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Contact process with sublattice symmetry breaking RONALD DICKMAN, UFMG, MARCELO MARTINS DE OLIVEIRA, Universidade Federal de Vicosa — We study the phase diagram and scaling properties of a contact process with creation at first- and second-neighbor sites and inhibition at first-neighbors. Inhibition takes the form of an increased annihilation rate, proportional to the square of the number of occupied neighbors of a given site. The pair approximation predicts the existence of three phases, inactive (absorbing), active symmetric, and active asymmetric, the latter exhibiting distinct sublattice densities on a bipartite lattice. These phases are separated by continuous transitions in the space of control parameters; the phase diagram is reentrant. Monte Carlo simulations in two dimensions verify the existence of a phase with broken sublattice symmetry. The symmetric-asymmetric transition appears to belong to the Ising universality class, as expected from symmetry considerations.

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