# BETHANY R. WILCOX

Department of Physics
University of Colorado Boulder
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## EDUCATION

### University of Colorado Boulder

Doctorate of Philosophy in Physics, May 2015

*Dissertation Title*: New Tools for Investigating Student Learning in Upper-division Electrostatics
*Advisor*: Steven J. Pollock

Masters of Science in Physics, 2012

Bachelors of Arts with Distinction in Physics and Astronomy, 2010

## RESEARCH GRANTS AND FELLOWSHIPS

PI: National Science Foundation Grant No. 2143976, "CAREER: A Model for Achieving Flexible and Scalable Conceptual Assessment – A Prototype in Undergraduate Quantum Mechanics," $745,089 (8/2022 – 7/2027)

PI: National Science Foundation Grant No. 2012147, "Collaborative Research: Assessing Undergraduate Student Learning in Upper-Level Courses in Thermal and Statistical Physics," $283,182 (9/2020-8/2023)

PI: National Science Foundation Grant No. 2013332, "Collaborative Research: Connecting Spins-First Quantum Mechanics Instruction to Quantum Information Science," $482,039 (9/2020-8/2024)

CoPI: National Science Foundation Grant No. 2243353, "Community Centered Pathways for Equity and Justice in STEM Teaching, $483,137 (8/2024-6/2027)

NSF Graduate Research Fellowship, 2012-2015

## AWARDS AND RECOGNITIONS

Outstanding Referee of the Physical Review journals, 2025

University of Colorado Boulder Faculty Assembly Excellence in Teaching Awardee, 2024

University of Colorado Boulder ASSETT "Excellence in Teaching with Technology" Awardee, 2023

University of Colorado Boulder Center for Teaching & Learning "The Best Should Teach" Awardee, 2023

Department of Physics Teaching Awardee, 2023

Institute of Physics Outstanding Reviewer, 2018, 2019, 2022, 2023

Institute of Physics Trusted Reviewer

European Journal of Physics Reviewer of the Year, 2017

Physics Education Research Topical Group Travel Award, Fall 2015

International Society of Engineering Educators Professional Development Program, 2014

University of Colorado Boulder United Government of Graduate Students Travel Award, 2012

Center for the Integration of Research, Teaching, and Learning Network Exchange, 2012

Society Photographic Instrumentation Engineers Scholarship, 2009

## RESEARCH EXPERIENCE

**University of Colorado Boulder –** Department of Physics, August 2018-Present
*Assistant Professor*

Physics Education Researcher: Understanding student reasoning during problem solving in physics across the curriculum, including students use of multiple representations and engagement in reflective practices. Developing and validating conceptual assessments in thermodynamics and quantum mechanics (including quantum information science) that can be used as a large-scale comparative measure of student learning as well as addressing the issue of variable content coverage in upper-division thermal and quantum physics. Investigating barriers and benefits to participation in summer REU programs for underserved student populations.

**University of Colorado Boulder –** Department of Physics, June 2015-December 2016
*Research Associate*
Advisor: Dr. Heather Lewandowski

Physics Education Researcher: Validating an attitudinal assessment targeted at understanding student epistemologies and expectations about the nature of experimental physics. Assembling and analyzing a national data set of student responses to this assessment.

**University of Colorado Boulder –** Department of Physics, August 2010-May 2015
*Graduate Researcher*
Advisor: Dr. Steven Pollock

Physics Education Researcher: Understanding student difficulties with mathematics in junior level Electricity and Magnetism. Developing and validating conceptual assessments that can be used as a large-scale comparative measure of student learning in upper-division electrostatics.

**University of Colorado Boulder**, August 2010-December 2012
*Graduate Researcher*
Advisor: Dr. Doug Duncan

CIRTL Researcher: Investigating the effect of different note taking styles as well as laptop and cell phone use during class on student learning outcomes.

**SETI Institute** – Mountain View, CA, Summer 2009
*Undergraduate Researcher*
Advisor: Dr. Gerald Harp

REU Intern: Analyzing radio frequency observations of nearby star systems for the signs of artificial signals. Characterizing the behavior of the Allen Telescope Array at high frequencies

**University of Colorado Boulder** – Department of Physics, August 2008-December 2009
*Undergraduate Researcher*
Advisor: Dr. Ivan Smalyukh

Liquid Crystal Researcher: Stabilizing a unique phase of liquid crystal at room temperature, with the ultimate goal of using liquid crystals as a medium for the formation of self-assembling periodic arrays of nanoparticles.

