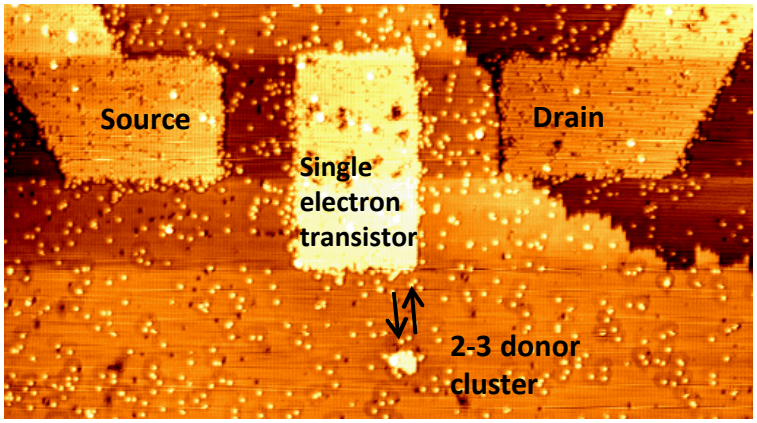
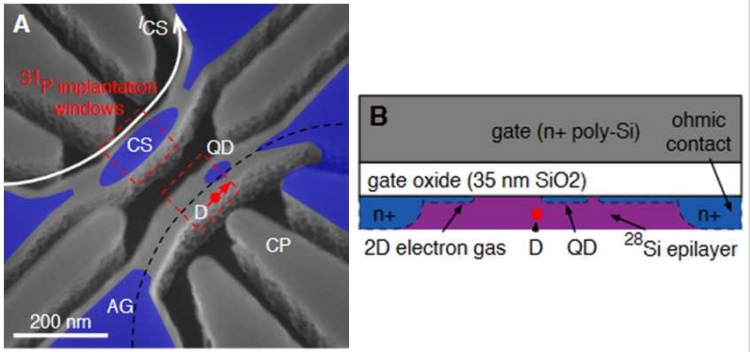
# Atomic-Precision Lithography and Quantum Computing

SAND2016-9594PE

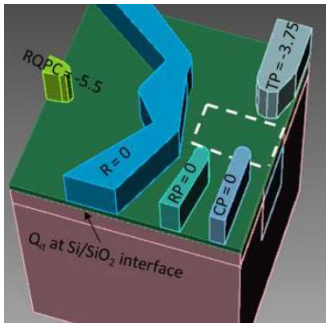


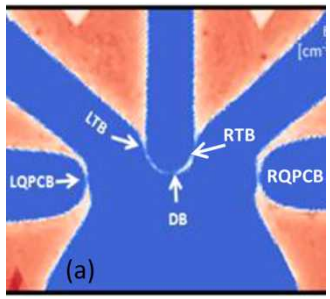

*Atomic-precision silicon donor devices*




*Coupled donor-quantum dot devices*

- Sandia 2nd lab worldwide, 1st in US to demonstrate atomic-precision Si lithography



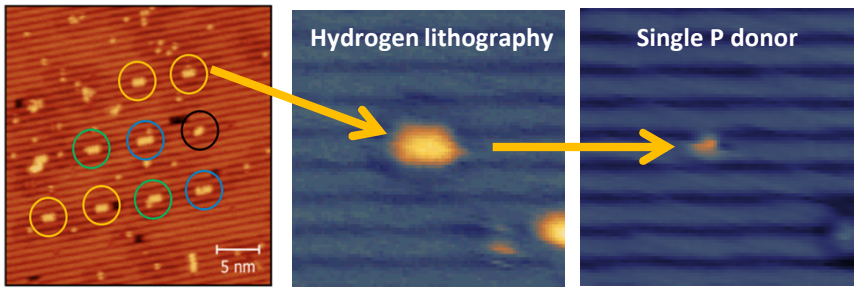

*Quantum Computer Aided Design - QCAD*

*M. Rudolph, APL 105, 163110 (2014)*

*P. Harvey-Collard, arXiv:1512.01606*

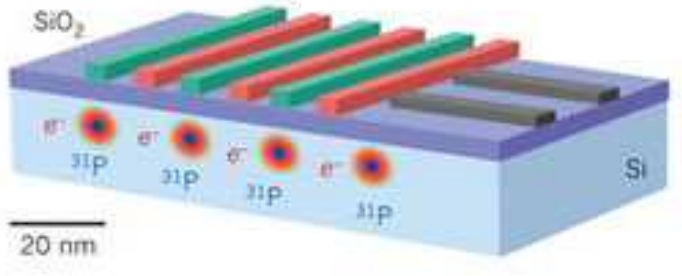
*X. Gao, JAP 114, 164302 (2013)*

# Atomic-Precision Lithography and Strongly Correlated Electron Systems




*Single-donor placement with atomic precision*

- **Ability to create atomic-precision electronics opens doors to new fundamental science**




***Hubbard lattice of donors = Artificial strongly correlated materials***