

LEIGH S. MARTIN
2620 Benvenue Avenue APT #3
Berkeley, CA 94704
United States of America
Leigh@Berkeley.EDU

Education

University of California at Berkeley
Enrolled in the Physics PhD program
University of Colorado at Boulder, B.A., Physics.
Graduated May 2012, Summa Cum Laude with Distinction.
Science and Mathematics GPA: 4.0; Cumulative GPA: 3.99

Honors and Awards

National Science Foundation Graduate Fellowship (2013, three years over five year period)
Berkeley Fellowship for Graduate Study (2013, two years)
National Defense Science and Engineering Fellowship (declined for NSF fellowship)
Physics Outstanding Graduate (spring 2012, University of Colorado at Boulder)
Recipient of the Jacob Van Ek award (spring 2011, University of Colorado at Boulder)
Dean's Scholar Award (2009, 2010, 2011, University of Colorado at Boulder)
Dean's List Honoree (2008 – 2012, University of Colorado at Boulder)
High School Valedictorian (2008)
High School Mathematics Award (2008)

Publications

1. S. Hacothen-Gourgy, **L. Martin** (*co-first author*), E. Flurin, V. V. Ramasesh, K. B. Whaley, I. Siddiqi, "Dynamics of Simultaneously Measured Non-Commuting Observables," *under review at Nature*.
2. E. Flurin, V. V. Ramasesh, S. Hacothen-Gourgy, **L. Martin**, N. Y. Yao, I. Siddiqi, "Observing Topological Invariants Using Quantum Walks in Superconducting Circuits," *under review at Nature Physics*.
3. M. Kimchi-Schwartz, **L. Martin**, E. Flurin, C. Aron, M. Kulkarni, H. Tureci, I. Siddiqi, "Stabilizing Entanglement via Symmetry-Selective Bath Engineering in Superconducting Qubits," *Phys. Rev. Lett.* **116**, 240503 (2016).
4. **L. Martin**, F. Motzoi, H. Li, M. Sarovar, B. Whaley, "Deterministic Generation of Remote Entanglement with Active Quantum Feedback," *Phys. Rev. A* **92**, 062321 (2015).
5. C. Hogle, X. Tong, **L. Martin**, M. Murnane, H. Kapteyn, P. Ranitovic, "Attosecond Coherent Control of Single and Double Photoionization in Argon," *Phys. Rev. Lett.* **115**, 173004 (2015).
6. P. Ranitovic, C. Hogle, P. Riviere, A. Palacio, X. Tong, N. Tushima, A. Gonzalez-Castrillo, **L. Martin**, F. Martín, M. Murnane, H. Kapteyn, "Attosecond VUV Coherent Control of Molecular Dynamics," *PNAS* vol. 111 no. 3 912-17 (2014).
7. **L. Martin**, C. Chen, J. Miao, "Multi-Shell Ankylography," arXiv: 1311.4517 (2013). - <http://arxiv.org/abs/1311.4517>
8. D. Adams, **L. Martin** (*co-first author*), M. Seaberg, D. Gardner, H. Kapteyn, M. Murnane, "A Generalization for Optimized Phase Retrieval Algorithms," *Optics Express* **20**, 24778-90 (2012).
9. D. Gardner, B. Zhang, M. Seaberg, **L. Martin**, D. Adams, F. Salmassi, E. Gullikson, H. Kapteyn, M. Murnane, "High Numerical Aperture Reflection Mode Tabletop Optical Diffraction Microscopy Using Off-Axis Apertured Illumination," *Optics Express* **20** 19050-9 (2012).
10. J. Miao, C. Chen, Y. Mao, **L. Martin**, H. Kapteyn, "Potential and Challenge of Ankylography," <http://arxiv.org/abs/1112.4459> (2011).

