Abstract Submitted
for the DAMOP08 Meeting of
The American Physical Society

Towards a Beta Asymmetry Measurement of Polarized Radioactive Atoms in an Optical Dipole Trap FANG FANG, HAIYAN WANG, DAVID FELDBAUM, ANDREW HIME, DAVID VIEIRA, XINXIN ZHAO — Laser cooled and trapped radioactive atoms provide an ideal sample for studying parity violation in beta decay. We present recent progress in undertaking a high precision beta-recoil measurement of radioactive ^{82}Rb atoms in an optical tweezer. We have demonstrated the loading of ^{82}Rb atoms from a magneto-optical trap (MOT) to a far off resonance dipole trap formed by a YAG laser and observed the evidence of spontaneous spin polarization of atoms in optical dipole trap loading [1]. We'll present the latest progress in polarizing the sample with optical pumping and precision measurement of the sample polarization. In our proposed beta asymmetry measurement, we plan to load ^{82}Rb atoms from a MOT into an optical tweezer and then beam the atoms down to a science chamber where the atoms will be polarized and their beta decay will be measured.
[1] Trapping radioactive ^{82}Rb in an optical dipole trap and evidence of spontaneous spin polarization. D. Feldbaum, H. Wang, D. Vieira and X. Zhao. Physical Review A 76, 051402(R) (2007).

Fang Fang

Date submitted: 18 Mar 2008 Electronic form version 1.4