## STUDENTS AND POST-DOCS MENTORED

*Graduate Students*

Katherine Rainey 2018-2021 (Ph.D.)
Nathan Crossette 2019-2022 (Ph.D.)
Giaco Corsiglia 2019-2023 (Ph.D.)
Cai Cash, 2023-2024 (Masters)

Jesse Kruse 2022-2024 (Masters)
Nathan Mackey 2024
Josephine Meyer 2021-2025 (anticipated)
Kristin Oliver 2021-2026 (anticipated)
Michael Freeman 2022-Present
Molly Gristion 2022-Present
Jonan-Rohi Plueger, 2022-Present

*Undergraduate Students*

James Huffman (2020)
Michael Freeman (2021-2022)
Jo Robbins (2021-2023)
Kristin Oliver (post-bac, 2021)
Harshini Sunil (2022-2023)
Gabriela Galarraga (2023)
Anoush Ralapanawe (2023)

*Post-docs*

Michael Vignal 2019-2021

## TEACHING EXPERIENCE

**University of Colorado Boulder**

*Assistant Professor* - Department of Physics

- Experimental Physics 2: Spring 2025 (N=79)
- Teaching and Learning Physics: Fall 2024 (N=17)
- Quantum Mechanics 2: Fall 2023 (N=52)
- Junior-level Quantum Mechanics 1: Spring 2022 (N=105), Fall 2022 (N=70), Spring 2023 (N=81)
- Senior-level Thermal Physics: Fall 2019 (N=70), Fall 2020 (N=86), Spring 2021 (N=56)
- Non-majors Light and Color: Spring 2019 (N=101), Spring 2024 (N=80)
- Junior-level Electrostatics: Fall 2018 (N=51), Spring 2020 (N=85)

**Colorado School of Mines**

*Teaching Assistant Professor* – Department of Physics

- Introductory Mechanics (N~500): Spring 2017, Fall 2017, Spring 2018

**University of Colorado Boulder**

*Guest Lecturer* – Department of Physics

- Junior-level electrostatics: Spring 2012, Spring 2013, Spring 2014, Spring 2015
- Introductory Physics 2: Fall 2014, Spring 2016

*Recitation Instructor* – Department of Physics, Fall 2011

*Teaching Assistant* – Department of Physics, Spring 2011, Fall 2010

*Physics Tutor, Multiple Courses* – Department of Physics, Fall 2010-Spring 2011

*Undergraduate Teaching Assistant* – Department of Astrophysical and Planetary Science, Spring 2010

*Learning Assistant* – Department of Physics, Spring 2010

*Learning Assistant* – Department of Astrophysical and Planetary Science, Fall 2009

# PUBLICATIONS

### Publications appearing in peer-reviewed journals

42) J. Kruse, M. Griston, **B. Wilcox** (2025) Characterization of Upper-Level Undergraduate Quantum Mechanics Courses in the U.S., *Phys. Rev. PER,* In Preparation

41) M. Griston, **B. Wilcox** (2025) Student engagement with homework corrections: a case study analysis, *Phys. Rev. PER,* In Preparation

40) M. Freeman, P. Poulos, T. Garcia, A. Sirnoorkar, B. Bridges, **B. Wilcox**, J. Laverty (2025) Development of Instructor Feedback for Second Generation Research-Based Assessments, *Phys. Rev. PER,* In Preparation

39) T. Garcia, M. Freeman, A. Sirnoorkar, B. Bridges, P. Poulos, **B. Wilcox**, J. Laverty (2024) Validation of tasks through knowledge-in-use, *Phys. Rev. PER,* In Preparation

38) T. Garcia, A. Sirnoorkar, M. Freeman, B. Bridges, P. Poulos, A. Jambuge, K. Rainey, **B. Wilcox**, J. Laverty (2024) Developing Assessment Tasks with a Knowledge-in-Use Framework, *Phys. Rev. PER,* In Preparation

37) J. Chini, M. Vignal, **B. Wilcox**, E. Scanlon (2024) Investigating the prevalence and usage of disability accommodations in Physics courses during the COVID-19 pandemic, *Phys. Rev. PER,* In Preparation

36) K. Oliver, V. Borish, **B. Wilcox**, H.J. Lewandowski (2024) Education for expanding the quantum workforce: Student perceptions of the quantum industry in an upper-division physics capstone course, *Phys. Rev. PER*, Under Review

35) K. Oliver, V. Borish, **B. Wilcox**, H.J. Lewandowski (2024) Implementation of the photovoice methodology in a project-based upper-division physics course, *Phys. Rev. PER*, **20**, 010142

34) J. Meyer, G. Passante, **B. Wilcox** (2024) Disparities in access to U.S. quantum information education, *Phys. Rev. PER*, **20**, 010131

33) J. Meyer, G. Passante, S. Pollock, **B. Wilcox** (2024) Introductory quantum information science coursework at US institutions: Content Coverage, European Physical Journal Quantum Technology, **11** (1), 16

32) J. Meyer, G. Passante, S. Pollock, **B. Wilcox** (2023) How media hype affects our physics teaching: A case study on quantum computing, *The Physics Teacher*, **61**, 339

31) N. Crossette, L. Carr, **B. Wilcox**, (2023) Correlations between student connectivity and academic performance: a pandemic follow-up, *Phys. Rev. PER*, **19**, 010106

