DR. ALEXA NITZAN STALEY

EXPERIENCE

Rigetti Computing Berkeley, CA
Technical Lead/Program Manager   *May '19 – July '19*
- Responsible for the research, build-out, and integration of the next generation quantum devices
- Determined key project requirements and tracked project's process

Quantum Engineer – Deployment Lead   *Dec'17 – May '19*
- Started, hired, and managed the Deployment team.
- Deployed six quantum devices for user access. Increased quantum device uptime from ~50% to 80%.
- Co-lead scrums and sprint planning for the quantum cloud service releases, and tracked project timelines.
- Decreased release timeline from a week to a day.
- Responsible for the integration of the quantum cloud services front-end, back-end infrastructure, and the quantum devices, resulting in several customer-facing releases and multiple deployed quantum devices.
- Facilitated collaboration between software engineers, hardware engineers and physicists working on R&D.
- Assisted in creating engineering requirements and roadmaps for major releases.
- Accountable for maintaining actively deployed quantum devices.
- Explored, tested, and implemented techniques aimed at scaling and improving performance of quantum computers.
- Active contributor and reviewer of internal python code used for device characterization and recalibration.
- Subject in Seeker's "We're close to a universal quantum computer, here's where we're at."

Quantum Engineer – Full Stack Quantum Engineer   *April'17 – Dec'17*
- Characterized and implemented one- and two-qubit gate operations required for quantum computing.
- Developed automated routines for qubit bring-up/characterization and recalibration.

Airware San Francisco, CA   *Jan'16 – April'17*
Software Test Engineer
- Designed test suites and conducted tests on the unmanned aerial vehicle ground control software to ensure robustness and guarantee safe operations of the multi-rotor and fixed-wing aircrafts.
- Maintained and refactored the test automation infrastructure as the company's product pivoted.
- Developed new automation scripts for hardware and software in the loop tests.
- Provided feedback to product managers and software engineers on usability of ground control software.
- Collaborated and assisted in-field flight-testing team.

Advanced LIGO Observatory Hanford, WA
Commissioner   *May '13 –'15*
- Commissioned the advanced laser interferometer gravitational wave observatory, a Nobel Prize winning observatory, which made the first direct detection of gravitational waves from a binary black hole merger on September 14th, 2015.
- Designed, implemented, and automated the locking sequence to get the detector operational. To ensure a high duty cycle, Advanced LIGO requires a novel, fast, deterministic, and robust locking sequence. This locking sequence is critical to getting the detector to its optimal sensitivity.
- Involved in the development of the control loops installed in the interferometer; some of these loops included optical alignment and frequency noise stabilization.
- Experience with Pound-Drever-Hall laser stabilization, phase-locked loops, and RF demodulation.
- Created a Matlab Simulink model to simulate the feedback servos used in the interferometer. The model produced a noise budget, which was used for mitigation of dominant noise sources.
- Installed optical tables, which involved working with lasers, fiber optics, RF modulators, lenses, sensors and opto-mechanical components. Also measured, analyzed, and modeled beam profiles of the lasers beams.
- Subject in LIGO documentary: "LIGO: A Passion for Understanding"

Tudor Invest Corporation Greenwich, CT
Commodities Intern   *June – August'08*
- Conducted research for the commodities group and produced a report on speculative trading activity in gold and broad commodities; participated in an intern trading competition

EDUCATION

Columbia University New York, NY   *Aug '11 – Oct '15*
- Doctor of Philosophy in Physics obtained October 2015; Master of Arts degree obtained May 2013. GPA: 3.9
- Dissertation Project - Arm Length Stabilization Technique: a critical step in reaching the interferometer's operating point; created a Matlab Simulink State-Space model to model all the control loops, actuators, and sensors in this technique; produced a noise budget for the technique and concluded it was reliable and robust.

