Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Evidence for a universal localization transition underlying the glass transition[1] DAVID SIMMONS, JUI-HSIANG HUNG, TARAK PATRA, VENKATESH MEENAKSHISUNDARAM, JAYACHANDRA HARI MANGALARA, The University of Akron — The glass transition is a ubiquitous pathway to the development of solid-like character, occurring in materials ranging from polymers to metals. Despite its technological and fundamental importance across diverse materials, the underlying nature of the glass transition remains a durable open question. Here we describe results from high-throughput simulations of the glass transition in metals, polymers, small organic molecules, and organics, indicating that a universal particle localization transition underlies the dynamic glass transition. We find that a single adjustable parameter is sufficient to describe the nonuniversal growth in relaxation time resulting from this localization event. These results point to an opportunity to advance the modern understanding of the glass transition by refocusing attention on the onset of localization rather than the growth in relaxation time as the key experimental observable.

[1]This work was made possible by generous support from the W. M. Keck Foundation. This material is based in part on work sup-ported by the National Science Foundation NSF Career Award grant number DMR1554920.

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Date submitted: 11 Nov 2016 Electronic form version 1.4