30) K. Rainey, M. Vignal, **B. Wilcox**, (2022) Validation of a Coupled, Multiple Response Assessment for Upper-Division Thermal Physics, *Phys. Rev. PER*, **18**, 020116

29) J. Meyer, G. Passante, S. Pollock, **B. Wilcox** (2022) Today's interdisciplinary quantum information classroom: Themes from a survey of quantum information science instructors, *Phys. Rev. PER*, **18**, 010150

28) M. Vignal, **B. Wilcox**, (2022) Investigating Unprompted and Prompted Diagrams Generated by Physics Majors During Problem Solving, *Phys. Rev. PER*, **18**, 010104

27) N. Crossette, M. Vignal, **B. Wilcox**, (2021) Investigating graduate student reasoning on a conceptual entropy questionnaire, *Phys. Rev. PER*, **17**, 020119

26) B. V. Dusen, M. Shultz, J. M. Nissen, **B. Wilcox**, N. G. Holmes, M. Jariwala, E. Close, H. J. Lewandowski, S. Pollock, (2020) Online administration of research-based assessments, *Am. J. Phys.* **89**, 7

25) **B. Wilcox**, M. Vignal (2020) Recommendations for emergency remote teaching based on the student experience, *The Physics Teacher*, **58**, 374

24) K. Rainey, M. Vignal, **B. Wilcox** (2020) Designing upper-division thermal physics assessment items informed by faculty perspectives of key content coverage, *Phys. Rev. PER*, **16**, 020113

23) **B. Wilcox**, S. Pollock, D. Bolton (2020) Retention of conceptual learning after an interactive introductory mechanics course, *Phys. Rev. PER*, **16**, 010140

22) **B. Wilcox**, G. Corsiglia (2019) Cross-context look at upper-division student difficulties with integration, *Phys. Rev. PER*, **15**, 020136

21) **B. Wilcox**, S. Pollock (2019) Investigating students' behavior and performance in online conceptual assessment, *Phys. Rev. PER*, **15**, 020145

20) Q. Ryan, **B. Wilcox**, S. Pollock (2018) Student difficulties with boundary conditions in the context of electromagnetic waves, *Phys. Rev. PER*, **14** 020126

19) D. Vargas, A. Bridgeman, D. Schmidt, P. Kohl, **B. Wilcox**, L. Carr (2018) Correlation between student collaboration network centrality and academic performance, *Phys. Rev. PER*, **14** 020112

18) D. Hu, B. Zwickl, **B. Wilcox**, H. Lewandowski (2017) Qualitative investigation of students' views about experimental physics, *Phys. Rev. PER*, **13** 020134

17) **B. Wilcox**, H. Lewandowski (2017) A summary of research-based assessment of students' beliefs about the nature of experimental physics, *Am. J. Phys.*, **86**, 212

16) **B. Wilcox**, H. Lewandowski (2017) Improvement or Selection? A longitudinal analysis of students' views about the nature of experimental physics in their lab courses, *Phys. Rev. PER*, **13** 023101

15) **B. Wilcox**, H. Lewandowski (2017) Students' views about the nature of experimental physics, *Phys. Rev. PER*, **13** 020110

14) **B. Wilcox**, H. Lewandowski (2017) Developing skills versus reinforcing concepts in physics labs: Insight from a survey of students' beliefs about experimental physics, *Phys. Rev. PER*, **13** 010108

13) **B. Wilcox**, H. Lewandowski (2017) Open-ended versus guided laboratory activities: Impact on students' beliefs about experimental physics, *Phys. Rev. PER*, **12** 020132

12) **B. Wilcox**, H. Lewandowski (2016) Research-based assessment of students' beliefs about experimental physics: When is gender a factor?, *Phys. Rev. PER*, **12** 020130

11) **B. Wilcox**, H. Lewandowski (2016) Alternative model for assessment administration and analysis, *Phys. Rev. PER*, **12** 010139

10) **B. Wilcox**, H. Lewandowski (2016) Students' epistemologies about experimental physics: Validating the Colorado Learning attitudes about Science Survey for Experimental Physics, *Phys. Rev. PER*, **12** 010123

9) **B. Wilcox,** S. Pollock (2015) Upper-division Student difficulties with Separation of Variables, *Phys. Rev. ST-PER*, **11** 020131

8) **B. Wilcox,** S. Pollock (2015) Validation and analysis of the coupled multiple-response Colorado upper-division electrostatics diagnostic, *Phys. Rev. ST-PER*, **11** 020130

7) **B. Wilcox**, M. Caballero, C. Baily, H. Sadaghiani, S. Chasteen, Q. Ryan, S. Pollock (2015) Development and uses of upper-division conceptual assessments, *Phys. Rev. ST-PER*, **11** 020115

6) S. Chasteen, **B. Wilcox**, M. Caballero, K. Perkins, S. Pollock, C. Wieman (2015) Educational transformation in upper-division physics: The Science Education Initiative model, outcomes, and lessons learned, *Phys. Rev. ST-PER*, **11** 020110

