

## Resume

**Katharina Gillen**

Spring 2020

Physics Department  
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Maiden name: Katharina Christandl

### 1. EDUCATIONAL PREPARATION

- Ph. D. Physics**                      The Ohio State University (8/2005), GPA 4.0/4.0  
Thesis: *Advancing neutral atom quantum computing: Studies of one-dimensional and two-dimensional optical lattices on a chip*  
Advisor: Gregory P. Lafyatis
- M. S. Physics**                      The Ohio State University (8/2000), GPA 4.0/4.0  
Thesis: *A compact, grating-stabilized diode laser for atomic spectroscopy*  
Advisor: Linn D. Van Woerkom
- Vordiplom Physics**                  Rheinische Friedrich-Wilhelms Universität Bonn, Germany  
(9/1998), GPA 1.0/1.0 (equivalent of US 4.0)

### 2. EMPLOYMENT

- 9/2017-present                      **Professor**, Cal Poly State University  
9/2012-8/2017                      **Associate Professor**, Cal Poly State University  
9/2006-8/2012                      **Assistant Professor**, Cal Poly State University  
4/2006-7/2006                      **Visiting Assistant Professor**,  
The Ohio State University  
7/2005-6/2006                      **Visiting Assistant Professor**, Kenyon College

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### 3. TEACHING RELATED ACTIVITIES

#### a. *Courses Taught:*

- PHYS 122 – College Physics II (Thermodynamics, Oscillations and Waves, Optics), Winter 2019 – laboratory
- PHYS 131 – General Physics I (Mechanics), Winter 2008 – lecture and laboratory
- PHYS 141 – General Physics I (Mechanics), Winter 2009, AY12/13, AY 13/14, AY 15/16, Winter 2017, Winter 2019 – lecture, AY 19/20 – studio
- PHYS 132 – General Physics II (Oscillations and Waves, Optics, Thermodynamics), Winter 2010, Fall 2010, Winter 2011, Fall 2011 – lecture and laboratory; Spring 2013, Fall 2013, Winter 2014, Winter 2017, Spring 2017 – laboratory; Fall 2016, AY 17/18, 18/19, 19/20 studio
- PHYS 133 – General Physics III (Electricity and Magnetism), Fall 2006, Winter 2007, Fall 2009, Fall 2018 – lecture and laboratory; AY 15/16, Spring 2019 – laboratory
- PHYS 211 – Modern Physics I, Winter 2011, Winter 2014 – lecture
- PHYS 212 – Modern Physics II, Spring 2014 – lecture
- PHYS 315 - Introduction to Lasers and Laser Applications, Spring 2016, Spring 2018 – lecture
- PHYS 322 – Vibrations and Waves, Fall 2009, Fall 2010 – lecture
- PHYS 323 – Optics, Fall 2007, Fall 2008 – lecture and laboratory
- PHYS 423 – Advanced Optics, Winter 2007, Winter 2009, Spring 2017 – lecture and laboratory
- PHYS 200, 400, 404, 461, 462, 463, 464 – Individual Study and Senior Project

#### b. *Contributions to the Curriculum:*

##### *Full Professor at Cal Poly:*

Includes all contributions to the curriculum since application for promotion to Full Professor.

- Virtual instruction of Physics 141 studio and Physics 132 studio: All course materials were made available to students on Canvas, classes met synchronously for two-hour sessions using Zoom, with active learning in breakout rooms (tutorials, labs, problem solving in groups), assessments were submitted and graded electronically. Shared new materials with collaborators and non-studio groups. Spring 2020.
- Physics 141 studio collaboration: Introduction of lecture tutorials into course, development of some common assessment questions, collection of student work for future analysis of student learning, led by Dr. Stamatis Vokos (2019-present), 2019-present
- Physics 132 studio collaboration: Introduction of lecture tutorials and real time physics activity into course, development of some common assessment questions, collection of student work for future analysis of student learning, led by Dr. Sean Echols (2017-2019) and Dr. Alfredo Sanchez (2019-present), 2017-present
- Improvements and edits to all lab experiments for PHYS 423 – Advanced Optics: “Fiber optics”, “Diffraction”, “Optical tweezers”, and new experiment “Acousto-optical modulators”, designed by Dr. John Sharpe, Spring 2017

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### *Associate Professor at Cal Poly:*

Includes all contributions to the curriculum since application for tenure and promotion to Associate Professor.

- Edits to lab manual for new lab experiment "Fiber Optics" for PHYS 423 – Advanced Optics, in collaboration with Dr. Glen Gillen, Spring 2015
- Setup of Michelson interferometer intended for new Quantum Information experiment for PHYS 342 – Quantum Lab 3, with undergraduate physics student Sam Meijer, in collaboration with Dr. Thomas Gutierrez, Winter 2012. Development of experiment not completed, but equipment is now used for undergraduate student projects in quantum information.

### *Assistant Professor at Cal Poly:*

- Equipment purchase intended for new Quantum Information experiment for PHYS 342 – Quantum Lab 3, in collaboration with Dr. Thomas Gutierrez, Spring 2009 and Spring 2010. Development of experiment not completed, but equipment is now used for undergraduate student projects in quantum information.
- Course proposal (in collaboration with Dr. Thomas J. Bensky) for and development of “Vibrations and Waves” course, submitted Fall 2008, included in the 2009-2011 course catalog, first offered in Fall 2009
- Development of the “Quantum Eraser” experiment (in collaboration with Dr. Thomas J. Bensky) for PHYS 323 – Optics, Fall 2007
- Improvement and development of laboratory experiments for PHYS 423 - Advanced Optics, in collaboration with Dr. John Sharpe, Winter 2007

### *c. Diversity and Student Support Training – Full Professor at Cal Poly:*

- Providing Equitable Academic Support, Center for Teaching, Learning, and Technology (CTLT), Department meeting, April 14<sup>th</sup>, 2020
- Safer Workshop, Safer, Department meeting, January 14<sup>th</sup>, 2020
- Interrupting Hidden Bias, Cal Poly Employee and Organization Development, Physics Department Retreat, September 17, 2019
- UndocuAlly Training 3: Becoming an Ally, Cal Poly UndocuAlly Working group, June 12, 2019
- UndocuAlly Training 2: Taking the Next Steps, Cal Poly UndocuAlly Working group, June 11, 2019
- UndocuAlly Training 1: Foundational Knowledge, Cal Poly UndocuAlly Working group, June 10, 2019
- Exposing Hidden Bias, Cal Poly Office of University Diversity and Inclusion (OUDI), Physics Department Retreat, September 18, 2018
- Unmasking Microaggressions, Cal Poly OUDI, August 2, 2017
- Speak Up! Responding to Everyday Bias, Cal Poly OUDI, July 21, 2017

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### d. Undergraduate Research:

- Senior Projects - Full Professor at Cal Poly:  
Includes all senior projects since application for promotion to Full Professor.
- 1. Anya Houk, “Quantum Search and Random Walks”, Winter and Spring 2020  
Theoretical work:
  - Study of quantum search algorithms: Grover’s quantum search algorithm, quantum search using quantum random walks (discrete and continuous), implementation of quantum random walks
- 2. Sergio Aguayo, “Investigating the Talbot Effect in Arrays of Optical Dipole Traps for Neutral Atom Quantum Computing”, Fall 2018 and Winter 2019  
Computational work:
  - Developed Mathematica code to calculate the near field diffraction pattern behind an array of pinholes and studied the influence of the Talbot effect on the resulting patterns
- 3. Elliot Lehman, “Optimization of an Injection Locked Laser System for Cold Neutral Atom Traps”, Fall 2018 and Winter 2019  
Experimental work:
  - Optimized injection locked diode laser setup for forming atomic dipole traps and studied locking efficiency dependence on laser temperature, current, and alignment
- 4. Alexandra Crawford, “Assembling and Characterizing the Efficiency of an Injection Locked Laser System for Cold Neutral Atom Optical Traps,” Winter and Spring 2018  
Experimental work:
  - Set up and characterized injection locked diode laser system for forming atomic dipole traps and performed initial studies of locking efficiency dependence on laser temperature and current
- 5. Jenna Valdez, “Developing an Imaging System to Monitor Atom Traps for Neutral Atom Quantum Computing,” Winter 2017  
Experimental work:
  - Designed and assembled hardware for high-speed camera and photodiode for monitoring trapped atom signal; modified existing LabVIEW code for recording and analyzing data from new imaging system

