

Abstract Submitted
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Diode Laser Absorption Spectroscopy of Lithium Atomic Beams

PAUL OXLEY, JOSEPH WIHBEY, The College of the Holy Cross, Worcester, MA — We present final results of a method to determine the density of an atomic beam, building on previous work [1]. Advances described in the present work include use of a double laser beam technique, implementing more accurate laser frequency calibration, and providing an independent confirmation of our experimental results. Analysis of the accuracy and precision of our measurements is also provided. With these improvements we are able to measure atomic beam fractional absorptions as low as 10^{-5} on a minute timescale. Stronger absorptions of 10^{-3} or larger, which are more typically found in AMO experiments, can be measured to a precision of 3% on a one second timescale. Knowledge of atomic beam density is important to quantify the results of atom collision experiments which use an atomic beam target.
[1] <http://meetings.aps.org/link/BAPS.2015.DAMOP.K1.169>

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