Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Optimal local control of entangled states in semiconductor quantum wells MARIO BORUNDA, ROBERT RADFORD, Oklahoma State Univ, ESA RASANEN, Tampere University of Technology — We apply quantum optimal control theory to establish a local voltage-control scheme that operates in conjunction with the numerically exact solution of the time-dependent Schrödinger equation. The scheme is demonstrated for high-fidelity coherent control of electronic charge in many-particle states of semiconductor double quantum dots. We find tailored gate voltages in the viable gigahertz regime that drive the system to a desired charge configuration with >99% yield. The results could be immediately verified in experiments and would play an important role in applications towards semiconducting quantum information.

Mario Borunda
Oklahoma State Univ

Date submitted: 11 Nov 2016   Electronic form version 1.4