5) M. Caballero, **B. Wilcox**, L. Doughty, S. Pollock (2015) Unpacking students' use of mathematics in upper division physics: Where do we go from here?, *Eur. J. Phys.* **36**, 065004

4) **B. Wilcox,** S. Pollock (2015) Upper-division Student Difficulties with the Dirac Delta Function, *Phys. Rev. ST-PER*, **11**, 010108

3) **B. Wilcox,** S. Pollock (2014) Coupled Multiple-Response vs. Free-response Assessment: An example from Upper-division Physics, *Phys. Rev. ST-PER*, **10** 020124

2) **B. Wilcox,** M. Caballero, S. Pollock (2013) Analytic Framework for Students' Use of Mathematics in Upper-Division Physics, *Phys. Rev. ST-PER*, **9**(2) 020119

1) Duncan D., Hoekstra A., **Wilcox B.** (2012). Digital Devices, Distraction and Student Performance – Does Cell Phone Use Reduce Learning? *Astronomy Education Review*, **11**(1), 010108

### Publications appearing in peer-reviewed conference proceedings

39) J. Kruse, M. Griston, **B. Wilcox** (2024) Instructors' Views on a Flexible Assessment Design, In Proceedings *2024 Physics Education Research Conference*, p. 237

38) P. Poulos, **B. Wilcox**, J.T. Laverty (2024) Investigating Self-Regulated Learning as a Framework for Research-Based Assessment Feedback, In Proceedings *2024 Physics Education Research Conference*, p. 342

37) J.R. Plueger, **B. Wilcox** (2024) Perspectives from Graduate Students on Their Experiences in NSF Research Experiences for Undergraduates, In Proceedings *2024 Physics Education Research Conference*, p. 330

36) M. Griston, **B. Wilcox** (2024) Homework corrections in upper-division physics courses: student and instructor motivations, In Proceedings *2024 Physics Education Research Conference*, p. 169

35) A. Sirnoorkar, A. Jambuge, K. Rainey, A. Adams, **B. Wilcox**, J. Laverty (2023) Theoretical Approach of Providing Feedback for Instructors through a Standardized Assessment for Undergraduate Physics, In Proceedings *2023 International Society of Learning Sciences*, p. 1326-1329

34) H. Sunil, **B. Wilcox** (2023) Investigating Academic Burnout in Undergraduate Physics Experiences, In Proceedings *2023 Physics Education Research Conference*, p. 350

33) M. Freeman, A. Sirnookar, J.T. Laverty, **B. Wilcox** (2023) Using Voting Theory to Guide Assessment Feedback; A study of Faculty Interpretation of Class Score Distributions, In Proceedings *2023 Physics Education Research Conference*, p. 101

32) K. Oliver, V. Borish, **B. Wilcox**, H. Lewandowski (2023) ``The prettiest photos are the ones that have happy people in them'': the use of photovoice in an upper-division physics capstone project course, In Proceedings *2023 Physics Education Research Conference*, p. 254

31) J. Kruse, **B. Wilcox** (2023) Rasch Analysis of the Quantum Mechanics Concept Assessment, In Proceedings *2023 Physics Education Research Conference*, p. 175

30) J. Meyer, N. Finkelstein, **B. Wilcox**, (2022) Ethics education in the quantum information science classroom: Exploring attitudes, barriers, and opportunities, In Proceedings *2022 American Society for Engineering Educators Conference*, #36517

29) M. Vignal, K. Rainey, **B. Wilcox**, M. Caballero, H. Lewandowski, (2022) Affordances of Articulating Assessment Objectives in Research-based Assessment Development, In Proceedings *2022 Physics Education Research Conference*, p. 475-480

28) J.T. Laverty, A. Sirnoorkar, A. Jambuge, K. Rainey, J. Weaver, A. Adamson, and **B. Wilcox**, (2022) A New Paradigm for Research- Based Assessment Development, In Proceedings *2022 Physics Education Research Conference*, p. 279-284

27) **B. Wilcox**, K. Rainey, M. Vignal, (2022) Methods for utilizing Item response theory with Coupled, Multiple-Response assessments, In Proceedings *2022 Physics Education Research Conference*, p. 488-493

26) J. Meyer, G. Passante, S. Pollock, **B. Wilcox**, (2022) Investigating student interpretations of the differences between classical and quantum computers: Are quantum computers just analog classical computers?, In Proceedings *2022 Physics Education Research Conference*, p. 317-322

25) G. Corsigilia, S. Pollock, **B. Wilcox**, (2022) Effectiveness of an online homework tutorial about changing basis in quantum mechanics, In Proceedings *2022 Physics Education Research Conference*, p. 118-123

24) N. Crossette, M. Vignal, **B. Wilcox**, (2021) Comparing undergraduate and graduate student reasoning on a conceptual entropy questionnaire, In Proceedings *2021 Physics Education Research Conference*, p. 105-110

