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Measuring Dynamical Facilitation in Supercooled Liquids and Related Materials YAEL ELMATAD, Center for Soft Matter, Physics Department, New York University, New York NY USA, AARON KEYS, Chemistry Department, University of California, Berkeley, Berkeley CA USA and Lawrence Berkeley National Laboratory, Berkeley, CA USA — We provide a physical interpretation for excitation dynamics in kinetically constrained lattice models in the context of supercooled liquids and granular materials. Several physical quantities such as instanton times, onset temperatures, and particle displacement fields are derived. These quantities are used to interpret measurements of dynamical facilitation previously performed for atomistic and molecular supercooled liquids and granular materials. We show that these previous measurements provide strong evidence that dynamical facilitation plays a key role in glassy materials.

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