

Robynne M. Lock

Department of Physics & Astronomy, Texas A&M University-Commerce
PO Box 3011, Commerce, TX 75429-3011
E-mail: robynne.lock@tamuc.edu; Ph. 903-468-8767

EDUCATION

- **University of Colorado at Boulder**, Boulder, CO
Ph.D., Physics, May 2011
Advisors: Drs. Margaret Murnane and Henry Kapteyn
- **University of Texas at Austin**, Austin, TX
B.S., Physics, May 2005
Cumulative GPA: 4.0/4.0

CURRENT POSITION

Assistant Professor, Department of Physics & Astronomy, Texas A&M University-Commerce, 2014-present

Research summary: Study physics identity development and career intentions in high school and college; Study implementation and impact of studio physic and learning assistant programs on physics identity and conceptual understanding; Examine impact of underrepresentation discussion on female high school students' physics identities and career choices. Examine group dynamics in studio physics.

Teaching:

Courses taught (2014 – present):

PHYS 2425 University Physics I (calculus-based introductory physics)
IS 351 Science Inquiry I (for pre-service elementary and middle school teachers)
IS 352 Science Inquiry II (for pre-service elementary and middle school teachers)
PHYS 530 Physics Mathematical Methods for Educators (Master's program for in-service high school teachers)
PHYS 531 Classical Mechanics for Educators (Master's program for in-service high school teachers)
PHYS 532 Electricity and Magnetism for Educators (Master's program for in-service high school teachers)
PHYS 371 Science and Math Education Theory and Practice (pedagogy course for Learning Assistants)
PHYS 270 Science Education Theory and Practice (pedagogy course for Learning Assistants)
PHYS 345 Teaching and Learning Physics (physics education research course)

Director of Learning Assistant Program, 2014-present

Created learning assistant program; recruit learning assistants; coordinate hiring of learning assistants; conduct weekly preparation meetings; teach learning assistant pedagogy course.

PREVIOUS POSITIONS

- **Postdoctoral Researcher, Department of Engineering and Science Education, Clemson University**, 2011-2013
Dr. Zahra Hazari
Studied students' career intentions and physics identities at the end of high school and beginning of college; conducted national survey of first year college students about career intentions, high school science experiences, and sustainability; conducted case studies of high school physics teachers; analyzed both quantitative and qualitative data using an identity framework with an emphasis on gender issues
- **Teaching Assistant and Co-Instructor, Department of Physics, Clemson University**, Clemson, SC.
Teaching Assistant (Spring 2013): PHYS 207 General Physics I (algebra-based physics)
Co-instructor (Fall 2012): PHYS 207 General Physics I (algebra-based physics)
- **Graduate Research Assistant, JILA, University of Colorado at Boulder**, 2006-2011
Drs. Margaret Murnane and Henry Kapteyn
Measured properties of high harmonic generation in order to study molecular structure and dynamics; modeled high harmonic generation using a two-center interference model; calculated molecular alignment of rotational wavepackets in small linear molecules

- **Teaching Assistant and Guest Lecturer, Physics Department, University of Colorado at Boulder, Boulder CO.**
Guest Lecturer (Spring 2011):
 PHYS 1230 Light and Color for Nonscientists: Taught one lecture of on the subject of optics and anatomy of the eye.
Teaching Assistant (Fall 2005):
 PHYS 1120 General Physics 2: Electricity, Magnetism, & Optics: Taught four recitation sections using University of Washington tutorials

