

<b>Education</b>	University of California, Davis Ph. D. Physics: Dec 2018 M. S. Physics: Dec 2013	2012 – 2018
	Saint Mary's College of California, Moraga B. S. Physics, Minor: Mathematics, <i>summa cum laude</i> (GPA: 3.873)	2007 – 2011
<b>Computing</b>	Python (proficient), C++ (intermediate), Go (intermediate), Bash (intermediate), CUDA (intermediate), Git (proficient)	
<b>Skills</b>	Simulations, Data Analysis, Statistics, Visualization, Linux, Python Data & Visualization Ecosystem (numpy, scipy, pandas, dask, matplotlib, ...), Regression, Bayesian parameter estimation, HPC, Distributed Computing, VTK, Jekyll.	
<b>Research &amp; Experience</b>	<b>Computational Physics Laboratory, Tampere University, Finland</b> <i>Postdoctoral Researcher</i> Advisor: Lasse Laurson	Jan 2019 – Present
	<ul style="list-style-type: none"> <li>Simulated nanoscale magnetic materials using a combination of open source software and in-house code (Go, CUDA, and Python). Numerical calculations of domain wall motion were compared to an analytic model [5].</li> <li>Leveraged GPUs deployed as part of the <a href="#">CSC's</a> Taito-GPU supercluster to enable massively parallelized simulations.</li> </ul>	
	<b>Department of Physics, University of California, Davis</b> <i>Graduate Student Researcher</i> Advisor: Kai Liu	2012 – 2018
	<ul style="list-style-type: none"> <li>Developed <a href="#">PyFORC</a>, a suite of open source tools for analyzing and visualizing magnetic measurements using the First-Order Reversal-Curves (FORC) technique (Python).</li> <li>Streamlined the Liu group's material analysis pipeline by developing <a href="#">tarmac</a>, a Python library for quickly visualizing Markov-chain monte carlo (MCMC) samples. This library makes it simple to identify correlations between parameters in a statistical model, and to evaluate convergence during curve fitting.</li> <li>Fabricated and characterized a wide range of nanoscale magnetic materials, including nanoparticles, thin films, single crystals, and patterned nanostructures using a variety of cutting-edge techniques. Programmed data acquisition and instrument control software for crucial laboratory equipment.</li> </ul>	
	<b>Physics Division, Lawrence Berkeley National Laboratory, Berkeley, CA</b> <i>Junior Specialist, <a href="#">ATLAS Experiment</a></i> Principal Investigator: Maurice Garcia-Sciveres	2011 – 2012
	<ul style="list-style-type: none"> <li>Tested prototype next-generation hardware developed for tracking the trajectories of charged particles at the <a href="#">Large Hadron Collider</a> (LHC), the largest particle physics experiment in the world.</li> <li>Developed system control GUI and backend for an integrated circuit tester (C++ and Qt; version control with SVN). These tools allowed for automated testing of hundreds of chips (entire wafers) at a time, greatly increasing throughput. Chips which passed tests <a href="#">were installed</a> as part of the Insertable B-Layer system at the LHC in 2014, enabling continued studies of the Higgs boson [12].</li> </ul>	
	<b>Physics Department, Saint Mary's College of California, Moraga</b> <i>Research Assistant, <a href="#">ALFALFA Collaboration</a></i> Advisor: Ron Olowin	2010 – 2011
	<ul style="list-style-type: none"> <li>Classified galactic and extragalactic astronomical observations as part of the Arecibo Legacy Fast-ALFA (ALFALFA) project, an international collaboration of astronomers based at the <a href="#">Arecibo Radio Observatory</a> in Puerto Rico.</li> </ul>	
<b>Teaching</b>	<i>Teaching Assistant, Dept. of Physics, University of California, Davis</i>	2012 – 2016
	<i>Student Tutor and Live-In Mentor, Physics Dept., St. Mary's College of California</i>	2010 – 2011

<b>Laboratory Skills</b>	<i>Fabrication</i>
	Sputtering, e-beam evaporation, and e-beam-/photo-lithography and lift-off.
	<i>Magnetic Characterization</i>
	Vibrating sample magnetometry (VSM), magneto-optic Kerr effect (MOKE), SQUID magnetometry, and magnetoresistance.
	<i>Other Techniques</i>
	X-ray diffraction (XRD), reciprocal space mapping (RSM), scanning electron microscopy (SEM), polarized neutron reflectometry (PNR), x-ray absorption spectroscopy (XAS) and magnetic circular dichroism (XMCD), and Hall effect and van der Pauw resistivity methods.
