Equilibration and non-equilibrium steady states in PT-symmetric Toda lattice[1] ANDREW HARTER, YOGESH JOGLEKAR, Indiana Univ-Purdue Univ, AVADH SAXENA, Los Alamos National Laboratory — The Toda lattice is a classical discrete integrable model, describing a chain of particles that interact through an exponentially decaying, pairwise potential. It also supports soliton solutions. We consider the fate of this lattice in the presence of localized, spatially separated, balanced drag (loss) and drive (gain). Such systems with balanced gain and loss undergo a transition, the so called parity-time (PT) symmetry breaking transition, from a quasi-equilibrium state to a state that is far removed from equilibrium. We determine the threshold for such a transition in the presence of stochastic and deterministic driving, and study the robustness of our results in the presence of different boundary conditions.

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