

Abstract Submitted
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Dynamical heterogeneities and fluctuations of the time variables in structural glasses KARINA E. AVILA, HORACIO E. CASTILLO, Ohio University, AZITA PARSAEIAN, Northwestern University — The existence of dynamical heterogeneities in disordered materials is considered now as a crucial element in explaining many observed features of their dynamical behavior. In this work, we investigate a possible hypothesis for their origin, which assumes that they emerge from soft (Goldstone) modes associated with a broken continuous symmetry under time reparametrizations. To test this hypothesis, we construct coarse grained observables from data obtained in simulations of four models of structural glasses. The fluctuations of these observables are decomposed into transverse components associated with the postulated time-fluctuation soft modes and a longitudinal component unrelated to them. We find that as temperature is lowered and timescales are increased, the time reparametrization fluctuations become increasingly dominant and their correlation volumes grow together with the correlation volumes of the dynamical heterogeneities, while the correlation volumes for longitudinal fluctuations remain small.

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