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**The structure of glass as revealed by dynamical large deviation methods**

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The dynamics of many-body systems is often richer than what one can directly infer from their static properties. This dynamical richness is revealed by considering strictly dynamical observables. The full statistical characteristics of such quantities encode the dynamical properties of the system at hand. By considering their large deviations it is possible to derive a statistical mechanics of trajectories, which is to trajectories of the dynamics what equilibrium statistical mechanics is to configurations of the statics. In this talk I will describe this approach and how it can be applied to the glass transition problem. I will show how the underlying kinetic phenomenon of glass formation is a novel class of order-disorder transitions in trajectory, rather than configuration, space. I will consider the connection between the inactive dynamical phases this approach reveals and glasses prepared by more standard means. A significant prediction from this approach is the emergence of non-trivial correlations that distinguish glass from its reversible melt. Time permitting I will discuss how these ideas extend to the area of quantum glasses.