Abstract Submitted
for the DAMOP14 Meeting of
The American Physical Society

Magneto-optical trap in a vapor cell TANWA ARPORNTHIP, Univ of Virginia, CHARLES SACKETT, University of Virginia, JERAMY HUGHES, ARCHIE BROWN, Triad Technology Inc. — Since the development of laser cooling, numerous applications have been developed, including atom interferometry, magnetometry, atomic clocks, quantum information, and non-linear optics. Despite the promising performance of these technologies, cold atoms have seen essentially no commercial development. One reason is the large size and complexity of the apparatus required. We discuss the development of a novel vacuum system consisting of a simple glass cell pumped only by a non-evaporable getter, and with an alkali dispenser to serve as an atom source. We have maintained a Rb magneto-optical trap in such a cell over a time scale of months, and we have developed several in situ diagnostics to monitor vacuum pressure and alkali atom density. This data reveals a great deal about how the alkali atoms interact with the glass walls and the getter material, knowledge which is needed for informed cell design.

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Date submitted: 31 Jan 2014 Electronic form version 1.4