Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Spin effects in coupled quantum dots under ac electric fields[1]
LILIA MEZA-MONTES[2], Instituto de Fisica BUAP, Apdo. Postal J-48, Puebla, Pue, 72570 Mexico , AREZKY H. HERNANDEZ, Instituto de Fisica UNAM, Mexico, SERGIO E. ULLOA, CMSS & NQPI Ohio University, Clipp Labs, Athens, Ohio 45701 — Spin control has recently attracted attention for applications in spin-based devices. Different effects and applied fields have been suggested to accomplish the goal. We explore the time evolution of electronic spin in coupled quantum dots under harmonic electric fields. Using the Floquet formalism, we obtain the time dependent wave function in terms of the Floquet states and the quasi-energy spectrum for a single electron in double InSb dots. The spatial part of the wave function includes the SIA and BIA spin-orbit effects. The spectral force is analyzed at anti-crossings of the quasi-energy bands as a function of the field strength. The resulting dynamical symmetries and the way they reflect in the time evolution of the spin clouds will be discussed.

[1]Partially supported by Condensed Matter and Surface Science Program & Nanoscale and Quantum Phenomena Institute, OU.
[2]On sabbatical leave at Ohio University.

Lilia Meza-Montes
Instituto de Fisica Universidad Autonoma de Puebla

Date submitted: 20 Nov 2006 Electronic form version 1.4