Abstract Submitted
for the DAMOP12 Meeting of
The American Physical Society

Raman coupling in a Fermi gas of ^{6}Li atoms LAWRENCE CHEUK, ARIEL SOMMER, MARK KU, WASEEM BAKR, TARIK YEFSAH, MARTIN ZWIERLEIN, Department of Physics, MIT-Harvard Center for Ultracold Atoms, and Research Laboratory of Electronics, Massachusetts Institute of Technology, Cambridg — Entangling the spin and momentum of atoms in a Fermi gas gives rise to a variety of new tools and new physical phenomena. Its realization in cold atomic systems via Raman lasers allows spin-orbit coupling and the creation of synthetic gauge fields. Spin-orbit coupling allows realizing models of topological insulators, while synthetic gauge fields offer the prospect of realizing quantum hall states. Raman coupling can also be used to probe the excitation spectrum of a Fermi gas. Raman spectroscopy provides complementary information to the widely used radio-frequency spectroscopy. It can be used to locally map the Fermi surface in a normal Fermi gas, and to directly measure the pairing gap in a strongly interacting Fermi gas. In this talk, we present progress towards Raman dressing and Raman spectroscopy in an ultracold Fermi gas of ^{6}Li atoms.

Lawrence Cheuk
Dept of Physics, MIT-Harvard Center for Ultracold Atoms,
and Research Laboratory of Electronics,
Massachusetts Institute of Technology

Date submitted: 31 Jan 2012 Electronic form version 1.4