Presentations

1. **Invited Talk: L. Martin**, I. Siddiqi, K. B. Whaley, “Quantum Control in Superconducting Circuits,” IMA Conference on Nano and Quantum Control, April 2016.
2. **L. Martin**, S. Hacoheh-Gourgy, E. Flurin, V. Ramasesh, “Simultaneous Measurement of Non-Commuting Observables: Part I,” APS March Meeting, 2016.
3. **L. Martin**, F. Motzoi, H. Li, M. Sarovar, B. Whaley, “Optimal Feedback for Remote Entanglement,” APS March Meeting, 2015.
4. **L. Martin**, C. Hogle, P. Ranitovic, M. Murnane, H. Kapteyn, “Applications of High Harmonic Generation,” Stanford Linear Accelerator Photon Science Seminar, September 2012.
5. C. Hogle, P. Ranitovic, **L. Martin**, M. Murnane, H. Kapteyn, W. Peters, A. P. Spencer, D. Jonas, X. Tong, N. Toshima, “Ultrafast Dynamics of Ozone Exposed to Ionizing Radiation,” DAMOP, June 2012.
6. P. Ranitovic, C. Hogle, **L. Martin**, W. Peters, A. Spencer, D. Jones, X. Tong, M. Murnane, H. Kapteyn, “Ultrafast Dynamics of Ozone Exposed to Ionizing Radiation,” CLEO, May 2012.
7. **L. Martin**, C. Chen, M. Seaberg, D. Adams, J. Miao, “Multiple Shell Ankylography,” CLEO, May 2012.
8. B. Zhang, D. Gardner, **L. Martin**, M. Seaberg, D. Adams, M. Murnane, H. Kapteyn, “Coherent Diffraction Imaging with an Apertured Illumination Support,” CLEO, May 2012.
9. C. Hogle, P. Ranitovic, X. Tong, **L. Martin**, M. Murnane, H. Kapteyn, “Visualization of D2 Nuclear Wave Packets with High Harmonic Radiation,” Gordon Research Conference, February 2012.
10. **L. Martin**, C. Chen, M. Seaberg, D. Adams, J. Miao, “Multiple Shell Ankylography,” CUR, October 2011.

Research Experience

Siddiqi and Whaley groups, UC Berkeley:

February 2013 – present

Design and implementation of experiments in superconducting circuits
Theoretical development of continuous measurement and quantum feedback

Quantum Optics Group of Tilman Esslinger - ETH Zurich:

October 2012 – July 2013

High power supply for magneto-optical trapping
Construction of a cavity QED/BEC experiment

Kapteyn-Murnane Research Group - JILA, University of Colorado at Boulder:

January 2010 - September 2012

Ultrafast three-dimensional ion momentum spectroscopy (COLTRIMS), data acquisition and analysis
Coherent diffraction imaging
Computational and mathematical development of new phase retrieval algorithm
High-speed electronic FPGA and computer-based laser stabilization
Numerous analog and digital electronics projects
Spectral broadening of ultrafast pulses via self-phase modulation

Miao Group - Department of Physics and Astronomy, University of California, Los Angeles

June - August 2012

Development of mathematical description of the capabilities of three-dimensional diffraction imaging (ankylography)
Experimental implementation of ankylography
Simulation and theoretical study of ankylography

Skills

One semester of assistant teaching (3rd year electricity and magnetism) - Learning Assistant Program at the University of Colorado at Boulder
Ti:Sapphire laser cavity alignment
Ultrahigh Vacuum Equipment
Analog, digital and high power electronics
Metal machining and CAD design
Atom trapping and cooling
Programming languages: Python, MATLAB, LabVIEW, C++, Verilog Hardware Description Language (low level, FPGA), Mathematica, OpenGL, PIC (programmable integrated circuit) Basic, Latex
Conversant in Spanish

Beginner in German, French and Mandarin Chinese

Volunteer Activities

Exploratorium volunteer – (Spring 2015-present)

UC Berkeley Compass Project – Undergraduate Research Project Supervisor (Fall 2013), public science demonstrations

Science Discovery Workshop (summer 2010, summer 2011)

JILA Wizard's Show (Spring 2010)

Weekly math and science tutoring at Boulder High (2008 - 2010)

Traveled to Mexico, Costa Rica, Nicaragua and Guatemala for various service projects (2007 - 2010)

Mentoring and tutoring at Johnson elementary, Denver CO (2008 - 2009)