

Abstract Submitted
for the DAMOP11 Meeting of
The American Physical Society

Spectroscopy of Ho atoms and optical pumping for initialization of a collectively encoded quantum register¹ JINLU MIAO, JAKE COVEY, MARK SAFFMAN, University of Wisconsin — We will present results on spectroscopy of the 410.5 nm cooling transition in Ho using a source based on a frequency doubled diode laser. A laser cooled Ho sample is suitable for collective encoding of a large quantum register in the 128 hyperfine ground states. We have studied hybrid optical/microwave approaches for optical pumping into a single Zeeman sublevel and will present calculations showing the feasibility of high purity state preparation as a precursor for quantum gate operations.

¹This work was supported by NSF.

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Date submitted: 04 Feb 2011

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