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Simulations of Soft Glassy Matter with Ripening HYUN JOO HWANG, ROBERT RIGGLEMAN, JOHN CROCKER, University of Pennsylvania — Soft glassy matter (SGM) such as foams, emulsions, and colloids, exhibit interesting rheological properties that have long defied explanation. In particular, the shear modulus of these materials displays weak power law frequency dependence. To understand the origin of this property in more depth, we have built a three-dimensional, modified Bubble Dynamics model. The bubbles interact with a purely repulsive harmonic potential and ripen according to diffusion-based governing equations. An energy minimizer is implemented to quasi-statically relax topological rearrangements in the system as ripening proceeds. Preliminary results show that the model displays expected intermittent particle rearrangements and a weakly frequency-dependent shear modulus behaving like a power law fluid. We find that the anomalous relaxation properties and avalanche-like nature of the rearrangements can be related to different measures of the systems potential energy landscape.

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