23) E. Scanlon, M. Vignal, **B. Wilcox**, J. Chini, (2021) Students' use of disability accommodations in emergency remote teaching, In Proceedings *2021 Physics Education Research Conference*, p. 384-389

22) B. Cervantes, **B. Wilcox**, S. Pollock, G. Passante, (2021) An Overview of Quantum Information Science Courses at US Institutions, In Proceedings *2021 Physics Education Research Conference*, p. 93-98

21) J. Meyer, G. Passante, S. Pollock, M. Vignal, **B. Wilcox** (2021) Investigating students' strategies for interpreting quantum states in an upper-division quantum computing course, In Proceedings *2021 Physics Education Research Conference*, p. 289-294

20) K. Oliver, **B. Wilcox** (2021) Understanding combinatorics challenges in an upper-division thermodynamics course, In Proceedings *2021 Physics Education Research Conference*, p. 315-320

19) M. Vignal, **B. Wilcox** (2021) Physics Problem-Solvers on Why They Generate Unprompted Diagrams, In Proceedings *2021 Physics Education Research Conference*, p. 420-425

18) **B. Wilcox,** M. Vignal (2020) Understanding the student experience with emergency remote teaching, In Proceedings *2020 Physics Education Research Conference*, p. 581-586

17) M. Vignal, **B. Wilcox** (2020) Comparing Unprompted and Prompted Student-Generated Diagrams, In Proceedings *2020 Physics Education Research Conference*, p. 551-556

16) N. Crossette, M. Vignal, **B. Wilcox** (2020) Investigating how graduate students connect microstates and macrostates with entropy, In Proceedings *2020 Physics Education Research Conference*, p. 98-103

15) K. Rainey, A. P. Jambuge, J. T. Laverty, **B. Wilcox** (2020) Developing coupled, multiple-response assessment items addressing scientific practices, In Proceedings *2020 Physics Education Research Conference*, p. 418-423

14) A. P. Jambuge, K. Rainey, **B. Wilcox**, J. T. Laverty (2020) Assessment feedback: A tool to promote scientific practices in upper-division, In Proceedings *2020 Physics Education Research Conference*, p. 234-239

13) J. Huffman, M. Vignal, **B. Wilcox** (2020) Investigating Upper-Division Students' Interpretations of the Divergence Theorem, In Proceedings *2020 Physics Education Research Conference*, p. 222-227

12) **B. Wilcox,** S. Pollock (2019) Student behavior and test security in online conceptual assessment, In Proceedings *2019 Physics Education Research Conference*, p. 645-650

11) K. Rainey, **B. Wilcox** (2019) Faculty survey on upper-division thermal physics content coverage, In Proceedings *2019 Physics Education Research Conference*, p. 494-499

10) K. Callan, **B. Wilcox**, W. Adams (2017) Testing group composition within the studio learning environment. In Proceedings *2017 Physics Education Research Conference,* p. 72-75

9) **B. Wilcox**, H. Lewandowski (2017) Impact of Grading Practices on Students' beliefs about Experimental Physics, In Proceedings *2017 Physics Education Research Conference,* p. 19-22

8) **B. Wilcox**, H. Lewandowski (2016) Impact of instructional approach on students' epistemologies about experimental physics, In Proceedings *2016 Physics Education Research Conference,* p. 388-391

7) **B. Wilcox**, H. Lewandowski (2015) Correlating students' beliefs about experimental physics with lab course success, In Proceedings *2015 Physics Education Research Conference,* p. 367-370

6) S. Pollock, **B. Wilcox** (2015) Upper-division students' use of Separation of Variables, In Proceedings *2015 Physics Education Research Conference,* p. 259-262

5) Q. Ryan, **B. Wilcox**, S. Pollock (2015) Student difficulties with Boundary Conditions, In Proceedings *2015 Physics Education Research Conference,* p.283-286

4) **B. Wilcox,** S. Pollock (2014) Student difficulties with the Dirac Delta Function, In Proceedings *2014 Physics Education Research Conference,* p. 271-274

3) **B. Wilcox,** S. Pollock (2013) Multiple-choice Assessment for Upper-division Electricity and Magnetism, In Proceedings *2013 Physics Education Research Conference*, p. 365-368

2) **B. Wilcox**, M. Caballero, R. Pepper, S. Pollock (2012) Upper-division Student Understanding of Coulomb's Law: Difficulties with Continuous Charge Distributions. In Proceedings *2012 Physics Education Research Conference,* **1513**, p. 418-421

1) M. Caballero, **B. Wilcox**, R. Pepper, S. Pollock (2012) ACER: A Framework on the use of Mathematics in Upper-Division Physics. In Proceedings *2012 Physics Education Research Conference,* **1513**, p. 90-93

## PRESENTATIONS AND POSTERS

### Invited conference presentations

**B. Wilcox** (2025) Coupled-multiple response – a flexible format for assessment items, *APS Global Physics Summit*, Anaheim, CA