STUDENT MENTORING

- **Graduate student advisor, Fall 2017-present**
Department of Physics & Astronomy, Texas A&M University-Commerce, Commerce, TX
 Thomas Blake Head. Blake presented his work at the 2018 AAPT Summer Meeting and PERC.
- **Graduate Student co-advisor, Spring 2017**
Department of Physics & Astronomy, Texas A&M University-Commerce, Commerce, TX
 Matthew Witt: RL presented results at 2017 AAPT Summer Meeting.
- **Undergraduate Honors Thesis Advisor, Spring 2016-present**
Department of Physics & Astronomy, Texas A&M University-Commerce, Commerce, TX
 Melanie Schroers: Melanie has successfully defended her thesis proposal. Melanie presented her results at the APS/AAPT Texas Regional Meeting Fall 2017 and at the Pathways Symposium, Fall 2017. RL presented results at 2017 PERC. RL and T. Bench presented results at 2018 AAPT Summer Meeting and PERC.
- **Undergraduate student researcher advisor, Summer 2016-present**
Department of Physics & Astronomy, Texas A&M University-Commerce, Commerce, TX
 Trever Bench: Trever presented results at 2018 AAPT Summer Meeting. RL presented results at 2018 PERC.
 Tyler Gentry: RL and T. Bench presented results at 2018 AAPT Summer Meeting and PERC.
 Allan Teer: RL presented results at 2017 AAPT Summer Meeting.
 Deanna Rogers: RL presented results at 2017 AAPT Summer Meeting.
 Tyrone Sheehan
- **Research Experience for Undergraduates, Summer 2014, Summer 2015, Summer 2016**
Department of Physics & Astronomy, Texas A&M University-Commerce, Commerce, TX
 Zackary Hutchens: RL presented his work at the 2016 AAPT Summer Meeting. Zack presented his work at the 2016 Quadrennial Physics Congress (PhysCon), the 2017 AAPT Winter Meeting, and the 2017 North Carolina section APS/AAPT regional meeting 2017. He continued to work on his project remotely through Spring 2018.
 Jordan Castillo: Jordan is a co-author on Lock et al. (2015). RL presented results at PERC 2017.
 Stephen Milburn
- **Group of Dr. Zahra Hazari, 2012-2013**
Department of Engineering and Science Education, Clemson University, Clemson, SC
 Trained one junior graduate student in coding qualitative video and interview data and one undergraduate student in conducting interviews and analyzing video data. Trained three junior graduate students in conducting school site visits, including collecting video data, writing field notes, and conducting interviews.
- **Laboratory of Drs. Margaret Murnane and Henry Kapteyn, 2009-2010**
JILA and University of Colorado at Boulder, Boulder, CO
 Trained two junior graduate students in laboratory safety, laser alignment, vacuum system maintenance; supervised one undergraduate student in adapting a pulsed gas jet for use in a specific vacuum chamber

ACADEMIC SERVICE

- **Speaker at Design, Connect, Create Physics Camps for Young Women, 2018**
 Presented physics career opportunities and my own career path to ~20 students in a summer camp for young women about to take their first high school physics class.
- **Physics & Astronomy Search Committee, 2018**
 Served on the search committee for Department Head for Physics & Astronomy. Evaluated applicants according to rubric.
- **Physics & Astronomy Search Committee, Chair, 2018**
 Chaired the Department of Physics & Astronomy Search Committee for an Assistant Professor in the area of Physics Education Research. I assisted in writing the job description, collated applicants' rankings, conducted phone and face-to-face interviews.

