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Shapes of dynamically heterogeneous regions in glassy fluids with attractive and repulsive interactions as revealed through anisotropic four-point correlation functions ELIJAH FLENNER, GRZEGORZ SZAMEL, Chemistry Department, Colorado State University — We investigate the size and anisotropy of dynamically heterogeneous regions in glassy fluids with attractive and repulsive interactions. To this end we simulate a binary Lennard-Jones mixture and its Weeks-Chandler-Andersen truncation. We use a four-point correlation function $G_4(\vec{k},\vec{r};t)$, which depends on the angle between $\vec{k}$ and $\vec{r}$, and its associated structure factor $S_4(\vec{k},\vec{q};t)$, which depends on the angle θ between $\vec{k}$ and $\vec{q}$, to characterize the size and anisotropy of the dynamically correlated regions. In particular, $G_4(\vec{k},\vec{r};t)$ allows us to explore dynamic heterogeneities at shorter distances. In contrast, to investigate dynamic heterogeneities at longer distances we analyze the small q behavior of $S_4(\vec{k},\vec{q};t)$ and obtain an anisotropic dynamic correlation length $\xi(\theta)$. We explore the dependence of dynamic heterogeneities at shorter and longer distances on the presence of attractive interactions.

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