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Initial state dependence on the relaxation of out-of-equilibrium spin-1/2 systems EDUARDO TORRES-HERRERA, LEA SANTOS, Department of Physics, Yeshiva University — Recently there has been great interest in simulating spin systems with cold atoms in optical lattices. Here, we show results for our studies of the relaxation process and the viability of thermalization in isolated one-dimensional quantum many-body systems described by spin-1/2 models. We show that the onset of thermal equilibrium depends on the interplay between initial states, observables and regimes. Our numerical studies are based on the spectrum analysis of the systems and on their long-time evolution after a quench.

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