- **LeoTeach Colloquium, 2018**
Presented a workshop on studio physics to ~ 15 teachers and students
- **Society for College Science Teachers Outstanding Undergraduate Science Teaching Award Committee, 2017**
Evaluated and ranked nominees for award.
- **Community for the Advancement of Physics Education (CAPE) Teacher Workshops, Summer 2017, Fall 2017, Spring 2018**
Co-organized and ran workshops for high school physics teachers beginning as part of Noyce Capacity Building grant. Workshops focused on lab development and electricity and magnetism.
- **Speaker at Southwest High School, 2017**
Presented physics career opportunities and my own career path to 2 classes of high school physics students
- **Region X Physics Panel Meeting, 2016**
Attended two meetings of high school physics teachers; Summer meeting involved roundtable discussions of issues relevant to teaching high school physics; Fall meeting involved presentations on electricity and magnetism topics; LAs presented; distributed information about M.S. in Physics with Teaching Emphasis
- **Physics & Astronomy search committee, 2015-2016,**
Served on the Department of Physics & Astronomy Search Committee. I assisted in revising the job description and the hiring matrix. I emailed the advertisement to my contacts and had the advertisement posted on the PER jobs blog. Participated in phone interviews and on campus interviews.
- **Biological & Environmental Sciences search committee, 2015-2016**
Served on the Biological & Environmental Sciences search committee for hiring an environmental scientist. I reviewed the hiring matrix and participated in on campus interviews.
- **LeoTeach Colloquium, 2016**
Co-presented a workshop on studio physics to ~ 40 teachers and students
- **Organizer of Department of Physics & Astronomy Mentoring Program, 2015-present**
Created mentoring program; assigned every freshmen, sophomore, and new physics major a faculty mentor; organized a mentoring meet-up; collaborated with Society of Physics Students to transition to student led program.
- **Physics Day Speaker, Texas A&M University-Commerce, 2015-2017**
Presented talks about physics career opportunities and served on panels about career experiences.
- **Career Day Speaker, L.V. Stockard Middle School, Dallas, TX, Spring 2015**
Presented physics career opportunities and my own career path to 4 classrooms of middle school students.
- **Assessment Committee, Chair 2014-present**
Wrote the Department of Physics & Astronomy Institutional Effectiveness Academic Program Plans and Results documents annually.
- **Doubling Committee, 2015-present**
Charged with doubling the number of physics majors graduating from the department
- **College Curriculum Committee, 2015-present**
Reviewed curriculum changes in College of Science and Engineering.
- **Department Curriculum Committee, Chair 2016-present**
Revise physics teacher preparation program, review changes in physics major and minor, and enter changes into CourseLeaf.
- **Department Curriculum Committee, 2014-2016**
Revised physics teacher preparation program, learning assistant pedagogy course, and reviewed changes in physics major and minor.
- **Reviewer for Physics Education Research Conference Proceedings, 2012-present**
Reviewed conference papers for publication.
- **Reviewer for Physical Review Physics Education Research, 2015-present**
Reviewed journal articles for publication.
- **President of Extreme Ultraviolet Engineering Research Center Student Leadership Council, 2010-2011**
Wrote Strengths, Weaknesses, Opportunities, and Threats analysis and presented the report to the program evaluators at annual site visit; helped organize two industry videoconferences

- **Vice-President of Extreme Ultraviolet Engineering Research Center Student Leadership Council, 2009-2010**
Organized student retreat (~60 participants) at National Science Foundation Engineering Research Centers Annual Meeting; helped organize one industry videoconference
- **Co-President of Women in JILA** at the University of Colorado, 2008-2009
Organized four lunch meetings that brought in senior women to discuss their careers
- **Partnerships for Informal Science Education in the Community, Spring 2010, Fall 2010**
JILA and University of Colorado at Boulder, Boulder, CO
Worked with middle school (sixth and eighth grade) students on inquiry-based activities about circuits and kinematics
- **Middle School Outreach, April 2010**
Vikan Middle School, Brighton, CO
Gave a presentation about lasers and supervised laser activities for four class periods of eighth graders
- **Graduate Admissions Committee, Spring 2009**
Read, evaluated, and discussed applicants for the University of Colorado physics graduate program

PROFESSIONAL AFFILIATIONS

- American Association for the Advancement of Science (AAAS), 2016-present
- American Association of Physics Teachers (AAPT), 2011-present
- American Physical Society (APS), 2001-present
- National Association for Research in Science Teaching (NARST), 2012-2013
- Optical Society of America (OSA), 2007-2011

