Abstract Submitted
for the DAMOP16 Meeting of
The American Physical Society

Investigation Into the Utilization of 3D Printing in Laser Cooling Experiments ERIC HAZLETT, BRANDON NELSON, SAM DIAZ DE LEON, JONAH SHAW, Carleton College — With the advancement of 3D printing new opportunities are abound in many different fields, but with the balance between the precisions of atomic physics experiments and the material properties of current 3D printers the benefit of 3D printing technology needs to be investigated. We report on the progress of two investigations of 3D printing of benefit to atomic physics experiments: laser feedback module and the other being an optical chopper. The first investigation looks into creation of a 3D printed laser diode feedback module. This 3D printed module would allow for the quick realization of an external cavity diode laser that would have an adjustable cavity distance. We will report on the first tests of this system, by looking at Rb spectroscopy and mode-hop free tuning range as well as possibilities of using these lasers for MOT generation. We will also discuss our investigation into a 3D-printed optical chopper that utilizes an Arduino and a computer hard drive motor. By implementing an additional Arduino we create a low cost way to quickly measure laser beam waists.

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Date submitted: 03 Feb 2016 Electronic form version 1.4