

Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Interferometry and Gravimetry with Spin-Orbit Coupled Condensates¹ BRANDON ANDERSON, VICTOR GALITSKI, University of Maryland at College Park — We propose an implementation of an atom interferometer using a system of Bosons with an optically induced pseudo-spin-1/2 degree of freedom. The localized pseudo-spin degree of freedom allows for a trapped condensate to experience interference effects without the need for a system to travel large spatial path lengths. It is shown that a spatially varying Zeeman field will induce an energy splitting between the degrees of freedom that is dependent on gravity of the acceleration of the system. The effects of the many-body ground state are explored and a general procedure for observing inertial effects is given.

¹This work is supported by US-ARO.

Brandon Anderson
University of Maryland at College Park

Date submitted: 20 Nov 2009

Electronic form version 1.4