

Abstract Submitted
for the DAMOP07 Meeting of
The American Physical Society

Probing atomic state coherence with a double-well optical lattice

PHILIP JOHNSON, American University, JENNIFER SEBBY-STRABLEY, EITE TIESINGA, TREY PORTO, CARL WILLIAMS, NIST, Gaithersburg — I will describe the theory of using the double-well optical lattice as an atom beam splitter, focusing on its ability to probe both inter-well and intra-well coherences. I will also discuss interesting effects such as the collapse-and-revival of first-order coherence occurring at *twice* the on-site interaction energy (U), the role of the double well tilt, and adiabaticity requirements. We have recently implemented an atom interferometer based upon these ideas and seen clear evidence for the effects discussed above.

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Date submitted: 02 Feb 2007

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