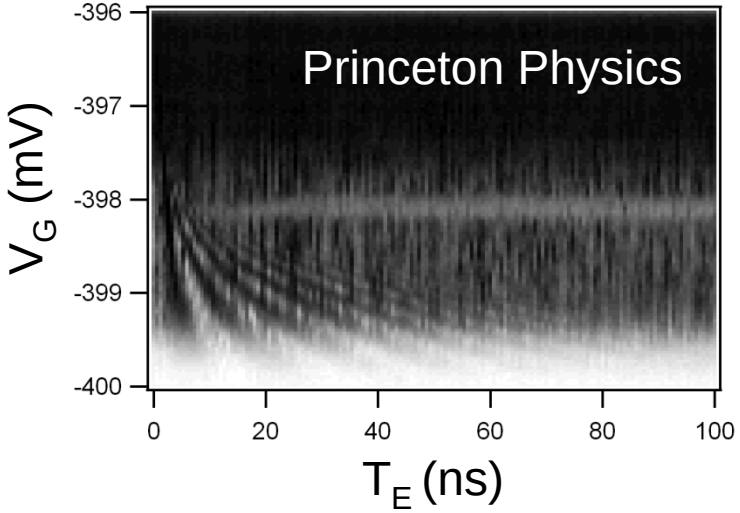
- Organizations: Princeton University, Lucent Technologies, Brookhaven National Laboratory
- Lead Investigator: Jason Petta
- Current Team Members: Kirk Baldwin (PU), Y. K. Chen (Lucent), Jason Petta (PU), Jim Sturm (PU), Pat Watson (PU)

Research areas of interest

- Quantum control of spins in nuclear-spin-free materials (Si/SiGe heterostructures).
- Goal is to develop 10 QD device capable of spin state transport, exchange gates, single spin ESR, and field gradient driven spin rotations. Spin state readout using rf-reflectometry.
- Committed to developing high quality integrated rf circuit boards with minimal cross-talk.

Unique qualifications and capabilities

- Team is focused on achieving the transition from GaAs spin qubits to SiGe spin qubits.
- Build on results obtained in the GaAs system, e.g. SWAP operation.
  Petta *et al. Science (2005)*



- Princeton has a SiGe growth system and extensive cryogenic infrastructure.

Teaming opportunities

Seeking consultant with microwave engineering experience for:

- rf circuit design: from semi-rigid coax cable to nanometer scale gate electrode pattern
- on-board bias tee design
- Integrated rf reflectometry circuit design

Seeking expert in Nb film patterning for fabrication of high speed, low dissipation, magnetic field gradient bias coils.

Seeking developer of low cost, 20 bit, 20 isolated channel digital to analog converters (dc-20 kHz) and ~1 GHz, 10 channel, 14 bit AWG.

Contact Information

- Jason Petta
- Assistant Professor of Physics
- Princeton University
- petta@princeton.edu
- 609-258-1173
- http://pettagroup.princeton.edu