Bowdoin College Brunswick, ME   *Aug '07 – May '11*
- Bachelor of Arts in Physics (major) and in Mathematics (minor); graduated Phi Beta Kappa, Magna Cum Laude, and High Honors in Physics. GPA: 3.87
- Honors Project: analyzed the Oppenheimer-Snyder dust cloud collapse into a black hole in the moving-puncture coordinate system; code was written in Fortran 90 and used techniques such as eighth-order interpolation, and fourth-order Runge-Kutta method.

SPECIAL SKILLS
- Experience with Python, Github, Jira, Asana, Bitbucket, Mathematica, Matlab, Fortran 90
- Fluent in Portuguese, proficient in Spanish
- Near completion of private pilots license

ADDITIONAL INFORMATION

- Bowdoin College Varsity Indoor/Outdoor Track and Field; NYSAIS 400 meter Hurdles Championship Record Holder (2007-2013); 2017 Berkeley Half Marathon runner
- Participated in the Newport-Bermuda Sailing Race, the Round the Island sailing race in Cowes, England, the Opera House sailing race in Nantucket, and the St. Barth's Bucket
- The Chapin School mentor: spoke to upper school and sixth grade girls about being a woman in physics, and mentored middle school students competing in NAIS virtual science fair project

PRIZES

2016 Yuri Milner's Breakthrough Prize in Fundamental Physics: Awarded to the co-authors of the LIGO detection paper
2016 Forman Prize of the Optical Society of America: Awarded to the Advanced LIGO Engineering group
2016 Gruber Foundation Cosmology Prize: Awarded to the LIGO scientific collaboration for the gravitational wave detection
2010 Clare Booth Luce Scholarship: a national scholarship awarded to women conducting research in science
2009 The Edwin Herbert Hall Prize, awarded to the best sophomore scholar in the field of physics
2008 All-Academic for Varsity Track & Field

PUBLICATIONS

Demonstration of Universal Parametric Entangling Gates on a Multi-Qubit Lattice
M. Reagor *et al.*
Science Advances 10, 1126 (2018)

Parametrically Activated Entangling Gates Using Transmon Qubits
S. Caldwell *et al.*
arXiv:1712.05771 (2017)

Unsupervised Machine Learning on a Hybrid Quantum Computer
J.S. Otterbach *et al.*
arXiv:1706.06562 (2017)

GW151226: Observation of Gravitational Waves from a 22-Solar-Mass Binary Black Hole Coalescence
B.P Abbott *et al.* (LIGO Scientific Collaboration and Virgo Collaboration)
Phys. Rev. Lett. 116, 241102 (2016)

Observation of Gravitational Waves from a Binary Black Hole Merger
B.P. Abbott *et al.* (LIGO Scientific Collaboration and Virgo Collaboration)
Phys. Rev. Lett 116, 061102 (2016)

GW150914: The Advanced LIGO Detectors in the Era of the First Discoveries
B.P. Abbott *et al.* (LIGO Scientific Collaboration and Virgo Collaboration)
arXiv:1602.03838 (2016)

Achieving Resonance in the Advanced LIGO Gravitational-Wave Interferometer
A. Staley *et al.*
Class. Quant. Grav. 31 (2014) 245010

High Precision Optical Cavity Length and Width Measurements using Double Demodulation
A. Staley *et al*.
Optics Express 23(15): 19417-19431 (2015)

Observation of Parametric Instability in Advanced LIGO
K. Arai *et al.*
Physical Review Letters 114, 161102 (2015)

The Status of the Advanced LIGO Gravitational-Wave Detectors
A. Staley on behalf of the LIGO Scientific Collaboration
Rencontres de Moriond Conference Proceeding 2015

Oppenheimer-Snyder Collapse in Moving-Puncture Coordinates
Alexa N. Staley, Thomas W. Baumgarte, J. David Brown, Brian Farris, Stuart L. Shapiro.
Class.Quant.Grav. 29 (2012) 015003
e-Print: arXiv:1109.0546 [gr-qc]