

Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Charge instability in double quantum dots in Ge/Si core/shell nanowires AZARIN ZARASSI, ZHAOEN SU, University of Pittsburgh, JENS SCHWENDERLING, RWTH Aachen University, SERGEY M. FROLOV, University of Pittsburgh, MORA HOCEVAR, Institutel CNRS, BINH-MINH NGUYEN, HRL Labs, JINKYOUNG YOO, Los Alamos National Laboratory, SHADI A. DAYEH, University of California San Diego — Controlling dephasing times are of great challenge in the studies of spin qubit. Reported long spin coherence time and predicted strong spin-orbit interaction of holes in Ge/Si core/shell nanowires, as well as their weak coupling to very few nuclear spins of these group IV semiconductors, persuade electrical spin control. We have established Pauli spin blockade in gate-tunable quantum dots formed in these nanowires. The g-factor has been measured and evidence of spin-orbit interaction has been observed in the presence of magnetic field. However, electrical control of spins requires considerable stability in the double dot configuration, and imperfectly these dots suffer from poor stability. We report on fabrication modifications on Ge/Si core/shell nanowires, as well as measurement techniques to suppress the charge instabilities and ease the way to study spin-orbit coupling and resolve electric dipole spin resonance.

Azarin Zarassi
Univ of Pittsburgh

Date submitted: 06 Nov 2015

Electronic form version 1.4