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- Senior Projects - Associate Professor at Cal Poly:  
Includes all senior projects since application for tenure and promotion to Associate Professor.
  1. Ian Powell, "Characterizing Double and Triple Laser Beam Interference Patterns in the context of Trapping Atoms for Quantum Computing," Spring 2014  
Computational work:
    - Designed and computed properties of 2D optical lattice formed by two or three Gaussian beams at various angles for use in quantum computing
  2. Jason Schray, "High Speed Control of Atom Transfer Sequence from Magneto-Optical to Dipole Trap for Quantum Computing," Spring 2014  
Experimental work:
    - Designed, built, and/or characterized components of the experiment (electronic circuits, acousto-optical modulators, mechanical shutters) and adapted LabVIEW code for transferring atoms from a Magneto-Optical Trap (MOT) to atomic dipole traps for use in quantum computing
  3. Sanjay Khatri, "Developing a Diffraction Pattern Projection System for Neutral Atom Quantum Computation," Fall 2013 and Winter 2014  
Experimental work:
    - Designed, built, and characterized optical setup for projecting pinhole diffraction traps into MOT for quantum computing
  4. Taylor Shannon, "Monitoring Atom Traps for Neutral Atom Quantum Computing," Fall 2013 and Winter 2014  
Experimental work:
    - Designed and built camera- and photodiode-setups and developed LabVIEW codes for recording images and fluorescence signal of atom traps for use in quantum computing
  5. Travis Frazer, "Nested Gaussian Laser Beams - A Blue-Detuned One-Dimensional Lattice of Optical Dipole Traps for Quantum Computing," Fall 2012 and Winter 2013  
Computational work:
    - Designed and computed properties of a 1D optical lattice of nested Gaussian beams for use in quantum computing
  6. Danielle May, "Investigation of Optical Dipole Traps for Trapping Neutral Atoms for Quantum Computing," Winter and Fall 2012  
Experimental work:
    - Measurement of diffraction pattern behind a circular aperture for laser beams incident at an angle for quantum computing applications

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- Senior Projects - Assistant Professor at Cal Poly:
  1. Andrew Ferdinand, "Saturated Absorption for a Magneto-Optical Atom Trap as a Step toward Atomic Dipole Traps in a Diffraction Pattern from a Circular Aperture," Fall 2010 and Winter 2011  
Experimental work:
    - Setup and characterization of saturated absorption setup for MOT, for use in atomic physics experiments
  2. Jennifer Rushing, "Achieving Laser Wavelength Stability for Use in Neutral Atom Quantum Computing," Fall 2010  
Experimental work:
    - Analysis and repair of laser stability issues, including temperature stability and noise analysis
  3. Grant Rayner, "Preparing a Vacuum Chamber to Trap Atoms and the Principles of a Magneto-Optical Trap," Winter and Spring 2010  
Experimental work:
    - Construction and bakeout of ultra high vacuum chamber for MOT, for use in atomic physics experiments
  4. Eric Muckley, "Constructing a Magneto-Optical Trap for Cold Atom Trapping," Spring and Fall 2009  
Experimental work:
    - Construction of tunable diode laser systems, optical setup for laser tuning, electromagnets and vacuum chamber for MOT, for use in atomic physics experiments
  5. Angelica Davidson, "Design and Construction of Injection-Locked Laser System for Atom Trapping and Quantum Computing," Fall 2007, Spring 2008  
Experimental work:
    - Construction of tunable diode laser systems, including one injection-locked system, for use in atomic physics experiments
  6. David Gilbert, "Diffracted Laser Light for Optical Dipole Trapping and Quantum Computing," Spring and Fall 2007  
Experimental work:
    - Measurement of diffraction pattern behind a circular aperture as possible atomic dipole trap for quantum computing
  
- Honors Research - Assistant Professor at Cal Poly:

Bert David Copsey (Mechanical Engineering), 2006-2007 and 2007-2008  
Computational work:

  - 2007-2008: Calculation of the polarization dependence of the trapping potential of an atomic dipole trap behind a pinhole, for laser light incident at several different angles
  - 2006-2007: Exploration of the polarization dependence of the trapping potential of a 2D optical lattice on a chip

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- Other Research Projects (funded through NSF, C3RP, EFI, SFSG, CBF, Frost, and individual study):

### *Full Professor at Cal Poly:*

Includes all other research projects since application for promotion to Full Professor.

- 2020: Eric Bettencourt, Jordan Churi, Anya Houk, Jake Mandel, Jacob Siderman
  - Automation of laser tuning process: Development of python code to control laser tuning scans, use peak finding algorithms, compare results to spectra, find correct locking voltage for laser
  - Updates of optical systems for laser tuning and magneto-optical trap (MOT)
- 2019: Christopher Adams, Sergio Aguayo, Justin Jee, Elliot Lehman, Sebastian Pardo, Jacob Siderman
  - Laser tuning
  - Design and construction of current switch for MOT
  - Optimization of injection locked diode laser system for forming atomic dipole traps
  - Updates to optical system for MOT
  - Calculation of dipole trap properties for Talbot pattern of pinhole array
- 2018: Sergio Aguayo, Alexandra Crawford, Justin Jee, Sebastian Pardo
  - Laser tuning
  - Setup and characterization of injection locked diode laser system for forming atomic dipole traps
- 2017: Sergio Aguayo, Mohammed Algarni, Justin Jee, Joshua Mann, Josh Solomon, Jenna Valdez
  - Laser tuning
  - Troubleshooting of noise sources limiting laser tuning and stability
  - Further development of imaging system for atom trap

### *Associate Professor at Cal Poly:*

Includes all other research projects since application for tenure and promotion to Associate Professor.

- 2016: Sergio Aguayo, Joshua Mann, Jenna Valdez
  - Laboratory move from 52-E2 to 180-635A
  - Conversion of diode laser setup to work in temperature-controlled room
  - Laser tuning
  - Further development of imaging system for atom trap
- 2014: Sanjay Khatri, Ian Powell, Jason Schray, Taylor Shannon
  - Computation and measurement of the diffraction pattern behind a pinhole for laser beams incident at large angles
  - Setup of components of the experiment and LabVIEW code development for atom trap projection, imaging, and atom transfer

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- Other Research Projects – *Associate Professor at Cal Poly* (continued):
  - 2013: Travis Frazer, Sanjay Khatri, Ian Powell, David Roberts, Jason Schray, Taylor Shannon
    - Computation and measurement of the diffraction pattern behind a pinhole for laser beams incident at large angles
    - Computation of properties of a 1D optical lattice of nested Gaussian beams for use in quantum computing
    - Laser repair and tuning, optical setup, circuit design and LabVIEW code development for atom transfer
  - 2012: Bert David Copsey, Travis Frazer, Danielle May, Sara Monahan, David Roberts, Jason Schray
    - Computation and measurement of the diffraction pattern behind a pinhole for laser beams incident at large angles
    - Laser repair and tuning, circuit design and LabVIEW code development for atom transfer

