in aged polymer glasses are the results of the heterogeneity and out-of-equilibrium behavior of glasses below the glass transition temperature. Numerical results of distribution of relaxation time agree with experimental observations.

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Date submitted: 15 Nov 2013 Electronic form version 1.4