PROFESSIONAL DEVELOPMENT

- **2018 Building Thriving Programs Workshop, College Park, MD**
Attended sessions on increasing enrollment of physics majors
- **2018 PhysTEC Conference, College Park, MD**
Attended sessions on physics teacher preparation
- **Next Gen Physical Science and Everyday Thinking (PET) Workshop, Covington, KY**
Participated in workshop for pilot instructors of the Next Gen PET curriculum
- **2017 Western Regional Noyce Conference, Fresno, CA**
Attended sessions on STEM teaching, managing current Noyce grants, and applying for Noyce grants
- **2016 APS National Mentoring Community Conference, Houston, TX**
Attended workshops on mentoring students with special attention to underrepresented minorities
- **Proposal Development Workshop, A&M-Commerce, Spring 2015**
Attended weekly meetings at ORSP to learn more about writing a successful grant proposal; prepared a logic model
- **AAPT New Faculty Workshop, College Park, MD, Fall 2014**
Attended sessions on practical details of teaching using techniques grounded in physics education research and on grant proposal preparation
- **2014 PhysTEC Conference, Austin, TX**
Attended sessions on physics teacher preparation
- **Southwest Regional Learning Assistant Workshop, San Marcos, TX, 2014**
Participated in workshop on how to best to implement a learning assistant program

GRANTS

Awarded

- “Noyce STEM Scholars at Texas A&M University-Commerce”
National Science Foundation – Noyce Track 1
PI: W.G. Newton; Co-PIs: **R.M. Lock**, R. Dibbs, J. Delgado-Acevedo, M. Fields, S. Starnes
Award #1758395
Award amount: \$1,199,473
Support period: 7/1/2018-6/30/2023

- “Collaborative Research: Mobilizing Teachers to Increase Capacity and Broaden Women’s Participation in Physics”
National Science Foundation – Discovery Research PreK-12 (DRK-12)
PI (at A&M-Commerce): **R.M. Lock**; Florida International University (PI: Z. Hazari) is the lead institution.
AAPT (PI: R. Vieyra) and APS (PI: T. Hodapp) are collaborating institutions.
Award #1720917
Award amount: \$2,999,435
Support period:5/15/17-5/14/21
- “A Community-Based Approach to Building the Capacity of Physics Teacher Preparation at Texas A&M University-Commerce”
National Science Foundation Division of Undergraduate Education – Noyce Capacity Building
PI: W.G. Newton; Co-PIs: **R.M. Lock**, G. Naizer
Award #DUE-1557398
Award amount: \$74,941
Support period: 7/15/2016-12/31/2017

Pending

- “Physics Teacher Preparation at Texas A&M University-Commerce”
PhysTEC Comprehensive Sites
PI: **R.M. Lock**; Co-PIs: W.G. Newton, K.P.Blount
Requested amount: \$288,397
Starting Date: 8/15/2019

AWARDS

- **PhysTEC fellow**, 2017-2019
Recognized as leader in physics teacher preparation.
- **Finalist for 2017 Tech Titans of the Future – University Level Award**
For the implementation of studio physics in University Physics
- **2017 Texas A&M University-Commerce Paul W. Barrus Distinguished Faculty Award for Teaching**
Award for tenure-track faculty members who have performed in an outstanding manner in teaching
- **2015-2016 Center for Faculty Excellence & Innovation (CFEI) Faculty Fellow for Teaching & Learning**,
Texas A&M University-Commerce
“Development of Studio Mode in Physics”
Led Transformation of University Physics I and II to studio mode, a student-centered, active-learning environment

