

Speaker: Jennifer Schwarz
Syracuse University

Abstract: Presumably most of us have experienced the frustration of trying to get stuck coffee beans out of a dispenser, throwing out expensive paint that has dried out and hardened, or even being caught in a traffic jam. In other words, most of us have encountered jamming---the transition of a many-body system from a fluid-like state to a disordered solid-like state with an extremely long relaxation time. To uncover potentially universal aspects of the jamming transition occurring in such a wide variety of systems, I will present models of jamming using correlated percolation. Uncorrelated, or ordinary, percolation has been used to describe the emergent spanning connectivity of a system as the number of contacts between particles increases randomly. Correlated percolation goes beyond ordinary percolation to mimic the more sophisticated features of granular systems, for example, where there exists force-balance in the jammed state. A few demos will be used to illustrate first-hand the interesting features of jamming systems.