

Abstract Submitted
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Collapse and revival of the monopole mode of a Bose-Einstein condensate in a spherical harmonic trap VICTOR COLUSSI, JILA, NIST and Department of Physics, University of Colorado, Boulder, Colorado, CAMERON STRAATSMA, JILA and Department of Electrical, Computer, and Energy Engineering, University of Colorado, Boulder, Colorado, MATTHEW DAVIS¹, DAN LOBSER, MURRAY HOLLAND, DANA ANDERSON, ERIC CORNELL, HEATHER LEWANDOWSKI, JILA, NIST and Department of Physics, University of Colorado, Boulder, Colorado — We observe the relaxation of the monopole (breathing) mode of a rubidium-87 Bose-Einstein condensate (BEC) in a highly spherical harmonic trap [1] at finite temperature. The experiments show a collapse and revival of the condensate oscillation, consistent with numerical simulations of the system using the Zaremba-Nikuni-Griffin methodology for the nonequilibrium dynamics of BECs [2]. The beating signal is shown to be due to the resonant excitation of the “out-of-phase” normal mode of the condensate and thermal cloud. [1] D. S. Lobser, A. E. S. Barentine, E. A. Cornell, and H. J. Lewandowski, *Nat. Phys.* 11, 1009 (2015). [2] E. Zaremba, T. Nikuni, and A. Griffin, *J. Low Temp. Phys.* 116, 277 (1999).

¹Permanent Address: School of Mathematics and Physics, University of Queensland, Brisbane, Queensland

Victor Colussi
JILA, NIST and Department of Physics, University of Colorado, Boulder, Colorado

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