

Abstract Submitted  
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**Understanding the glass transition in GeSbTe materials** GLENN MARTYNA, IBM Research — Moore’s law demands the continual reduction in size of the components of computers. One future direction for memory technology involves the use of phase change materials which can be switched by pulsed electrically heating from a conducting crystalline phase to an insulating amorphous phase. These materials are typically alloys of Germanium, Antimony and Tellurium (GST). In order to form multi-state bits, it is necessary to arrest the glass transition via varying annealing time such that differences in resistivity can be measured based. As might be expected, this process is hindered by “creep” of the glass towards higher resistance states after the quench is halted. In this lecture, simulation studies are employed to study the glass transition from the crystalline state and discern the mechanism for the gap opening. The nature of mid gaps states found from the simulated quenches gives insight into the mechanism of the creep and suggests ways in which the phenomena can be arrested.

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