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Finite Temperature Dynamics of the Kondo Model in Ultracold Alkaline-Earth Atoms[1] SHIMPEI GOTO, IPPEI DANSHITA, Department of Physics, Kindai University — Rapid development in controlling ultracold alkaline-earth-like atoms has paved a new way to realize quantum simulators of multiorbital many-body systems. Specifically, Ono *et al.* has recently reported the observation of the antiferromagnetic interaction between stable and metastable states of ^{171}Yb atoms [1], which makes it highly possible to simulate the Kondo model, one of the most fundamental models of multiorbital many-body systems. The characteristic feature of the Kondo model is the anomalous temperature dependence of the electric resistivity, namely the Kondo effect. Here, one practical question arises: How can one observe such an effect in atomic gasses, which are electrically neutral? In this study, we numerically simulate quench dynamics at finite temperatures triggered by the shift of a trap center with the use of matrix product states. We find that the center-of-mass velocity, which can be measured in typical experiments, depends significantly on temperature, and such temperature dependence disappears in fully spin-polarized systems. These results indicate that one can use the center-of-mass velocity as a signal of the Kondo effects.

[1] K. Ono *et al.,* arXiv:1810.00536

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