### *Assistant Professor at Cal Poly:*

- 2011: Bert David Copsey, Andrew Ferdinand, Travis Frazer, Danielle May, Sara Monahan, Grant Rayner, David Roberts, Jennifer Rushing, Jason Schray
  - Troubleshooting and repair of laser locking electronics
  - Laser tuning
  - Creation of Cal Poly's first cold atom sample in a MOT
- 2010: Bert David Copsey, Matthew Curry, Andrew Ferdinand, Danielle May, Grant Rayner, Jennifer Rushing
  - Redesign of lasers for improved temperature stability
  - Setup and alignment of MOT optical system
  - Setup of saturated absorption
- 2009: Michael Boardman, Bert David Copsey, Andrew Ferdinand, Eric Muckley, Grant Rayner, Jennifer Rushing
  - Bake-out of ultra-high vacuum chamber
- 2008: Bert David Copsey, Alison Goodsell, Troy Kuersten, Eric Muckley
  - Design and construction of electromagnets and vacuum chamber for magneto-optical trap
- 2007: Angelica Davidson, David Gilbert, Alison Goodsell, Eric Muckley
  - Construction of tunable diode laser systems for atom trapping experiments

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### 4. SCHOLARSHIP

Note: For professional activities I use the name “Katharina Gillen-Christandl” to clarify the connection to my previous work before my name change.

#### a. *Publications:*

- External Publications - Associate Professor at Cal Poly:
  - **Books:**
    1. “Light propagation in linear optical media,” Glen D. Gillen, Katharina Gillen, and Shekhar Guha (collaborator at the Air Force Research Labs), CRC Press, Taylor & Francis Group, Boca Raton, FL, 2014.
      - Purpose: Technical reference book for professional scientists and engineers working in the field of optics or other related fields.
      - 11 Chapters, 370 pages.
      - Original contract date (Chapter contributor): September 17, 2010.
      - Revised contract date (Co-author): March 22, 2013.
      - Final manuscript submission date: May 20, 2013.
      - Final proof corrections submission date: October 2, 2013.
      - Publication date: November 19, 2013.
      - Contribution: Wrote Chapters 5 (17 pg.) and 11 (42 pg.). Significantly contributed to Chapter 4 (10 pg.). Minor editing of other chapters. All contributions were made after promotion to Associate Professor at Cal Poly.
  - **Peer-Reviewed Journal Publications:**
    1. “Comparison of Gaussian and super Gaussian laser beams for addressing atomic qubits,” Katharina Gillen-Christandl, Glen D. Gillen, M. J. Piotrowicz (postdoc, University of Michigan; former postdoc of Saffman group), M. Saffman (Professor of Physics, University of Wisconsin, Madison), *Applied Physics B* **122**, 131 (2016).
      - Contribution: Made significant changes and corrections to Mathematica code simulating the evolution of atomic qubits in different laser beam profiles. Ran simulations, generated and analyzed computational data. Wrote approx. half of the manuscript. Edited whole manuscript. Work done entirely after promotion to Associate Professor.

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- External Publications - Assistant Professor at Cal Poly:
  - **Peer-Reviewed Journal Publications:**
    1. “Polarization dependent atomic dipole traps behind a circular aperture for neutral atom quantum computing,” Katharina Gillen-Christandl, **Bert D. Copsy (Cal Poly undergraduate student, ME)**, *Physical Review A* **83**, 023408 (2011).
      - Contribution: Idea, student supervision, calculations and analysis, wrote manuscript. Student contribution: Developed Mathematica code. Performed initial calculations. Work done entirely at Cal Poly.
    2. “Projection of diffraction patterns for use in cold neutral atom trapping,” Katharina Gillen-Christandl, Glen D. Gillen, *Physical Review A* **82**, 063420 (2010).
      - Contribution: Idea, atomic physics portion of calculations, wrote approx. half of the manuscript, edited whole manuscript. Work done entirely at Cal Poly.
- External Publications - Work done prior to arrival at Cal Poly:
  - **Peer-Reviewed Journal Publications:**
    1. “Optical dipole traps for cold atoms using diffracted laser light,” Glen D. Gillen, Shekhar Guha, Katharina Christandl, *Physical Review A* **73**, 013409 (2006).
    2. “Advancing neutral atom quantum computing: Studies of one-dimensional and two-dimensional optical lattices on a chip,” Katharina Christandl, Ph.D. thesis, The Ohio State University (2005).
    3. “1D and 2D optical lattices on a chip for quantum computing,” Katharina Christandl, Gregory P. Lafyatis, Seung-Cheol Lee, Jin-Fa Lee, *Physical Review A* **70**, 032302 (2004).
      - selected for September 2004 issue of the “Virtual Journal of Quantum Information”
    4. “Two-dimensional imaging of neutral alkali atom samples using surface ionization,” Katharina Christandl, Gregory P. Lafyatis, Andrei Modoran, Tung-Hsiu Shih, *Review of Scientific Instruments* **73** (12), 4201 (2001).
    5. “A compact, grating-stabilized diode laser for atomic spectroscopy,” Katharina Christandl, M.S. thesis, The Ohio State University (2000).

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- Internal Publications - Assistant Professor at Cal Poly:
  1. “Simulations of the polarization dependence of the light potential equation in quantum computing,” **Bert David Copsey (Cal Poly undergraduate student, ME)**, Katharina Gillen (project supervisor), *Cal Poly Honors Undergraduate Research Journal* **2**, 61-70 (2009). Peer-reviewed by Cal Poly faculty.
  2. “Light trap manipulation and its potential use in quantum computing,” **Bert David Copsey (Cal Poly undergraduate student, ME)**, Katharina Gillen (project supervisor), *Cal Poly Honors Undergraduate Research Journal* **1**, 57-64 (2008). Peer-reviewed by Cal Poly faculty.
- Manuscripts Submitted (External) - Assistant Professor at Cal Poly:
  1. “A Quantum Eraser Experiment for the Undergraduate Laboratory,” K. Gillen-Christandl, T. J. Bensky, submitted to the *American Journal of Physics*, June 13, 2008. Not accepted. Rewritten and submitted to the *European Journal of Physics*, January 2, 2009. Not accepted.
- Project Reports - Associate Professor at Cal Poly:

Includes all project reports since application for tenure and promotion to Associate Professor.

  - External Grants:
    1. Final report for “RUI: Investigation of Atomic Dipole Traps Created by Diffraction of Laser Light for Use in Quantum Computing,” Katharina Gillen, submitted to the National Science Foundation (NSF), December 21, 2013. Approved.
    2. Annual report for “RUI: Investigation of Atomic Dipole Traps Created by Diffraction of Laser Light for Use in Quantum Computing,” Katharina Gillen, NSF, July 31, 2013. Approved.
    3. Annual report for “RUI: Investigation of Atomic Dipole Traps Created by Diffraction of Laser Light for Use in Quantum Computing,” Katharina Gillen, NSF, July 24, 2012. Approved.

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- Project Reports - Assistant Professor at Cal Poly:
  - External Grants:
    1. Annual report for “RUI: Investigation of Atomic Dipole Traps Created by Diffraction of Laser Light for Use in Quantum Computing,” Katharina Gillen, NSF, July 21, 2011. Approved.
    2. Annual report for “RUI: Investigation of Atomic Dipole Traps Created by Diffraction of Laser Light for Use in Quantum Computing,” Katharina Gillen, NSF, June 18, 2010. Approved.
  - Internal Grants:
    1. Final report for C3RP project “Atom transfer from a magneto-optical trap to an atom trap created by diffracted laser light,” Katharina Gillen, submitted to the Department of the Navy, Office of Naval Research (ONR), 2010. Approved.
    2. Final report for C3RP project “Design and construction of a magneto-optical trap for experimental investigation of atomic dipole traps for quantum computing,” Katharina Gillen, ONR, 2009. Approved.
    3. Final report for C3RP project “Experimental investigation of diffraction patterns as atomic dipole traps for quantum computing,” Katharina Gillen, ONR, 2008. Approved.

