

13th July 2016 - 2:00 p.m.
 CFEL-bldg. 99, seminar room IV

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Cracking the glass transition Understanding glassy dynamics from first principles

The liquid-to-glass transition remains one of the deepest unsolved problems in condensed matter science. Although a wide diversity of theoretical views has been developed to describe this phenomenon, there is still no general consensus on the physical mechanisms underlying the transition. In this talk, I will first give a general introduction to the topic, and then present a novel theory of glass formation, referred to as generalized mode-coupling theory (GMCT), that can potentially shed new light on complex glassy phenomena. GMCT is based entirely on first principles, seeking to predict the full time- and temperature-dependent dynamics of glass-forming systems using only static structural information as input. Ultimately, this work can help to elucidate the intricate link between structure and dynamics in disordered matter, and may pave the way toward a rigorous microscopic understanding of the glass transition.