PEER-REVIEWED PUBLICATIONS

1. Jianlan Wang, Zahra Hazari, Cheryl Cass, and Robynne Lock, “Episodic memories and the longitudinal impact of high school physics on female students’ physics identity,” *International Journal of Science Education* (2018). DOI: 10.1080/09500693.2018.1486522
2. Robynne M. Lock and Zahra Hazari, “Discussing underrepresentation as a means to facilitating female students’ physics identity development,” *Physical Review Physics Education Research* **12**, 020101 (2016). *Featured in M. McCartney, “The physics of a gender gap,” in S. Vignieri and J. Smith (Eds.), “In Other Journals,” Science* **353**, 787 (2016).
3. Allison Godwin, Geoff Potvin, Zahra Hazari, and Robynne Lock, “Identity, Critical Agency, and Engineering: An Affective Model for Predicting Engineering as a Career Choice,” *Journal of Engineering Education* **105**, 312 (2016).
4. Zahra Hazari, Geoff Potvin, Robynne M. Lock, Florin Lung, Gerhard Sonnert, and Philip M. Sadler, “Factors that Affect the Physical Science Career Interest of Female Students: Testing Five Common Hypotheses,” *Physical Review Special Topics – Physics Education Research* **9**, 020115 (2013).
5. R.M. Lock, S. Ramakrishna, X. Zhou, H.C. Kapteyn, M.M. Murnane, and T. Seideman, “Extracting Continuum Electron Dynamics from High Harmonic Emission from Molecules,” *Physical Review Letters* **108**, 133901 (2012).
6. Robynne M. Lock, Xibin Zhou, Wen Li, Henry C. Kapteyn, and Margaret M. Murnane, “Measuring the Intensity and Phase of High-Order Harmonic Emission from Aligned Molecules,” *Chemical Physics* **366**, 22 (2009).

7. Xibin Zhou, Robynne Lock, Nick Wagner, Wen Li, Henry C. Kapteyn, and Margaret M. Murnane, "Elliptically Polarized High-Order Harmonic Emission from Molecules in Linearly Polarized Laser Fields," *Physical Review Letters* **102**, 073902 (2009).
8. Wen Li, Xibin Zhou, Robynne Lock, Henry Kapteyn, Margaret Murnane, Serguei Patchkovskii, and Albert Stolow, "Time-Resolved Dynamics in N₂O₄ Probed Using High Harmonic Generation," *Science* **322**, 1207 (2008).
9. Isabell Thomann, Robynne Lock, Vandana Sharma, Etienne Gagnon, Stephen T. Pratt, Henry C. Kapteyn, Margaret M. Murnane, and Wen Li, "Direct Measurement of the Angular Dependence of the Single-Photon Ionization of Aligned N₂ and CO₂," *Journal of Physical Chemistry A* **112**, 9382 (2008).
10. Xibin Zhou, Robynne Lock, Wen Li, Nick Wagner, Margaret M. Murnane, and Henry C. Kapteyn, "Molecular Recollision Interferometry in High Harmonic Generation," *Physical Review Letters* **100**, 073902 (2008).
11. Nicholas Wagner, Xibin Zhou, Robynne Lock, Wen Li, Andrea Wüest, Margaret Murnane, and Henry Kapteyn, "Extracting the Phase of High-Order Harmonic Emission from a Molecule Using Transient Alignment in Mixed Samples," *Physical Review A* **76**, 061403 (2007).

