

Abstract Submitted
for the DAMOP07 Meeting of
The American Physical Society

Phase Sensitive Recombination of two Bose-Einstein Condensates on an Atom Chip¹ G.-B. JO, J.-H. CHOI, C. CHRISTENSEN, Y.R. LEE, T.A. PASQUINI, W. KETTERLE, D.E. PRITCHARD, MIT-Harvard Center for Ultracold Atoms — We report on the relative phase sensitive recombination of two split Bose-Einstein condensates on an atom chip. By merging two separate condensates with well-defined relative phase and by measuring the atom loss due to the recombination, we read out the relative phase of two phase coherent condensates. The strong dependence of the atom loss of the merged condensate on the relative phase is attributed to development of a dark soliton which increases the temperature of the merged condensate through the dissipation. In addition, we study the dependence of the atom loss on the time scale of the merge.

¹This work was funded by DARPA, NSF, ONR, and NASA.

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Date submitted: 02 Feb 2007

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