

Stuart Sherwin

Education

UC Berkeley Regents and Chancellor's Scholar

BA Physics, UC Berkeley, 2013

BA Applied Mathematics, UC Berkeley, 2013

PhD Electrical Engineering and Computer Science, UC Berkeley [In Progress]

UC Berkeley GPA: 3.99

Relevant Coursework

EECS Linear Systems Theory, Computational Imaging Graduate Seminar

Math: Multi-variable Calculus, Linear Algebra, Abstract Algebra, Numerical Analysis, Real Analysis, Complex Analysis, Partial Differential Equations, Logic.

Physics: Electricity and Magnetism, Quantum Mechanics, Statistical Mechanics, Classical Mechanics, Solid State Physics, Biophysics, Electronics Lab, Advanced Laboratory Techniques.

Professional Experience

UC Berkeley EECS PhD Program Berkeley 2016-Present
(Working with Laura Waller's group on computational imaging and Andy Neureuter's group on EUV lithography)

Student Researcher

- Rigorous 3D electromagnetic simulations for high-efficiency EUV lithography using etched phase-shift masks
- Aberration measurement using off-axis illumination of a weak diffuser

KLA-Tencor Milpitas, CA 2013-2016
(A semiconductor capital equipment manufacturer employing ~6000 people globally.)

Software Engineer, 5D Process Control 2014-2016
(A division that specializes in data analysis to improve customers' process control)

- Developed algorithms to calculate the effect of wafer topography on overlay (pattern alignment) for the Patterned Wafer Geometry Feedforward (PWG-FF) project
- Developed methodologies to quantify and optimize overlay control improvement from PWG-FF
- Wrote software to analyze data from PWG-FF evaluations to be used by applications engineers at customer factories to demonstrate overlay control improvements
- Wrote software to simulate and optimize overlay feedback and feedforward control to obtain better control with fewer measurements
- Developed new algorithms for spatial modeling of overlay data for dimensionality reduction while maintaining faithful representation of the data
- Compiled algorithm libraries for the K-T Analyzer overlay analysis software

Software Engineer, Reflected Electron Beam Lithography (REBL) Program 2014
Intern, REBL Program 2013
(A program to develop a new lithography tool for advanced semiconductor manufacturing, using an electron beam instead of the traditional optical lithography)

- Removed need for time-consuming print calibration by developing on-the-fly algorithms to calibrate the electron beam's magnification, rotation, current density, contrast, and uniformity
- Implemented optimization of an array of $\sim 1M$ microscopic electron optical lenslets
- Created error budgets for calibration algorithms, using Matlab to simulate the effects of calibration errors on print quality
- Designed and analyzed lithographic experiments to quantify capabilities of the REBL system

Asylum Research, Goleta, CA 2011-2012
(An Atomic Force Microscope manufacturer based in Goleta, CA employing ~ 50 people.)
Intern

- Developed inertial motor system, which repurposes the piezoelectric actuators from their usual role in scanning the sample to a new function in transporting the sample between scans
- Improved ease of use with a feedback algorithm based on images from an optical camera to move the AFM tip any set distance

Additional Relevant Experience

Professor Hartmut Häffner's Laboratory, Physics UC Berkeley 2013-2013
(An experimental physics laboratory developing quantum information technology)
Research Apprentice

- Integrated Comsol results with another package (BemSolver) to enable the simulation of boundary conditions used in experiments, but not allowed by BemSolver
- Prepared, ran, and analyzed electrostatics simulations to aid in the design of ion-trapped quantum computing experiments
- Modeled experimental setup using Comsol Multiphysics simulation software; ran simulation in Matlab using Matlab-Comsol Livelink software

Professor Adrian Lee's Laboratory, Physics UC Berkeley 2010-2011
(An experimental physics laboratory designing Bolometers to measure the Cosmic Background Radiation, thought to be the radiation signature of the Big Bang.)
Research Apprentice

- Assembled Bolometers: epoxied metal strain reliefs to Printed Circuit Boards (PCBs); Soldered resistors; micro-soldered striplines; Wire-bonded inductors to PCBs

Awards

Regents' and Chancellor's Scholarship (UC Berkeley, 2009)
Highest Distinction in General Scholarship (UC Berkeley, 2013)
Phi Beta Kappa (UC Berkeley, 2013)
General Manager's Award (KLA-Tencor, 2015)
Team Award (KLA-Tencor, 2015)