Abstract Submitted
for the FWS15 Meeting of
The American Physical Society

A search for violations in the spin statistics theorem using laser-cooled strontium atoms[1] ALEXANDER PENAFLOR, DOMINIC FUENTES, MICHAEL PHUNG, ARACELY COBOS, Cal State Univ East Bay, TAICHI INAKI, Stony Brook University, JENNIE GUZMAN, Cal State Univ East Bay — We are beginning an experiment to search for violations of the spin-statistics theorem (SST) for photons. Using laser-cooled strontium atoms, we will set constraints on the SST-forbidden two-photon transition between states with angular momentum J=0 and J'=1. In order to stimulate a transition between these two states, the pair of photons would need to possess total angular momentum J=1, which is an exchange-antisymmetric state forbidden by the SST. This new experimental search is motivated by enhancements to the sensitivity of possible SST violations that come from using laser-cooled strontium. These enhancements will enable an improvement in sensitivity by a few orders of magnitude compared to previous searches.

[1]A search for violations in the spin statistics theorem using laser-cooled strontium atoms

Alexander Penaflor
Cal State Univ East Bay

Date submitted: 12 Oct 2015 Electronic form version 1.4