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Reservoir-induced phase transitions in bosonic lattice systems MATTHIAS MOOS, MICHAEL FLEISCHHAUER, Department of Physics and Research Center OPTIMAS, University of Kaiserslautern, Germany — We discuss bosonic lattice systems that are coupled to local reservoirs and driven to nonequilibrium steady states. By engineering the reservoirs we can tailor different phases of steady states that are separated by critical points, where the criticality is defined as a divergence of the correlation length. Free bosonic lattice systems with a linear coupling to reservoirs always show a dynamical instability accompanying the criticality. We investigate interacting many-body systems as well as nonlinear coupling to reservoirs, as, for instance, by saturated gain processes. To this end we employ mean-field approximations as well as numerical methods to derive correlations and critical exponents of the reservoir-induced phase transitions.

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