PEER-REVIEWED CONFERENCE PROCEEDINGS PAPERS

1. Robynne M. Lock, Melanie Schroers, and William G. Newton, Examining the factors that impact group work effectiveness in studio physics, 2017 PERC Proceedings [Cincinnati, OH, July 26-27, 2017], edited by Lin Ding, Adrienne Traxler, and Ying Cao.
2. Robynne M. Lock, Jordan Castillo, Zahra Hazari, and Geoff Potvin, Determining Strategies that Predict Physics Identity: Emphasizing Recognition and Interest, 2015 PERC Proceedings [College Park, MD, July 29-30, 2015], edited by A.D. Churkian, D.L. Jones, and Lin Ding.
3. Robynne M. Lock, Zahra Hazari, and Geoff Potvin, "Physics Career Intentions: The Effect of Physics Identity, Math Identity, and Gender," *AIP Conference Proceedings* 1513, 262 (2013). *Finalist for 2012 PERC Proceedings Paper Award.*
4. Geoff Potvin, Zahra Hazari, Leidy Klotz, Allison Godwin, Robynne M. Lock, Jennifer Dawn Cribbs, and Nicole Barclay, "Disciplinary Differences in Engineering Students' Aspirations and Self-Perceptions," 2013 American Society for Engineering Education Conference Proceedings (2013).
5. Allison Godwin, Geoff Potvin, Zahra Hazari, and Robynne Lock, "Understanding Engineering Identity Through Structural Equation Modeling," 2013 IEEE Frontiers in Education Conference, IEEE Press (2013).
6. Robynne M. Lock, Xibin Zhou, Margaret M. Murnane, and Henry C. Kapteyn, "Elliptical Dichroism of High Harmonics Emitted from Aligned Molecules," in *Ultrafast Phenomena XVII: Proceedings of the 17th International Conference, The Silvertree Hotel and Snowmass Conference Center, Snowmass, Colorado, United States, July 2010*. M. Chergui, D. Jonas, E. Riedle, R. Schoenlein, A. Taylor Eds., Oxford University Press, 2011. pp. 53-55.
7. Xibin Zhou, Robynne Lock, Henry C. Kapteyn, and Margaret M. Murnane, "Observation of Elliptically Polarized High Harmonic Emission from Molecules Driven by Linearly Polarized Light," in *Ultrafast Phenomena XVI: Proceedings of the 16th International Conference on Ultrafast Phenomena, Stresa Italy, June 2008*. P. Corkum, S. Silvestri, K.A. Nelson, E. Riedle, R.W. Schoenlein Eds., Springer Series in Chemical Physics Vol. 92, 2009. pp. 21-23.
8. I. Thomann, R. Lock, C. La-O-Vorakiat, E. Gagnon, A. Sandhu, H. C. Kapteyn, M. M. Murnane, and W. Li, "Direct Measurement of the Angular-Dependence of Molecular Ionization Cross-Sections by Time-Resolved Extreme-Ultraviolet Spectroscopy," in *Ultrafast Phenomena XVI: Proceedings of the 16th International Conference on Ultrafast Phenomena, Stresa Italy, June 2008*. P. Corkum, S. Silvestri, K.A. Nelson, E. Riedle, R.W. Schoenlein Eds., Springer Series in Chemical Physics Vol. 92, 2009. pp. 72-74.
9. W. Li, X. B. Zhou, R. Lock, S. Patchkovskii, O. Smirnova, A. Stolow, M. Murnane, and H. Kapteyn, "Probing Dynamics in Polyatomic Molecules Using High Harmonic Generation: the Role of Ionization Continua," in *Ultrafast Phenomena XVI: Proceedings of the 16th International Conference on Ultrafast Phenomena, Stresa Italy, June 2008*. P. Corkum, S. Silvestri, K.A. Nelson, E. Riedle, R.W. Schoenlein Eds., Springer Series in Chemical Physics Vol. 92, 2009. pp. 63-65.
10. Xibin Zhou, Robynne Lock, Nick Wagner, Wen Li, Henry C. Kapteyn, and Margaret M. Murnane, "Molecular Recollision Interferometry in High Harmonic Generation," in *Ultrafast Phenomena XVI: Proceedings of the 16th International Conference on Ultrafast Phenomena, Stresa Italy, June 2008*. P. Corkum, S. Silvestri, K.A. Nelson, E. Riedle, R.W. Schoenlein Eds., Springer Series in Chemical Physics Vol. 92, 2009. pp. 87-89.

NON-PEER-REVIEWED PUBLICATIONS

1. Rodolfo Valdes-Vasquez, Leidy Klotz, Tripp Shealy, Jennifer Cribbs, Allison Godwin, Robynne Lock, Geoff Potvin, and Zahra Hazari, "College students who exhibit pro-sustainability attitudes and behaviors," *Journal of College Admission* **Fall 2014**, 17 (2014).