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### b. *Presentations:*

- External Presentations - Invited - Full Professor at Cal Poly:  
Includes all invited presentations since application for promotion to Full Professor. Presenter is in bold.
  1. “The final steps towards neutral atom quantum computers – All you need is light,” **Katharina Gillen**, Fall meeting of the Ohio Section of the American Physical Society, Miami University, Oxford, OH, October 13, 2017. Invited talk.
  2. “Quantum Computing with Atoms and Light,” **Katharina Gillen**, 2017 Optics and Photonics Winter Workshop, University of Arizona – College of Optical Sciences, Tucson, AZ, January 7, 2017. Invited talk.
  
- External Presentations - Invited - Associate Professor at Cal Poly:  
Includes all invited presentations since application for tenure and promotion to Associate Professor. Presenter is in bold.
  1. “Quantum computing with a 2D array of movable atom traps formed by pinholes,” **Katharina Gillen**, Colloquium, Harvey Mudd College, Claremont, CA, April 14, 2015. Invited talk.
  2. “1D optical lattice of dark spot traps formed by two nested laser beams for atom transport and quantum information applications,” **Travis Frazer (Cal Poly undergraduate student)**, Katharina Gillen-Christandl, Division of Atomic, Molecular, and Optical Physics (DAMOP) – an international professional meeting of the American Physical Society, Québec City, Canada, June 7, 2013. Invited DAMOP Undergraduate Research talk.
  3. “Atomic Dipole Traps Formed in the Diffraction Pattern of a Circular Aperture for Use in Neutral Atom Quantum Computing,” **Katharina Gillen**, Atomic Physics Seminar, University of Wisconsin, Madison, WI, February 3, 2012. Invited talk.

Note: In addition to these invited presentations, I received an invitation to the inaugural Optics and Photonics Winter School & Workshop at the University of Arizona in January 2016. I had to decline the invitation for family reasons.
  
- External Presentations - Invited - Assistant Professor at Cal Poly:  
Presenter is in bold.
  1. “Light Polarization Dependence of Optical Dipole Traps Created in the Diffraction Pattern of a Pinhole,” **Bert David Copsy (Cal Poly undergraduate student)**, Katharina Gillen-Christandl, DAMOP, Charlottesville, VA, May 21, 2009. Invited talk at the Undergraduate Research Session of DAMOP.
  2. “Trapping Atoms in the Diffraction Pattern Behind a Pinhole – A Possible Path to Quantum Computing?,” **Katharina Gillen**, Oregon Center for Optics Retreat, Eugene, OR, September 19<sup>th</sup>, 2008. Invited talk.
  3. “Trapping Atoms with Light: From Pinholes to Quantum Computers,” **Katharina Gillen**, Women in Physics Conference, University of Southern California, Los Angeles, CA, January 19, 2008. Invited talk.

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- External Presentations - Contributed - Full Professor at Cal Poly:  
Includes all contributed presentations since application for promotion to Full Professor. Presenter(s) is (are) in bold.
  1. “Quantum Algorithms for Physicists: Unpacking Grover’s Search Algorithm,” **Anya Houk (Cal Poly CPE undergraduate student)**, Katharina Gillen, Annual Workshop of the Southwest Quantum Information and Technology (SQuInT) network, Eugene, OR, February 8, 2020. Poster presentation.
  2. “Updates to Magneto-Optical Trap for Neutral Atom Quantum Computing,” **Eric Bettencourt, Jordan Churi, Anya Houk, Jacob Sideman (Cal Poly undergraduate students)**, Glen D. Gillen, Katharina Gillen, SQuInT network, Eugene, OR, February 8, 2020. Poster presentation.
  3. “Preparation of Atom Transfer to 2D Pinhole Diffraction Trap Array for Quantum Information Applications,” **Justin Jee, Sebastian Pardo, Elliot Lehman, Sergio Aguayo (Cal Poly Physics undergraduate students)**, Glen Gillen, Katharina Gillen-Christandl, Division of Atomic, Molecular, and Optical Physics (DAMOP) – an international professional meeting of the American Physical Society, May 30, 2019, Milwaukee, WI. Poster presentation.
  4. “Investigating the Influence of the Talbot Effect on Novel 2D Atomic Dipole Trap Arrays for Use in Quantum Computing,” **Sergio Aguayo (Cal Poly Physics undergraduate student)**, Katharina Gillen-Christandl, DAMOP, May 28, 2019, Milwaukee, WI. Poster presentation.
  5. “Preparation of pinhole diffraction trap array experiment for neutral atom quantum computing,” **Justin Jee, Elliot Lehman (Cal Poly Physics undergraduate students)**, Glen Gillen, Katharina Gillen, Optics and Photonics Winter School and Workshop, University of Arizona – College of Optical Sciences, January 5, 2019, Tucson, AZ.
  6. “Projection of pinhole diffraction trap array into cold atom cloud for quantum computing using atomic qubits,” **Sergio Aguayo, Alexandra Crawford, Justin Jee (Cal Poly Physics undergraduate students)**, Katharina Gillen, SQuInT, Albuquerque, NM, February 22, 2018. Poster presentation.
  7. “1D array of dark spot traps formed by counterpropagating nested Gaussian laser beams for trapping and moving atomic qubits,” **Katharina Gillen-Christandl**, Travis Frazer (former Cal Poly Physics undergraduate student), DAMOP, June 8, 2017, Sacramento, CA. Poster presentation.

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- External Presentations - Contributed - Associate Professor at Cal Poly:  
Includes all contributed presentations since application for tenure and promotion to Associate Professor. Presenter(s) is (are) in bold.
  1. “Effects of addressing laser beam intensity profiles on single qubit gates in neutral atom quantum computing,” **Katharina Gillen-Christandl, Glen D. Gillen**, Michal J. Piotrowicz, Mark Saffman, SQuInT, Albuquerque, NM, February 18, 2016. Poster presentation.
  2. “Scalable 2D array of dipole traps formed by pinhole diffraction for neutral atom quantum computing,” **Katharina Gillen-Christandl, Glen Gillen**, Sanjay Khatri, Ian Powell, Jason Schray, and Taylor Shannon, International Conference on Atomic Physics (ICAP), August 7, 2014, Washington, D.C. Poster presentation.
  3. “Exploring the range of motion of atom traps formed in the diffraction pattern behind a pinhole for quantum computing,” **Sanjay Khatri, Taylor Shannon (Cal Poly Physics undergraduate students)**, Ian Powell, Jason Schray, Glen Gillen, and Katharina Gillen-Christandl, DAMOP, June 3, 2014, Madison, WI. Poster presentation.
  4. “Progress towards experimentally realizing movable atom traps behind an array of pinholes for quantum computing,” **Ian Powell, Sanjay Khatri, Jason Schray, Taylor Shannon (Cal Poly undergraduate students)**, Glen D. Gillen, and Katharina Gillen-Christandl, SQuInT, Santa Fe, NM, February 20, 2014. Poster presentation.
  5. “Investigating the laser angle dependence of movable pinhole traps for neutral atom quantum computing,” **Travis Frazer (Cal Poly Physics undergraduate student)**, David Roberts, Jason Schray, Glen Gillen, and Katharina Gillen-Christandl, DAMOP, Québec City, Canada, June 5, 2013. Poster presentation.
  6. “Atom trapping in the large-angle diffraction pattern behind a pinhole for quantum computing,” **Travis Frazer, Jason Schray (Cal Poly undergraduate students)**, Dani May, Sara Monahan, David Roberts, Glen Gillen, and Katharina Gillen-Christandl, SQuInT, Santa Barbara, CA, February 21, 2013. Poster presentation.
  7. “Neutral atom quantum computing with the dipole traps formed behind a circular aperture,” **Dani May, Sara Monahan, David Roberts, Jason Schray (Cal Poly undergraduate students)**, Bert Copsey, Travis Frazer, Jennifer Rushing, Glen D. Gillen, and Katharina Gillen-Christandl, SQuInT, Albuquerque, NM, February 17, 2012. Poster presentation.

