Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Dynamics of the spin in slowly rotating magnetic field[1] AMRIT POUDEL, Dartmouth College, CANRAN XU, MAXIM G. VAVILOV, University of Wisconsin-Madison — We study the dynamics of a spin coupled to its environment in a slowly rotating magnetic field. We show that once rotation starts abruptly, the spin exhibits precession around rotating magnetic field. This precession is suppressed due to the decoherence of the spin induced by the environment. At longer times, the spin rotates with the magnetic field and has a component perpendicular to the plane of rotation of the field, which is proportional to the product of the Berry curvature and the angular velocity of the rotation. Finite temperature environment causes thermalization of the spin and, in particular, effectively reduces the magnitude of the spin in the direction perpendicular to the plane of rotation.

[1]Supported by NSF grants DMR-955500 and DMR-1105178

Amrit Poudel
Dartmouth College

Date submitted: 15 Nov 2013 Electronic form version 1.4