Correlated Percolation Models of Jamming and Glass Transitions
MONWHEA JENG, JENNIFER SCHWARZ, Syracuse University — Toninelli, Biroli, and Fisher recently introduced a model of correlated percolation called the Knight model, which they claimed to prove underwent a dynamical glass transition. This transition had novel properties, with a discontinuous jump in the order parameter, but with diverging time scales and correlation lengths. We show that their proof misidentified the critical point, so that these properties are currently unproven for this model. However, we show that these novel properties can in fact be proven for suitably modified models of correlated percolation, with qualitatively similar culling rules. We discuss the features of the models necessary for a rigorous proof to be possible. We also discuss properties of models such as the force balance model and the original Knight model, which appear to undergo novel transitions despite the lack of a rigorous proof of such a transition.

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