**B. Wilcox** (2024) Assessing student learning in Quantum Mechanics: Old challenges, new solutions, *4-Corners Sectional Meeting of the American Physical Society*, Flagstaff, NM

J. Meyer, G. Passante, S. Pollock, **B. Wilcox**, (2024) How media hype affects our physics teaching: what 21st century educators need to know, *2024 American Association of Physics Teachers Summer Meeting*, Boston, MA

J. Meyer, G. Passante, S. Pollock, **B. Wilcox** (2023) The question of equity: For whom are US quantum education programs being developed?, *Building a National Ecosystem for Quantum Technologies,* virtual conference, Universitat Jena

**B. Wilcox** (2022) Quantum Information Education: An emerging interdisciplinary classroom, *4-Corners Sectional Meeting of the American Physical Society,* Albuquerque, NM

**B. Wilcox** (2021) Investigating student learning across time and the curriculum, *4-Corners Sectional Meeting of the American Physical Society,* virtual conference, Oct. 2021

**B. Wilcox**, H.J. Lewandowski (2019) Students' beliefs about the nature of experimental physics, *Pacific Northwest Association for College Physics and Oregon Section American Association of Physics Teachers Conference*, Beaverton, OR

**B. Wilcox** (2017) Investigating students' use of mathematics in upper-division problem solving, *2017 Physics Education Research Conference*, Cincinnati, OH

**B. Wilcox** (2017) Interactive engagement techniques in advanced physics courses – Development, effectiveness, and sustainability, *The 2017 Conference of International Research Group on Physics Teaching*, Dublin, Ireland

**B. Wilcox**, H.J. Lewandowski (2017) Students' beliefs about the nature of experimental physics, *48th Annual Meeting of the APS Division of Atomic, Molecular, and Optical Physics*, Sacramento, CA

**B. Wilcox**, M. Caballero, C. Baily, H. Sadaghiani, S. Chasteen, Q. Ryan, S. Pollock (2016) Development and uses of upper-division conceptual assessments, *2016 American Association of Physics Teachers Winter Meeting*, New Orleans, LA

**B. Wilcox,** S. Pollock (2014) Coupled Multiple-response vs. Free-response Formats in Upper-division Conceptual Assessment. *2014 American Association of Physics Teachers Summer Meeting*, Minneapolis, MN

**B. Wilcox,** M. Caballero, D. Rehn, S. Pollock (2013) An Analytic Framework for Students' Use of Mathematics in Upper-division Physics, *Global Physics Department*, globalphysicsdept.org

**B. Wilcox,** S. Pollock, C. Baily (2013) Active Learning in Upper-division Physics, *International Conference on Nuclear Data for Science and Technology*, New York, NY

### Departmental Colloquia

**B. Wilcox** (2025) Developing Current and Next Generation Quantum Physics Assessments, *Old Dominion University*, Norfolk, VA

**B. Wilcox** (2024) Developing Current and Next Generation Physics Assessments, *University of Colorado Boulder*, Boulder, CO

**B. Wilcox** (2023) Measuring student learning in physics: When, where, and how, *University of Central Florida*, September 2023, Orlando, FL

**B. Wilcox** (2020) Scalable and flexible measures of student learning across time and context, *University of Maine Physics Department Colloquium*, February 2020, Orono, MN

**B. Wilcox**, S. Pollock (2016) Investigating Student Learning in Upper-division Electrostatics, *Texas Tech University Physics Department Colloquium*, March 2016, Lubbock, TX

**B.Wilcox**, S. Pollock (2014) Tools for Educational Transformation in Upper-division Electrostatics, *Cal. State University Fullerton Departmental Colloquium*, December 2014, Fullerton, CA

### Departmental Seminars

**B. Wilcox** (2021) Understanding and measuring student learning across time, content, and educational context, *Cornell University Discipline-Based Education Research Seminar*, Virtual

**B. Wilcox** (2020) Understanding and measuring student learning across time, content, and educational context, *Michigan State University Physics Education Research Lab Seminar 2020 virtual series*, Virtual

**B. Wilcox** (2018) Measuring students' epistemologies about experimental physics, *Kansas State University Physics Education Research Group Meeting*, Virtual, March 2018

**B. Wilcox**, H. Lewandowski (2016) Measuring students' epistemologies about experimental physics, *Texas Tech University Physics Education Research Group Meeting*, March 2016, Lubbock, TX

**B. Wilcox,** S. Pollock (2014) Physics Education Research at the Upper-division: What's so hard about Maxwell's Equations, *Equality through Awareness meeting*, Golden, CO

**B. Wilcox,** S. Pollock (2014) Coupled Multiple-response vs. Free-response Formats in Upper-division Conceptual Assessment. *Discipline-Based Educational Research meeting*, Boulder, CO

**B. Wilcox**, E. Sperandeo, D. Duncan, A. Hoekstra (2012) The Nexus Between Teaching and Communication Technologies: How Clickers, Laptops, and Cell Phones Affect Student Learning, *Discipline-Based Educational Research meeting*, Boulder, CO

