

Curriculum Vitae

Richard Lawrence

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Education

2014 - Present	Texas A&M University Ph.D., Experimental Particle Physics (expected 2021) M.S., Physics 2018
2010 - 2012	University of California, Davis B.S., Physics, Honors
2008 - 2010	American River College
2008	Rio Americano High School

Research Experience

2016 - Present	Texas A&M University Advisor: Dr. David Toback
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- Field: Dark Matter
Searched for Dark Matter as a member of the Cryogenic Dark Matter Search (CDMS), a 100-scientist particle physics experiment. Lead student developer and analyzer for large scale simulations of fundamental particle interactions in cryogenic/condensed matter physics detectors. Maintained data analysis and simulation software tools. Produced large-scale (multi-million CPU-hour/multi-terabyte) Geant4-based detector simulation datasets for the collaboration.
- Field: Dark Matter/Quantum Computing (Cross-Collaboration)
Used Geant4-based detector simulation to study the effect of crystal topography on phonon propagation in crystal devices used in both dark matter particle searches and Quantum Computers (q-bits).
- Field: Big Computing
Student lead for Grid Computing for the Mitchell Institute. Maintained grid computing software infrastructure. Provided software, computing, user interface, and grid support for big data analysis of Large Hadron Collider particle physics (e.g. discovery of the Higgs boson). Monitored the health of the Brazos computing cluster and the data owned by its physics users.

2014 - 2015	Texas A&M University Advisor: Dr. Helmut Katzgraber Field: Quantum Computing Used computational tools to study optimization problems
2012	University of California, Davis Advisor: Dr. Richard Scalettar Field: Condensed Matter Theory Used computational tools to study quantum phase transitions

Relevant HPRC Skills

Cluster computing	SLURM, Condor, Open Science Grid
Scientific computing	ROOT, MATLAB, Python, Jupyter notebooks
Software management	Git, cvmfs, Anaconda
Programming (General)	Bash, C/C++, Python, Google Script (Java-like), Perl

Job Experience

2014 - 2019	Graduate Teaching Assistant Texas A&M University Introductory Physics Labs and Recitations, both Algebra and Calculus-based. Some UNIX and python coding included.
2012 - 2013	Private Tutor Lake Elsinore, CA
2011 - 2012	Volunteer Tutor U.C. Davis, CA and Norco College, CA
2008 - 2011	Workshop Assistant West Sacramento, CA

Community Service

2017 - 2020	Cookie Manager Girl Scouts of Central Texas, Troop 9021 Organized training, sales, inventory, revenue for cookie season.
2014 - 2015	Physics Festival Texas A&M University Demonstrated physics concepts for children.

