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Reservoir induced criticality in 1D bosonic lattice systems MATTHIAS MOOS, MICHAEL HOENING, MICHAEL FLEISCHHAUER, Department of Physics and Reseach Center OPTIMAS, University of Kaiserslautern, Germany — We discuss reservoir driven phase transitions to critical states in onedimensional bosonic lattice systems subject to local dissipation. By coupling to local reservoirs fermionic and bosonic lattice systems can be driven to a steady state which shows criticality in the sense of a diverging correlation length. For free lattice bosons this criticality is generically associated with a dynamical instability of the system. To avoid this instability we introduce a nonlinearity by saturating the dissipative gain. We consider coupling of the lattice sites to common local reservoirs of different range and derive correlations as well as critical exponents of the induced quasi-phase transition in a mean-field approximation.

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