D. Duncan, A. Hoekstra, **B. Wilcox** (2011). Learning and Interactive Behavior in Large Lecture Classes: Note-taking, Laptop Use, Cell Phone Use and Grades. *Discipline-Based Educational Research meeting*, Boulder, CO

D. Duncan, A. Hoekstra, **B. Wilcox** (2011). Assessing Correlations between Clicker Use, Note-taking Methods and Learning Outcomes in Three Large Science Classes. *Discipline-Based Educational Research meeting*, Boulder, CO

### Contributed talks

B.Wilcox, J. Meyer, G. Passante, S. Pollock (2024) The Quantum Computing Conceptual Survey – an assessment instrument for the growing educational ecosystem of quantum computing, *Quantum Science and Engineering Education Conference*, Montreal, Quebec

B.Wilcox, J. Meyer, G. Passante, S. Pollock (2024) Quantum Computing Conceptual Survey: Results from 2 semesters of pilot data collection, *Quantum Science and Engineering Education Conference*, Montreal, Quebec

G. Passante, B.Wilcox, S. Pollock (2024) Student ideas and difficulties when reasoning around the CNOT gate, *Quantum Science and Engineering Education Conference,* Montreal, Quebec

S. Pollock, B.Wilcox, G. Passante (2024) Adaptable curricular exercises to support teaching undergraduate quantum information, *Quantum Science and Engineering Education Conference,* Montreal, Quebec

M. Freeman, **B. Wilcox**, J. Laverty, T. Garcia, B. Bridges, P. Poulos (2024) Providing Actionable Feedback to Instructors with a New Modular Thermodynamics Assessment, *2024 American Association of Physics Teachers Summer Meeting,* Boston, MA

M. Griston, **B. Wilcox** (2024) Homework corrections in upper-division physics courses: student and instructor motivations, *2024 American Association of Physics Teachers Summer Meeting,* Boston, MA

J. Kruse, M. Griston, **B. Wilcox** (2024) Instructors' Views on a Flexible Assessment Design, *2024 American Association of Physics Teachers Summer Meeting,* Boston, MA

J. Meyer, G. Passante, S. Pollock, **B. Wilcox** (2024) Quantum Computing Conceptual Survey: Status and next steps, *2024 American Association of Physics Teachers Summer Meeting,* Boston, MA

K. Oliver, V. Borish, **B. Wilcox**, H.J. Lewandowski (2024) Education for a quantum workforce: Student perceptions of the quantum industry in a physics capstone course, *2024 American Association of Physics Teachers Summer Meeting,* Boston, MA

J.R. Plueger, G. Passante, S. Pollock, **B. Wilcox** (2024) Transitioning Paper Tutorials to an Online Platform with Interactive Feedback, *2024 American Association of Physics Teachers Summer Meeting,* Boston, MA

P. Poulos, **B. Wilcox**, J.T. Laverty (2024) Investigating Self-Regulated Learning as a Framework for Research-Based Assessment Feedback, *2024 American Association of Physics Teachers Summer Meeting,* Boston, MA

J. Meyer, G.Passante, S. Pollock, **B. Wilcox** (2023) The Quantum Computing Conceptual Survey: Preliminary work and next steps, *QSEEC23*, Seattle, WA

M. Gristion, J. Kruse, B. Wilcox (2023) A characterization of existing quantum mechanics assessments, *2023 American Association of Physics Teachers Summer Meeting,* Sacramento, CA

J. Kruse, **B. Wilcox** (2023) Rasch Analysis of the Quantum Mechanics Concept Assessment, *2023 American Association of Physics Teachers Summer Meeting,* Sacramento, CA

J. Robbins, **B. Wilcox** (2023) The Tentativeness and Trustworthiness of Science, *2023 American Association of Physics Teachers Summer Meeting,* Sacramento, CA

H. Sunil, **B. Wilcox** (2023) Investigating Academic Burnout in Undergraduate Physics Experiences, *2023 American Association of Physics Teachers Summer Meeting,* Sacramento, CA

M. Freeman, A. Sirnookar, J.T. Laverty, **B. Wilcox** (2023) Using Voting Theory to Guide Assessment Feedback; A study of Faculty Interpretation of Class Score Distributions, *2023 American Association of Physics Teachers Summer Meeting,* Sacramento, CA

K. Oliver, V. Borish, **B. Wilcox**, H. Lewandowski (2023) ``The prettiest photos are the ones that have happy people in them'': the use of photovoice in an upper-division physics capstone project course, *2023 American Association of Physics Teachers Summer Meeting,* Sacramento, CA

J. Meyer, G. Passante, S. Pollock, **B. Wilcox** (2023) Toward a validated assessment of quantum information science concepts, *2023 American Association of Physics Teachers Summer Meeting,* Sacramento, CA