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- External Presentations - Contributed - Assistant Professor at Cal Poly:  
Presenter(s) is (are) in bold.
  1. “Computational Investigation of Dipole Traps Formed by the Projection of Diffraction Patterns from a Circular Aperture,” **Glen D. Gillen, Katharina Gillen-Christandl**, DAMOP, Atlanta, GA, June 16, 2011. Poster presentation.
  2. “Progress Towards Experimental Realization of Polarization Dependent Optical Dipole Traps in the Diffraction Pattern of a Pinhole,” **Grant Rayner, Bert Copsey, Dani May (Cal Poly undergraduate students)**, Andrew Ferdinand, Jennifer Rushing, Glen D. Gillen, Katharina Gillen-Christandl, DAMOP, Atlanta, GA, June 15, 2011. Poster presentation.
  3. “Neutral Atom Trapping with the Diffraction Pattern from a Circular Aperture for the Generation of a 2D Array of Optical Dipole Traps,” **Andrew Ferdinand, Danielle May (Cal Poly Physics undergraduate students)**, Bert D. Copsey, Grant Rayner, Jennifer Rushing, Glen D. Gillen, and Katharina Gillen-Christandl, SQuInT, Boulder, CO, February 18, 2011. Poster presentation.
  4. “Investigation of a quantum memory created by diffraction of laser light at an array of pinholes,” **Bert David Copsey (Cal Poly undergraduate student)**, Katharina Gillen-Christandl, Glen D. Gillen, DAMOP, Houston, TX, May 27, 2010. Poster presentation.
  5. “A neutral atom quantum memory created by diffraction of laser light at an array of pinholes,” **Katharina Gillen**, SQuInT, Santa Fe, NM, February 20, 2010. Talk (competitively accepted).
  6. “Polarization-dependent atomic dipole traps behind a pinhole for controllable manipulation of qubit locations in a quantum memory,” **Bert David Copsey (Cal Poly undergraduate student)**, Katharina Gillen-Christandl, Glen D. Gillen, DAMOP, Charlottesville, VA, May 22, 2009. Poster presentation.
  7. “Investigation of the Polarization Dependence of Optical Dipole Traps for Quantum Computing,” **Bert David Copsey (Cal Poly undergraduate student)**, Katharina Gillen-Christandl, Glen D. Gillen, DAMOP, State College, PA, May 28, 2008. Poster presentation.
  8. “Injection Locking Lasers,” **Angelica Davidson (Cal Poly Physics undergraduate student)**, Women in Physics Conference (national conference), University of Southern California, Los Angeles, CA, January 20, 2008. Talk. Angelica’s talk was the only student talk at this conference.
  9. “Diffracted Laser Light for Optical Dipole Trapping and Quantum Computing,” **David Gilbert (Cal Poly Physics undergraduate student)**, Southern California Conference on Undergraduate Research, Cal State Los Angeles, November 17, 2007. Poster presentation.
  10. “Polarization-dependent neutral atom trapping potentials of 2D optical lattices on a chip”, Presenter: **Bert David Copsey (Cal Poly undergraduate student)**, Co-authors: Katharina Gillen, Rajani Ayachitula, DAMOP/DAMPhi, Calgary, Alberta (Canada), June 8, 2007. Poster presentation.

## Katharina Gillen

- External Presentations - Contributed - Work done prior to arrival at Cal Poly or by external collaboration:  
Presenter is in bold.
  1. “Experimental Progress Towards the Development of Neutral Atom Quantum Computing Architecture Based on 2D Optical Lattices on a Chip,” **Rajani Ayachitula**, Andrew Morss, Katharina Gillen, Gregory Lafyatis, DAMOP, State College, PA, May 2008. Poster presentation.
  2. “Calculations of Optical Dipole Traps for Cold Atoms Using Diffracted Laser Light,” **Katharina Christandl**, Glen D. Gillen, Shekhar Guha, DAMOP, Knoxville, TN, May 2006. Poster presentation.
  3. “Quantum Computing on a Chip: Neutral Atoms Trapped in 1D and 2D Optical Lattices,” **Katharina Christandl**, Rajani Ayachitula, Michael Chmutov, Gregory P. Lafyatis, Seung-Cheol Lee, Jin-Fa Lee, Midwestern Cold Atom Workshop, Urbana-Champaign, IL, November 2005. Poster presentation.
  4. “Advancing Neutral Atom Quantum Computing: Studies of 1D and 2D Optical Lattices on a Chip,” **Katharina Christandl**, Ph.D. Thesis Defense, The Ohio State University, Columbus, OH, August 4, 2005. Talk.
  5. “1D and 2D Optical Lattices on a Chip for Neutral Atom Quantum Computing,” Katharina Christandl, **Rajani Ayachitula**, Michael Chmutov, Gregory P. Lafyatis, Seung-Cheol Lee, Jin-Fa Lee, Crossborders Workshop, Columbus, OH, June 2005. Poster presentation.
  6. “Neutral atom quantum computing architecture based on 1D and 2D optical lattices on a chip,” **Katharina Christandl**, Rajani Ayachitula, Michael Chmutov, Gregory P. Lafyatis, Seung-Cheol Lee, Jin-Fa Lee, DAMOP, Lincoln, NE, May 2005. Poster presentation.
  7. “1D and 2D optical lattices on a chip for quantum computing,” **Katharina Christandl**, Rajani Ayachitula, Gregory P. Lafyatis, Seung-Cheol Lee, Jin-Fa Lee, DAMOP, Tucson, AZ, May 2004. Talk.
  8. “Detecting Neutral Atoms – A Novel Design,” **Katharina Christandl**, Gregory P. Lafyatis, Andrei Modoran, Tung-Hsiu Shih, DAMOP, Williamsburg, VA, May 2002. Poster presentation.
  9. “A compact, grating-stabilized, diode laser for atomic spectroscopy,” **Katharina Christandl**, Master’s Thesis Defense, The Ohio State University, Columbus, OH, August 9, 2000. Talk.

## Katharina Gillen

- Cal Poly Presentations – Full Professor at Cal Poly:  
Includes all Cal Poly presentations since application for promotion to Full Professor. Presenter(s) is (are) in bold.
  1. “Optimizing Cal Poly’s Cold Atom Optical Trap Setup for Future Quantum Computing,” **Alexandra Crawford**, Sergio Aguayo, Mohammed Algarni, Justin Jee (**Cal Poly Physics undergraduate students**), Glen D. Gillen, Katharina Gillen, Women’s Science Fair (hosted by the Gender Equity Center), June 8, 2018, San Luis Obispo, CA. Poster.
  2. “Optimizing Cal Poly’s Cold Atom Optical Trap Setup for Future Quantum Computing,” **Alexandra Crawford**, **Sergio Aguayo**, **Mohammed Algarni**, **Justin Jee (Cal Poly Physics undergraduate students)**, Glen D. Gillen, Katharina Gillen, Cal Poly College of Science and Mathematics (CSM) Student Research Conference, May 17/18, 2018, San Luis Obispo, CA. Poster.
  3. “Progressing Towards Creating and Characterizing Atoms in a Magneto-Optical Trap,” **Sergio Aguayo**, **Mohammed Algarni**, **Justin Jee**, Josh Solomon (**Cal Poly Physics undergraduate students**), Katharina Gillen, Frost Fall Symposium, October 20, 2017, San Luis Obispo, CA. Poster.
  4. “Progressing Towards Trapping Atoms in a Magneto-Optical Trap,” **Sergio Aguayo**, **Justin Jee**, **Josh Solomon (Cal Poly Physics undergraduate students)**, Katharina Gillen, Frost Summer Symposium, August 18, 2017, San Luis Obispo, CA. Talk.
  5. “Quantum computing with atoms trapped by light,” **Katharina Gillen**, Cal Poly Physics 220 Seminar, March 16, 2017, San Luis Obispo, CA. Talk.
  6. “Preparing a magneto-optical atom trap for applications in cold atom quantum computing,” **Sergio Aguayo**, Joshua Mann, **Jenna Valdez (Cal Poly Physics undergraduate students)**, Program Review Site Visit Poster Session February 2, 2017, San Luis Obispo, CA. Poster.

