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Three-body physics in quenched unitary Bose gases JOSE P. D'INCAO, ANDREW G. SYKES, JOHN P. CORSON, ANDREW P. KOLLER, JILA, University of Colorado and NIST, CHRIS H. GREENE, Department of Physics, Purdue University, ANA M. REY, KADEN R.A. HAZZARD, JOHN L. BOHN, JILA, University of Colorado and NIST — A degenerate Bose gas, quenched to unitarity, displays rapid losses that are attributed to three-body recombination. The rate at which this occurs is an item of keen interest in producing and probing a unitary Bose gas. In this work we explore the three-body physics relevant for unitary Bose gases using the hyperspherical adiabatic representation and determine the population of Efimov states formed during the quench and their subsequent decay rate by assuming a local interaction model in which a harmonic potential mimics the finite density of other particles. Our findings [2], consistent with experiments at JILA [1], indicate that the three-body loss time scales are generally longer than the system's equilibration time, therefore bolstering this scheme as an efficient route to create and explore the dynamics of unitary Bose gases. Supported by National Science Foundation, AFOSR-MURI, ARO-MURI, NDSEG and NRC.

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[2] A. G. Sykes, J. P. Corson, J. P. D'Incao, A. P. Koller, C. H. Greene, A. M. Rey, K. R. A. Hazzard, J. L. Bohn, arXiv:1308.0828.

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