

Abstract Submitted  
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**Toward a Rb MOT for Undergrad Research and Advanced labs at Bridgewater State University** EDWARD DEVENEY, Bridgewater State University — The seminal paper for the undergraduate MOT appeared in AJP (**63** (4), 1995) by C. Wieman, G. Flowers and S. Gilbert; ‘Inexpensive laser cooling and trapping experiment for undergraduate laboratories’. They wrote: “Because of this visual appeal and the current research excitement in this area, we felt that it was highly desirable to develop an atom trapping apparatus that could be incorporated into the undergraduate laboratory classes.” From our observations, it seems that while there are extraordinary examples of MOTs thriving in a few undergraduate labs, MOT experiments have yet to be widely incorporated into the undergraduate curriculum - likely because they are, in fact, not trivial to make. With the benefit of 20 years evolution since this 1st undergraduate MOT paper, we report the progress at BSU of constructing a  $^{85}\text{Rb}$  MOT that incorporates significant simplifications and straightforward techniques that include: using a single ECDL laser for both trapping and re-pumping (using an EOM to add FM sidebands) and combining a purchased stabilized HeNe with the ECDL in a Fabry-Perot Interferometer to correct and sufficiently stabilize the ECDL for trapping. When completed we will revisit the question of do-ability for the undergraduate research/advanced lab. The BSU MOT was planned with and is currently being built with the help and guidance of David DeMille and his research group at Yale University [including J. Barry Thesis, Yale].

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