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Nonequilibrium critical dynamics of the triangular antiferro-Ising model

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We present the NEQ critical dynamics of antiferro-Ising model on a triangular lattice via MC spin-flip kinetics. Macroscopic degeneracy of the ground state fundamentally affects the NEQ time evolution of the system. In particular, the defects and the loose spins play key roles in the dynamics. The long time evolution is characterized by a critical dynamic scaling with a growing length $L(t)$. With random initial states, $L(t)$ exhibits a subdiffusive growth in time, with dynamic exponent $z=2.33$, while $L(t)$ shows a diffusive growth with $z=2$ for the relaxation within the dominant sector of the ground state manifold. Persistence and the aging behavior of the model are also discussed.

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Mechanism for the partial synchronization in coupled chaotic systems

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We investigate the dynamical mechanism for the partial synchronization in three coupled one-dimensional maps. A completely synchronized attractor on the diagonal becomes transversely unstable via a blowout bifurcation, and then a two-cluster state, exhibiting on-off intermittency, appears on an invariant two-dimensional plane. If the two cluster state becomes transversely stable, then a partial synchronization may occur on the invariant plane. Otherwise, total desynchronization takes place. It is found that the transverse stability of the two-cluster state may be determined through the competition between its laminar and bursting components. When "transverse strength" (i.e., a weighted transverse Lyapunov exponent) of the laminar component is larger (smaller) than that of the bursting component, a partially synchronized (totally desynchronized) attractor appears through the blowout bifurcation.