Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Breaking the glass ceiling: Configurational entropy measurements in extremely supercooled liquids LUDOVIC BERTHIER, Universite de Montpellier CNRS — Liquids relax extremely slowly on approaching the glass state. One explanation is that an entropy crisis, due to the rarefaction of available states, makes it increasingly arduous to reach equilibrium in that regime. Validating this scenario is challenging, because experiments offer limited resolution, while numerical studies lag more than eight orders of magnitude behind experimentally-relevant timescales. In this work we not only close the colossal gap between experiments and simulations but manage to create *in-silico* configurations that have no experimental analog yet. Deploying a range of computational tools, we obtain four independent estimates of their configurational entropy. These measurements consistently indicate that the steep entropy decrease observed in experiments is found in simulations even beyond the experimental glass transition. Our numerical results thus open a new observational window into the physics of glasses and reinforce the relevance of an entropy crisis for understanding their formation.

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Date submitted: 09 Nov 2016 Electronic form version 1.4