

Abstract Submitted
for the DAMOP14 Meeting of
The American Physical Society

Rydberg spectroscopy of trapped Holmium atoms¹ JAMES HOSTETTER, Univ of Wisconsin, Madison, THOMAS SCHMID, 5. Physikalisches Institut, Universität Stuttgart, 70550 Stuttgart, Germany, LUKE STUYVENBERG, MARK SAFFMAN, Univ of Wisconsin, Madison — Holmium atoms have the potential for collective encoding of multi-qubit quantum registers in a large manifold of 128 hyperfine/Zeeaman ground states. We report on studies of optical pumping of laser cooled and optically trapped Ho atoms to the $|F, M\rangle = |11, 0\rangle$ or $|F, M\rangle = |11, 11\rangle$ ground states. Two-photon Rydberg excitation using near degenerate 410.5 and 415 nm beams has minimal Doppler broadening. Progress towards Rydberg spectroscopy using the optically pumped sample will be presented.

¹Supported by the NSF

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Date submitted: 31 Jan 2014

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