<b>Publications</b>	<ol style="list-style-type: none"> <li>1. Murray, P. D. <i>et al.</i> <b>Interfacial-Redox-Induced Tuning of Superconductivity in <math>\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}</math></b>. <i>In review</i>.</li> <li>2. Murray, P. D., Zhang, J., Zhang, X. &amp; Liu, K. <b>Electrically Tunable Exchange Bias</b>. <i>In preparation</i>.</li> <li>3. Gilbert, D. A. <i>et al.</i> <b>Building Bridges from FORC to Phase-Resolved Major Loops</b>. <i>In preparation</i>.</li> <li>4. Rippy, G. <i>et al.</i> <b>X-ray nanodiffraction studies of ionically controlled nanoscale phase separation in cobaltites</b>. <i>Physical Review Materials</i> <b>3</b>, 082001. ISSN: 2475-9953. doi:<a href="https://doi.org/10.1103/PhysRevMaterials.3.082001">10.1103/PhysRevMaterials.3.082001</a> (2019).</li> <li>5. Skaugen, A., Murray, P. D. &amp; Laurson, L. <b>Analytical computation of the demagnetizing energy of thin film domain walls</b>. <b>2</b>, 1–11. arXiv: <a href="https://arxiv.org/abs/1906.07475">1906.07475</a> (2019).</li> <li>6. Karayev, S. <i>et al.</i> <b>Interlayer exchange coupling in Pt/Co/Ru and Pt/Co/Ir superlattices</b>. <i>Physical Review Materials</i> <b>3</b>, 041401. doi:<a href="https://doi.org/10.1103/PhysRevMaterials.3.041401">10.1103/PhysRevMaterials.3.041401</a> (2019).</li> <li>7. Quintana, A. <i>et al.</i> <b>Voltage-Controlled ON–OFF Ferromagnetism at Room Temperature in a Single Metal Oxide Film</b>. <i>ACS Nano</i> <b>12</b>, 10291–10300. doi:<a href="https://doi.org/10.1021/acsnano.8b05407">10.1021/acsnano.8b05407</a> (2018).</li> <li>8. Gilbert, D. A. <i>et al.</i> <b>Ionic tuning of cobaltites at the nanoscale</b>. <i>Physical Review Materials</i> <b>2</b>, 104402. doi:<a href="https://doi.org/10.1103/PhysRevMaterials.2.104402">10.1103/PhysRevMaterials.2.104402</a> (2018).</li> <li>9. De Toro, J. A. <i>et al.</i> <b>Remanence plots as a probe of spin disorder in magnetic nanoparticles</b>. <i>Chemistry of Materials</i> <b>29</b>, 8258–8268. doi:<a href="https://doi.org/10.1021/acs.chemmater.7b02522">10.1021/acs.chemmater.7b02522</a> (2017).</li> <li>10. Sun, L. <i>et al.</i> <b>Magnetization reversal in kagome artificial spin ice studied by first-order reversal curves</b>. <i>Physical Review B</i> <b>96</b>, 144409. doi:<a href="https://doi.org/10.1103/PhysRevB.96.144409">10.1103/PhysRevB.96.144409</a> (2017).</li> <li>11. Zhang, Q. <i>et al.</i> <b>Magnetic fingerprint of interfacial coupling between CoFe and nanoscale ferroelectric domain walls</b>. <i>Applied Physics Letters</i> <b>109</b>, 082906. doi:<a href="https://doi.org/10.1063/1.4961545">10.1063/1.4961545</a> (2016).</li> <li>12. The ATLAS IBL Collaboration. <b>Prototype ATLAS IBL modules using the FE-I4A front-end readout chip</b>. <i>Journal of Instrumentation</i> <b>7</b>, P11010–P11010. doi:<a href="https://doi.org/10.1088/1748-0221/7/11/P11010">10.1088/1748-0221/7/11/P11010</a> (2012).</li> </ol>
<b>Selected Conferences</b>	<p>P. D. Murray. <b>Invited colloquium:</b> <i>Tuning Ionic Distributions for Multifunctional Materials</i>. Tampere University, Tampere, Finland (2019).</p> <p>P. D. Murray, D. A. Gilbert, A. J. Grutter, B. J. Kirby, D. Hernandez-Maldonado, M. Varela, Z. E. Brubaker, R. V. Chopdekar, V. Taufour, R. Zieve, J. R. Jeffries, E. Arenholz, Y. Takamura, J. Borchers, and K. Liu. <b>Poster:</b> <i>Interfacial-Redox-Induced Tuning of Superconductivity in <math>\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}</math></i>. International Conference on Magnetism and Magnetic Materials, San Francisco, CA (2018).</p> <p>P. D. Murray, Z. Chen, D. A. Gilbert, J. Zang, T. Stücker, K. Lenz, B. B. Maranville J. Fassbender, H. Yu, J. Borchers, and K. Liu. <b>Poster:</b> <i>Topological Hall Effect in Planar Artificial Skyrmion Lattices</i>. Conference on Magnetism and Magnetic Materials, Pittsburgh, PA (2017).</p> <p>P. D. Murray, D. A. Gilbert, A. J. Grutter, A. L. Ionin, R. V. Chopdekar, A. T. N'Diaye, B. J. Kirby, B. B. Maranville, Y. Takamura, E. Arenholz, K. Liu, and J. Borchers. <b>Talk:</b> <i>Complete Suppression of Magnetism in <math>\text{Gd}/(\text{La},\text{Sr})\text{CoO}_3</math> Films via Redox Design of Oxygen Distributions</i>. Conference on Magnetism and Magnetic Materials, New Orleans, LA (2016).</p>