NON-PEER-REVIEWED CONFERENCE PROCEEDINGS PAPERS

1. Zahra Hazari, Robynne M. Lock, Cheryl A.P. Cass, and Carrie Beattie, *Obscuring Power Structures in the Physics Classroom: Implications for Student Engagement and Physics Identity Development*, 2013 PERC Proceedings [Portland, OR, July 17-18, 2013], edited by P. V. Engelhardt, A. D. Churukian, and D. L. Jones.

PRESENTATIONS BY RL

1. **Contributed** talk, Robynne M. Lock, Melanie Schroers, Trever Bench, Nicole Gentry, and William G. Newton, "Evidence for effective group work in studio physics", American Association of Physics Teachers Summer Meeting (2018).
2. **Poster** presentation, Robynne M. Lock, Melanie Schroers, Trever Bench, Nicole Gentry, and William G. Newton, "Evidence for effective group work in studio physics," Physics Education Research Conference (2018).
3. **Contributed** talk, Robynne M. Lock, Allan Teer, Matthew Witt, Deanna Rogers, and Zahra Hazari, "Physics identity in high school: Impact of discussing women's underrepresentation," American Association of Physics Teachers Summer Meeting (2017).
4. **Poster** presentation, Robynne M. Lock, Melanie Schroers, and William G. Newton, "Examining the factors that impact group work effectiveness in studio physics," Physics Education Research Conference (2017).
5. **Contributed** talk, Robynne M. Lock, William G. Newton, Melanie Schroers, and Zachary Hutchens, "Implementing studio physics: The effect on Physics Identity Development," American Association of Physics Teachers Summer Meeting (2016).
6. **Invited** poster presentation, Robynne M. Lock, Zahra Hazari, Geoff Potvin, and Jennifer Cribbs, "Using structural equation modeling to test the physics identity framework," Physics Education Research Conference (2016).
7. **Invited** talk, "The Role of Recognition and Interest in Physics Identity Development," American Physical Society April Meeting (2016).
8. **Seminar**, Robynne M. Lock, "Understanding Physics Career Choice through Identity," Biology seminar series, Texas A&M University-Commerce (2015).
9. **Contributed** talk, Robynne M. Lock, Zahra Hazari, and Geoff Potvin, "Determining Strategies that Predict Physics Identity: Emphasizing Recognition and Interest," American Association of Physics Teachers Summer Meeting (2015).
10. **Poster** presentation, Robynne M. Lock, Zahra Hazari, and Geoff Potvin, "Determining Strategies that Predict Physics Identity: Emphasizing Recognition and Interest," Physics Education Research Conference (2015).
11. **Contributed** talk, Robynne M. Lock and Zahra Hazari, "Discussing Underrepresentation as a Means to Increasing Female Physics Identity," American Association of Physics Teachers Summer Meeting (2014).
12. **Poster** presentation, Robynne M. Lock and Zahra Hazari, "Discussing Underrepresentation as a Means to Increasing Female Physics Identity," Physics Education Research Conference (2014).
13. **Contributed** talk, Robynne M. Lock, Reganne Tompkins, and Zahra Hazari, "Examining How Discussing Underrepresentation May Mediate Female Engagement in Physics," American Physical Society April Meeting (2013).
14. **Poster** presentation, Robynne M. Lock, Zahra Hazari, and Geoff Potvin, "Physics Career Intentions: The Effect of Physics Identity, Math Identity, and Gender," Physics Education Research Conference (2012).
15. **Invited** talk, Robynne Lock, "Development of a Physics Identity in High School," STEM Think Tank and Conference (2012).
16. **Contributed** talk, Robynne M. Lock, Zahra Hazari, Philip M. Sadler, and Gerhard Sonnert, "Examining Physics Career Interests: Recruitment and Persistence into College," American Physical Society April Meeting (2012).

