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A bootstrap-like algorithm with a discontinuous glass transition

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We introduce a stochastic lattice gas model with Glauber dynamics and kinetic constraints, the Spiral Model. We show the occurrence at a finite critical density of a transition displaying the unconventional properties of the liquid/glass transition. Above the critical density ergodicity is broken due to the appearance of an infinite spanning cluster of blocked particles whose density is discontinuous at the transition. Furthermore, the size of the blocked clusters diverges exponentially as the critical density is approached from below. We will explain how this transition is due to the occurrence of an unconventional percolation transition for a related bootstrap-like algorithm.