## Katharina Gillen

- Cal Poly Presentations - Associate Professor at Cal Poly:  
Includes all Cal Poly presentations since application for tenure and promotion to Associate Professor. Presenter(s) is (are) in bold.
  1. “Preparing a magneto-optical atom trap for applications in cold atom quantum computing,” **Sergio Aguayo, Joshua Mann, Jenna Valdez (Cal Poly Physics undergraduate students)**, Cal Poly Physics Department Fall Poster Conference, October 21, 2016, San Luis Obispo, CA. Poster.
  2. “Quantum computing with atoms trapped by light,” **Katharina Gillen**, Cal Poly Physics 220 Seminar, March 10, 2016, San Luis Obispo, CA. Talk.
  3. “Atom Trapping,” **Sanjay Khatri, Taylor Shannon (Cal Poly Physics undergraduate students)**, Cal Poly Physics 220 Seminar, March 13, 2014, San Luis Obispo, CA. Talk.
  4. “Atom Trapping and Quantum Computing,” **Travis Frazer (Cal Poly Physics undergraduate student)**, Cal Poly Physics 200 Seminar, February 27, 2013, San Luis Obispo, CA. Talk.
  5. “Trapping Atoms with Lasers,” **David Roberts, Sara Monahan, Travis Frazer, Jason Schray (Cal Poly undergraduate students)**, MATHCOUNTS competition, hosted by Cal Poly Mathematics, February 4, 2012, San Luis Obispo, CA. Talk and demonstrations (outreach).
  6. “Cal Poly's First Magneto-Optical Trap,” **Travis Frazer, Sara Monahan, David Roberts, Dani May (Cal Poly undergraduate students)**, Cal Poly Physics Colloquium, December 1, 2011, San Luis Obispo, CA. Talk.

## Katharina Gillen

- Cal Poly Presentations - Assistant Professor at Cal Poly:  
Presenter(s) is (are) in bold.
  1. “Atom Trapping: Student Perspective,” **Bert Copsey, Dani May (Cal Poly undergraduate students)**, Cal Poly Physics 200 Seminar, March 7, 2012, San Luis Obispo, CA. Talk.
  2. “How to build a neutral atom quantum computer,” **Katharina Gillen**, Physics Department Colloquium, May 26, 2011. Talk.
  3. “Trapping Neutral Atoms in the Diffraction Pattern Directly Behind a Pinhole,” **Dani May (Cal Poly Physics undergraduate student)**, Katharina Gillen, CSM Student Research Conference, May 12-13, 2011. Poster presentation.
  4. “Creating an Ultra High Vacuum for Trapping Atoms,” **Grant Rayner (Cal Poly Physics undergraduate student)**, CSM Student Research Conference, May 13-14, 2010. Poster presentation.
  5. “Constructing a Magneto-Optical Trap,” **Eric Muckley (Cal Poly Physics undergraduate student)**, CSM Student Research Conference, May 14-15, 2009. Poster presentation.
  6. “Trapping atoms in a magneto-optical trap,” **Bert Copsey (ME), Troy Kuersten (Physics/AERO), Eric Muckley (Physics), Cal Poly undergraduate students**, Physics Department Colloquium, December 4, 2008. Talk.
  7. “Injection-locked laser system for trapping atoms with light,” **Angelica Davidson (Cal Poly Physics undergraduate student)**, CSM Student Research Conference, May 16, 2008. Talk.
  8. “Effects of Laser Polarization on Optical Atom Traps for Use in Quantum Computing,” **Bert David Copsey (Cal Poly Mechanical Engineering undergraduate student)**, CSM Student Research Conference, May 15-16, 2008. Poster presentation.

## Katharina Gillen

### c. *Grants and Contracts:*

- External Grant Extensions - Associate Professor at Cal Poly:  
Includes all external grant extensions since application for tenure and promotion to Associate Professor.
  1. NSF-approved no-cost extension for “RUI: Investigation of Atomic Dipole Traps Created by Diffraction of Laser Light for Use in Quantum Computing,” August 1<sup>st</sup>, 2013 – September 30<sup>th</sup>, 2013, National Science Foundation (NSF), requested June 10, 2013, PI: Katharina Gillen (100% participation), Co-PI: Dr. Thomas D. Gutierrez. Involved four Cal Poly undergraduate students (Sanjay Khatri, Ian Powell, Jason Schray, Taylor Shannon). **Granted.**
  2. Grantee-approved no-cost extension for “RUI: Investigation of Atomic Dipole Traps Created by Diffraction of Laser Light for Use in Quantum Computing,” August 1<sup>st</sup>, 2012 – July 31<sup>st</sup>, 2013, National Science Foundation (NSF), requested February 21, 2012, PI: Katharina Gillen (100% participation), Co-PI: Dr. Thomas D. Gutierrez. Involved seven Cal Poly undergraduate students (Travis Frazer, Danielle May, Sara Monahan, Matthew Murachver, Ian Powell, David Roberts, Jason Schray). **Granted.**
- External Grants - Assistant Professor at Cal Poly:
  1. “RUI: Investigation of Atomic Dipole Traps Created by Diffraction of Laser Light for Use in Quantum Computing,” August 1<sup>st</sup>, 2009 – July 31<sup>st</sup>, 2012, National Science Foundation, submitted September 24<sup>th</sup>, 2008, Total amount: \$200,000, PI: Katharina Gillen (100% participation), Co-PI: Dr. Thomas D. Gutierrez. Involved twelve Cal Poly undergraduate students (Max Bigras, Michael Boardman, Bert Copsey, Andrew Ferdinand, Travis Frazer, Michael Lady, Danielle May, Richard Mellinger, Sara Monahan, Eric Muckley, Grant Rayner, David Roberts, Jennifer Rushing, Jason Schray, Edward Taylor). **Granted.**
- External Grant Applications - Assistant Professor at Cal Poly:
  1. “Experimental realization and characterization of atomic dipole traps created by diffracted laser light,” Research Corporation Cottrell College Science Award Proposal, submitted November 2006, Amount: \$61,443, PI: Katharina Gillen. Not funded.

## Katharina Gillen

- Internal Grants - Assistant Professor at Cal Poly:
  1. “Introducing an Active Learning Based Vibrations and Waves Course into the Cal Poly Physics Curriculum,” CTL Grant Program, submitted October 2008, Amount: \$5744, **Granted**.
  2. “Atom transfer from a magneto-optical trap to an atom trap created by diffracted laser light,” California Central Coast Research Partnership (C3RP), submitted May 2008, Amount: \$29,948. **Granted**.
  3. “Polarization dependence of the scalar term of the atomic dipole trap potential and its applications to quantum computing,” Cal Poly Honors Research Program, submitted November 2007, Amount: \$1,000. **Granted**.
  4. “Design and construction of a magneto-optical trap for experimental investigation of atomic dipole traps for quantum computing,” California Central Coast Research Partnership (C3RP), submitted November 2007, Amount: \$18,975. **Granted**.
  5. “Experimental work towards the realization of atomic dipole traps using diffraction patterns,” Extramural Funding Initiative, submitted July 2007, Amount: 8 WTUs and \$2,000. **Granted**.
  6. “Experimental study of atomic dipole traps created by diffracted laser light,” State Faculty Support Grant, submitted January 2007, Amount: \$8,500. **Granted**.
  7. “Experimental investigation of diffraction patterns as atomic dipole traps for quantum computing,” California Central Coast Research Partnership (C3RP), submitted November 2006, Amount: \$29,853. **Granted**.
  8. “Investigation of the polarization dependence of atom trapping potentials for quantum computing,” Cal Poly Honors Research Program, submitted November 2006, Amount: \$5,000. **Granted**.
  