17. **Poster** presentation, Robynne M. Lock, Xibin Zhou, Margaret M. Murnane, and Henry C. Kapteyn, “Elliptical Dichroism of High Harmonics Emitted from Aligned Molecules,” 17th International Conference on Ultrafast Phenomena (2010).
18. **Poster** presentation, Robynne Lock, Xibin Zhou, Margaret Murnane, and Henry Kapteyn, “Polarization-Resolved Measurements of High Harmonic Emission from Aligned Molecules”, Multiphoton Processes Gordon Research Conference (2010).
19. **Seminar**, Robynne Lock, Xibin Zhou, Margaret Murnane, and Henry Kapteyn, “Probing Molecular Structure and Dynamics Using High Harmonic Generation,” Eric Cornell/Debbie Jin Bi-group seminar (2010).
20. **Contributed** talk, Robynne Lock, Xibin Zhou, Wen Li, Margaret Murnane, and Henry Kapteyn, “Polarization Measurements of High-Order Harmonics from Transiently Aligned Molecules,” Conference on Lasers and Electro-Optics/ Quantum Electronics and Laser Science Conference (2009).
21. **Invited** talk, Robynne Lock, Xibin Zhou, Margaret Murnane, and Henry Kapteyn, “Probing Molecular Structure and Dynamics Using High Harmonic Generation,” Workshop on Studies of Atoms and Molecules with “New Light Sources” (2009).
22. **Poster** presentation, Robynne Lock, Xibin Zhou, Wen Li, Nicholas Wagner, Margaret Murnane, and Henry Kapteyn, “Molecular Recollision Interferometry in High Harmonic Generation,” 16th International Conference on Ultrafast Phenomena (2008).
23. **Contributed** talk, Robynne Lock, Wen Li, Xibin Zhou, Margaret Murnane and Henry Kapteyn, Serguei Patchkovskii and Albert Stolow, “Understanding High-Order Harmonic Generation from Polyatomic Molecules Undergoing Large Dynamic Structural Changes,” 16th International Conference on Ultrafast Phenomena (2008).
24. **Contributed** talk, Robynne Hooper, Nick Wagner, Xibin Zhou, Wen Li, Margaret Murnane and Henry Kapteyn, “Extracting the Phase of HHG Emission from Aligned Molecules using Gas Mixtures,” American Physical Society Division of Atomic, Molecular, and Optical Physics Annual Meeting (2007).

PRESENTATIONS BY STUDENTS

1. **Poster** presentation, Trever Bench, Robynne M. Lock, Melanie Schroers, Nicole Gentry, and William G. Newton, “Evidence for effective group work in studio physics”, American Association of Physics Teachers Summer Meeting (2018).
2. **Contributed** talk, Thomas Blake Head, Allan Teer, Robynne M. Lock, and Zahra Hazari, “Examining students’ responses to a career exploration lesson,” American Association of Physics Teachers Summer Meeting (2018).
3. **Poster** presentation, Thomas Blake Head, Robynne M. Lock, Allan Teer, Trever Bench, Zahra Hazari, and Geoff Potvin, “STEP UP 4 Women: Examining students’ responses to lesson interventions,” Physics Education Research Conference (2018).
4. **Poster** presentation, Melanie Schroers, Robynne M. Lock, William G. Newton, and Zackary Hutchens, “Examining the factors that impact group work in studio physics,” Pathways Symposium (2017).
5. **Contributed** talk, Melanie Schroers, Robynne M. Lock, and William G. Newton, “Examining the factors that impact group work in studio physics,” Joint Fall 2017 Meeting of the Texas Section of the APS, Texas Section of AAPT, and Zone13 of the Society of Physics Students (2017).
6. **Poster** presentation, Zackary Hutchens and Robynne Lock, “The impact of studio mode on conceptual understanding and physics identity development,” North Carolina AAPT Section Meeting (2017).
7. **Poster** presentation, Zackary Hutchens and Robynne Lock, “The impact of studio mode on conceptual understanding and physics identity development,” AAPT Winter Meeting (2017).
8. **Poster** presentation, Zackary Hutchens and Robynne Lock, “The impact of studio mode on conceptual understanding and physics identity development,” 2016 Quadrennial Physics Congress (PhysCon) (2016).