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Non-Hermitian Kondo effect in ultracold alkaline-earth atoms MASAYA NAKAGAWA, RIKEN CEMS, NORIO KAWAKAMI, Kyoto University, MASAHITO UEDA, University of Tokyo RIKEN CEMS — The Kondo effect is one of the most important phenomena in strongly correlated many-body systems. It consists of a localized impurity spin and a surrounding fermion cloud which antiferromagnetically couples with the impurity, thereby realizing an emergent many-body bound state called the Kondo singlet. Motivated by the recent progress in cold-atom experiments [1], which have realized the Kondo Hamiltonian using ultracold Yb atoms, we extend the paradigm of the Kondo effect towards open quantum systems [2]. We consider the Kondo Hamiltonian by taking into account the effect of inelastic scattering with the impurity spin, which gives rise to a non-Hermitian term in the exchange interaction. Using the renormalization group (RG) calculation, we find that the Kondo effect shows an anomalous RG flow in the non-Hermitian case, accompanied by a new energy scale unique to the dissipative system. We confirm our prediction of the RG flow using an exact solution based on a generalized Bethe ansatz. [1] L. Riegger et al., arXiv:1708.03810. [2] M. Nakagawa, N. Kawakami, and M. Ueda, in preparation.

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