- Internal Grant Applications - Assistant Professor at Cal Poly:
  1. “Characterization of atomic dipole traps created by diffracted laser light,” State Faculty Support Grant, submitted January 2008, Amount: 8 WTUs. Not funded.
  2. “Optimization of atom transfer into atom traps created by diffracted laser light,” Extramural Funding Initiative, submitted March 2008, Amount: 8 WTUs, \$1,000. Not funded.

## Katharina Gillen

### d. *Other Scholarly Activities:*

#### 1. Sabbatical, Fall 2014 and Winter 2015

Position Title: Visiting Associate Professor

Sponsor: Mark Saffman

Institution: Department of Physics, University of Wisconsin, Madison

The Saffman research group is the leading group in my research field of neutral atom quantum computing, being one of only two groups in the world to achieve a two-qubit gate with neutral atoms and being the group currently closest to experimentally demonstrating a neutral atom quantum computer.

Duration: August-December 2014 at the University of Wisconsin, Madison;  
January-March 2015 in San Luis Obispo

- Worked on Atomic Qubit Array (AQuA) experiment
- Designed and built hardware for a magneto-optical trap system with a novel, compact laser beam geometry
- Computationally studied the effects of different laser beams on atomic qubits, resulting in a peer-reviewed publication and a poster presentation
- Established lasting collaboration with Saffman group

#### 2. “Node” status for Cal Poly in the Southwest Quantum Information and Technology (SQuInT) network, Fall 2012

The SQuInT network is an internationally recognized group of institutions in the Southwestern U.S. (at least originally) with significant ongoing research in the fields of quantum information and technology. It is maintained through the National Science Foundation (NSF) Center for Quantum Information and Control at the University of New Mexico, Albuquerque, and the University of Arizona, Tucson.

After participating in the annual SQuInT workshop in 2010 and 2011, the Principal Investigators of the Center invited us to become a SQuInT node institution. As a node institution, we are officially listed as such in the NSF grant proposal for the Center, and receive travel support for our undergraduates to attend the annual SQuInT workshop. The workshop is attended by 150-200 people, including Nobel Laureates in quantum information related fields (e.g. William Phillips, David Wineland). At the time, Cal Poly was one of only two primarily undergraduate institutions in this network made up of mostly research universities, National Labs, and research labs in industry.

I have been the Cal Poly representative on the SQuInT Steering Committee since Fall 2012 (see also section 5. d.). The steering committee is responsible for nominating and voting on invited speakers for the annual SQuInT workshop, and meets annually to discuss and decide changes and future directions of the SQuInT network and workshop.

## 5. SERVICE AND UNIVERSITY CITIZENSHIP

### a. *Department Service:*

- Committees and Citizenship - Full Professor at Cal Poly:  
Includes all committees/citizenship activities since application for promotion to Full Professor.
  - Course Coordinator, PHYS 132 studio, 2017-2018
  - Lower Division Course Committee, 2017-2018
  - Curriculum Committee, 2016-present
    - Chair 2016-2018
  - Diversity and Inclusivity, 2017-present (co-chair 2019-2020)
  - RPT Clarification Committee, 2018-present
  - Facilities Committee, 2016-2017
  - Academic Advisor, 2016-present
  - Participant, Physics Department Vision Retreat, Sept. 6, 2017
  - Participant, Program Review Site Visit, 2017
    - Associate Professors meeting
    - Assessment and Curriculum Committee meeting
    - Department Report Out meeting
  - Peer evaluation of tenured/tenure track faculty and lecturers, 2016-present
  
- Committees and Citizenship - Associate Professor at Cal Poly:  
Includes all committees/citizenship activities since application for tenure and promotion to Associate Professor.
  - Course Coordinator, PHYS 141, 2012-2013, 2013-2014, W/Sp 2016
  - Course Coordinator, PHYS 132, 2011-2012
  - Lower Division Course Committee, 2011-2014, 2015-2016
  - Curriculum Committee, 2011-2016
  - Facilities Committee, 2015-2016
  - College-Based Fee Committee, 2015-2016
  - Academic Advisor, 2015-2016
  - Peer evaluation of tenured/tenure track faculty and lecturers, 2012-2016
  
- Committees and Citizenship - Assistant Professor at Cal Poly:
  - College Based Fee Committee, 2008-2011 (included membership on the Facilities Committee 2009-2010)
  - Curriculum Committee, 2007-2011
    - Chair of the Subcommittee on Optics and Waves, Fall 2007: Course proposal for “Vibrations and Waves” course, which was included in the 2009-2011 course catalog; Restructuring of Optics sequence, changes effective in 2009-2011 course catalog.
  - Faculty Recruitment Subcommittee, 2006-2009, two lecturer searches, one tenure-track search

## Katharina Gillen

- Committees and Citizenship - Assistant Professor at Cal Poly (continued):
  - Job candidates hosted:
    - Brian Granger, Research Scientist, Tech-X Corporation, Boulder, Colorado, “One-dimensional Ultracold Quantum Gases,” Physics Colloquium, March 6, 2008
    - Scott Pollack, Postdoctoral Researcher, Rice University, “Dissipative Flow of a Superfluid Ultracold Atomic Gas,” Physics Colloquium, March 3, 2011
  
- Club Advisor – Full Professor at Cal Poly (also as Assistant and Associate Professor):
  - Cal Poly Women in Physics Club, 2010-2014 (advisor); 2016-2017 (co-advisor); 2017-present (advisor)
    - Received College of Science and Mathematics Top Club Award AY 2017-2018
    - Co-sponsor of two-day event “Patching up the Pipeline” with Dra. Nicole Cabrera Salazar, advocate and mentor for minorities in STEM, Movement Consulting, April 23/24, 2020; assisted presidents of Women in Physics and Minorities in Physics clubs with successful grant proposals to College of Science and Mathematics Inclusion and Equity Fund (\$1,500), OUDI Enrichment (\$1,000), and Career Services Diversity Funding (\$1,500) to fund this event.
  
- New faculty mentor

*Full Professor at Cal Poly:*  
Includes all mentorships since application for promotion to Full Professor.

  - Vardha Bennert, Associate Professor, Physics Department, 2016-present
  - Irene Humer, Physics Department Lecturer, 2018-2019
  - Hilary Jacks, Physics Department Lecturer, 2019-present

*Associate Professor at Cal Poly:*  
Includes all mentorships since application for tenure and promotion to Associate Professor.

  - Vardha Bennert, Assistant Professor, Physics Department, 2011-2016
  - Fariha Nasir, Physics Department Lecturer, 2015-2016

## Katharina Gillen

- Hosted Guest Speakers

*Full Professor at Cal Poly:*

Except where indicated otherwise, all of the following are people in my research field whom I met and connected with at conferences. All visits to Cal Poly were initiated and organized by me. Includes all guest speakers hosted since application for promotion to Full Professor.

