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The angoricity describes the approach to the jamming KUN WANG, CHAOMING SONG, PING WANG, HERNAN MAKSE, Levich Institute and Physics Department of CCNY — The application of concepts from equilibrium statistical mechanics to out of equilibrium systems has a long history offering the fascinating possibility to describe a diverse range of systems from glasses to grains. For jammed systems, the key idea was to replace the energy ensemble describing conservative systems by the volume ensemble for dissipative jammed systems. However, this approach is not able to describe the jamming critical point for deformable particles such as emulsions where the volume fraction, coordination number and elastic moduli behaves as power-law of the external stress as the system approaches jamming. The geometrical considerations have to be augmented by the ensemble of stresses described by the angoricity which replaces the role played by the temperature in thermal systems. Here we perform a basic test of the stress ensemble of jammed matter by following two independent approaches: we exhaustively enumerate the available jammed states and numerically follow the dynamics of the system near the jamming point. A direct comparison between both methods supports the idea of thermalization at a given angoricity which is shown to determine the systems state as it approaches the jamming transition. This result opens the possibility to calculate important quantities near J-point.

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