Kinetic Heterogeneities at Dynamical Crossovers[1] THOMAS HAX-
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vania — We perform molecular dynamics simulations of a model glass-forming liquid
to measure the spatial and temporal extent of kinetic heterogeneities as functions
of distance a and time t. We locate local maxima $\chi^\star$ of the dynamic susceptibility
$\chi_{\mathrm{ss}}(a, t)$ at distances $a^\star$ and times $t^\star$. We find two types of maxima, both corre-
lated with crossovers in the dynamical behavior: a smaller, early-time maximum
corresponding to the crossover from ballistic to sub-diffusive motion, and a larger,
late-time maximum corresponding to the crossover from sub-diffusive to diffusive
motion. Our results indicate that dynamic heterogeneities are not necessarily sig-
natures of an impending glass or jamming transition. To quantify the lifetime of
heterogeneities, we measure the decay of the time correlation function of the overlap
parameter. We find that the ratio of the lifetime to the relaxation time increases as
temperature is decreased towards the glass transition.

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