- Jeffrey Power (Cal Poly Physics and Chemistry alumnus), University of Cologne, “How study abroad changed my science career,” College of Science and Mathematics Meet and Greet, and “Gene Transfer from an Evolutionary Perspective”, Physics Colloquium, May 30, 2019
- Chandra Raman, Associate Professor, Georgia Institute of Technology, “Putting atoms to work: AMO physics from academia to industry and back,” Physics Colloquium and Graduate School Recruitment Presentation, October 26, 2017
- David Weld, Assistant Professor, University of California, Santa Barbara, “Quantum simulation of extreme non-equilibrium phenomena,” Physics Colloquium, October 5, 2017

*Assistant Professor at Cal Poly:*

All of the following are people in my research field whom I met and connected with at conferences and workshops since starting at Cal Poly. Their visits to Cal Poly were initiated and organized by me.

- Jonathan Weinstein, Assistant Professor, University of Nevada, Reno, "Fun with cryogenic atoms and molecules," Physics Colloquium and Graduate School Recruitment Presentation, September 22, 2011
- Mark Saffman, Professor, University of Wisconsin, Madison, “Quantum logic gates with strongly interacting Rydberg atoms,” Physics Colloquium, July 25, 2011
  - Fellow of the American Physical Society
  - World-leading expert on neutral atom quantum computing. Leads one of only two groups who have achieved 2-qubit gates using neutral atoms.
- Carlton Caves, Professor, University of New Mexico, “Quantum-limited measurements: One physicist’s crooked path from quantum optics to quantum information,” Physics Colloquium and Graduate School Recruitment Presentation, November 4<sup>th</sup>, 2010
  - Fellow of the American Physical Society
- Satyan Bhongale, Postdoctoral Researcher, Center for Quantum Science, George Mason University and National Institute of Standards and Technology, Maryland, “Phase separated Bose-Einstein Condensate for High Sensitivity Force Measurement,” Physics Colloquium, October 21, 2010
- Nima Dinyari, Graduate Student, Oregon Center for Optics, University of Oregon, Graduate School Recruitment Presentation, November 17, 2008

## Katharina Gillen

### b. *College Service*

#### *Full Professor at Cal Poly:*

- Faculty coordinator for CSM international exchange program with Bonn University and Munich University of Applied Sciences (MUAS) in Germany, 2018-present
  - Bonn: Initiated and attended meetings at Bonn University, wrote and submitted program proposal; developed list of class substitutions for exchange students for physics, and coordinated with chemistry department to do the same; advisor for students interested in this exchange program
  - MUAS: Visited MUAS and developed list of class substitutions for exchange students for physics, and coordinated with mathematics department to do the same; advisor for students interested in this exchange program
  - Arranged visit of Cal Poly physics and chemistry alumnus to advertise the new exchange programs to students and inform faculty and staff, 2019
  - Organized “Build a Laser” workshop event for two faculty members, one research assistant, and ten students from Bonn to visit and work with 14 Cal Poly students to build a laser, engage in cultural exchange, and develop interest in our new exchange program. Event was scheduled for March 2-7, 2020, but had to be postponed indefinitely due to the COVID-19 pandemic.
- Curriculum Committee, 2016-2018

#### *Associate Professor at Cal Poly:*

- Curriculum Committee, 2013-2016 (except while on leave AY 14/15)
  - Substituted as CSM College Curriculum representative to the Academic Senate Curriculum Committee, May 19, 2016, incl. discussion of the new Health Science (Public Health) BS degree in the College of Science and Mathematics

### c. *University Citizenship:*

#### *Full Professor at Cal Poly:*

Includes all university citizenship activities since application for promotion to Full Professor.

- Fall conference and Academic Day of WOW, 2017-present
- Commencement, Fall 2016, Spring 2017, Spring 2018, Spring 2019, Spring 2020 (virtual graduation with physics majors)
- Open House, 2017, 2018, 2019, 2020
  - Helped organize Women in Physics Club participation (dept. tours and demonstrations), 2018
  - Arranged for students to show cold atom research lab during dept. tours, 2017, 2018, 2019
  - Gave tour of Advanced Optics lab, 2017
  - Participated in Zoom meeting with prospective students and their families, 2020
- Member, Master's thesis committee
  - Daniel Fugett, Aerospace Engineering, 2016-2017

## Katharina Gillen

### c. *University Citizenship* (continued):

#### *Associate Professor at Cal Poly:*

Includes all university citizenship activities since application for tenure and promotion to Associate Professor.

- Fall conference and Academic Day of WOW, 2012-2016 (except during sabbatical, 2014)
- Commencement, Fall 2011, Spring 2012, Fall 2012, Spring 2013, Fall 2013, Spring 2014
  - Assistant Marshall of College of Science and Mathematics, Fall 2011, Fall 2012, Fall 2013, Spring 2014
- Open House (demonstrations), 2016
  - Helped organize Women in Physics Club booth, 2012-2014
  - Demonstrations for prospective students and their families, 2016
- Member, Master's thesis committee
  - Tyler Beck, Aerospace Engineering, 2016-present

#### *Assistant Professor at Cal Poly:*

- Fall conference, 2006-2011
- Academic Day of WOW, 2010-2011
- Commencement, Fall 2006, Fall 2007, Spring 2008, Fall 2008, Spring 2009, Fall 2009, Spring 2010, Fall 2010, Spring 2011
  - Assistant Marshall of College of Science and Mathematics, Fall 2007, Spring 2010, Fall 2010
- Open House (lab tours, demonstrations), 2007-2011
  - Lab tours and demonstrations for prospective students and their families
- CSM Student Research Conference, 2008-2011
  - Advisor to five undergraduate student presenters (one or more each year)
- Participation in Admissions video, Fall 2008 and Spring 2010
- Honors Research Program
  - Attended Honors Research presentations, Winter 2007 and Winter 2008
  - Served as reviewer for the Honors Undergraduate Research Journal, Winter 2008 and Winter 2009

## Katharina Gillen

### d. *Professional Service:*

#### *Full Professor at Cal Poly:*

Includes all professional service activities since application for promotion to Full Professor.

- Inclusion, Diversity, and Equity:
  - Team leader for Cal Poly Physics team, American Physical Society Inclusion, Diversity, and Equity Alliance (APS-IDEA) Network, 2020 - present. Composed and submitted application, attended inaugural half-day workshop June 12, 2020.
- Committees:
  - SQuInT Steering Committee member (by invitation from Ivan Deutsch for Cal Poly to become an official SQuInT node institution, committee nominates and votes on invited speakers for SQuInT workshop, meets to discuss and decide changes and future directions of SQuInT network and workshop), 2017-present

#### *Associate Professor at Cal Poly:*

Includes all professional service activities since application for tenure and promotion to Associate Professor.

- Committees:
  - SQuInT Steering Committee member, 2012-2017
  - DAMOP Education Committee member (by invitation from Louis DiMauro, chair of DAMOP, in 2009, 3-year term, selects speakers for DAMOP Undergraduate Research session, organizes undergraduate luncheon at DAMOP), 2011-2012
- Peer Reviews of Journal Articles:
  - Optics Communications, 2013

#### *Assistant Professor at Cal Poly:*

- Session Chair
  - Undergraduate Research Session, Division of Atomic, Molecular, and Optical Physics (DAMOP), Atlanta, GA, June 2011, by invitation from Christopher Monroe, chair of DAMOP
  - Neutral Atom Quantum Information Processing Session, Workshop of the Southwest Quantum Information and Technology (SQuInT), Boulder, CO, February 2011, by invitation from Ivan Deutsch, chair of SQuInT
- Committees:
  - DAMOP Education Committee member (by invitation from Louis DiMauro, chair of DAMOP, 3-year term, committee selects speakers for DAMOP Undergraduate Research session, organizes undergraduate luncheon at DAMOP), 2009-2011
- Proposal Reviews:
  - National Science Foundation, 2009 and 2010