N. Crossette, L. Carr, **B. Wilcox**, (2022) Social network analysis of student collaboration in pandemic-affected courses, *2022 American Association of Physics Teachers Summer Meeting,* Grand Rapids, MI

J.T. Laverty, A. Sirnoorkar, A. Adamson, J. Weaver, **B. Wilcox**, (2022) Supporting Instructors through Research Based Assessment, *2022 American Association of Physics Teachers Summer Meeting,* Grand Rapids, MI

J. Meyer, G. Passante, S. Pollock, **B. Wilcox** (2021) Preliminary Findings from a Survey of Quantum Information Science Instructors, *2021 American Association of Physics Teachers Summer Meeting,* Virtual Meeting

N. Crossette, M. Vignal, **B. Wilcox** (2021) Comparing undergraduate and graduate student reasoning on a conceptual entropy questionnaire, *2021 American Association of Physics Teachers Summer Meeting,* Virtual Meeting

M. Vignal, **B. Wilcox** (2021) Asking why students and instructors draw diagrams while problem solving, *2021 American Association of Physics Teachers Summer Meeting,* Virtual Meeting

M. Vignal, **B. Wilcox** (2021) Student experiences with emergency remote teaching in Fall 2020, *2021 American Association of Physics Teachers Winter Meeting,* Virtual Meeting

A.P. Jambuge, K. Rainey, A. Sirnookar, **B. Wilcox,** J.T. Laverty, (2021) Research-based Assessment Feedback for Instructors, *2021 American Association of Physics Teachers Winter Meeting,* Virtual Meeting

K. Rainey, A.P. Jambuge, A. Sirnookar, J.T. Laverty, **B. Wilcox** (2021) A Knowledge-in-Use Assessment for Upper-Division Thermal Physics, *2021 American Association of Physics Teachers Winter Meeting,* Virtual Meeting

N. Crossette, M. Vignal, **B. Wilcox** (2020) Investigating how graduate students connect microstates and macrostates with entropy, *2020 American Association of Physics Teachers Summer Meeting,* Virtual Meeting

M. Vignal, **B. Wilcox** (2020) Similarities and differences between unprompted and prompted student generated diagrams, *2020 American Association of Physics Teachers Summer Meeting,* Virtual Meeting

K. Rainey, M. Vignal, **B. Wilcox** (2020) Initial Implementation of an Upper-Division Thermal Physics Assessment, *2020 American Association of Physics Teachers Summer Meeting,* Virtual Meeting

**B. Wilcox,** M. Vignal (2020) Understanding the student experience with emergency remote teaching, *2020 American Association of Physics Teachers Summer Meeting,* Virtual Meeting

K. Rainey, **B. Wilcox**, (2019) Survey on Upper-Division Thermal Physics Content Coverage, *2019 American Association of Physics Teachers Summer Meeting,* Provo, UT

**B. Wilcox,** S. Pollock (2019) Student behavior and test security in online conceptual assessment, *2019 American Association of Physics Teachers Summer Meeting,* Provo, UT

**B. Wilcox**, K. Callan (2018) Impact of psychological interventions on gender gaps in introductory studio physics, *2018 American Association of Physics Teachers Summer Meeting*, Washington, DC

**B. Wilcox**, H. Lewandowski (2017) Impact of grading practices on student's beliefs about experimental physics, *2017 American Association of Physics Teachers Summer Meeting*, Cincinnati, OH

**B. Wilcox**, H. Lewandowski (2016) Gender differences in students' epistemologies about experimental physics, *2016 American Association of Physics Teachers Summer Meeting*, Sacramento, CA

**B. Wilcox**, H. Lewandowski (2016) Measuring students' epistemologies about experimental physics: Ongoing validation of the E-CLASS, *2016 American Association of Physics Teachers Winter Meeting*, New Orleans, LA

**B. Wilcox**, H. Lewandowski (2015) Correlating students' beliefs about experimental physics with lab course success, *2015 American Association of Physics Teachers Summer Meeting*, College Park, MD

**B. Wilcox,** S. Pollock (2015) Physics Education Research at the Upper-division: What's so hard about Maxwell's Equations, *AIMS Faculty Conference: Create Collaborate Evaluate*, Greeley, CO

**B. Wilcox,** S. Pollock (2014) Student difficulties with the Dirac Delta Function. *2014 American Association of Physics Teachers Summer Meeting*, Minneapolis, MN

**B. Wilcox,** S. Pollock (2013) In-Between Multiple-choice and Open-ended: Large-scale Assessment for Upper-division Physics? *2013 American Association of Physics Teachers Summer Meeting*, Portland, OR

**B. Wilcox**, M. Caballero, S. Chasteen, B. Zwickl, C. Baily, S. Pollock (2012) Resources for Research-based Instruction in Upper-Division Physics. *American Association of Physics Teachers Summer Meeting*, Philadelphia, PA

**B. Wilcox**, A. Hoekstra, D. Duncan (2012) Cell Phones in the Classroom: Digital Distraction and Student Performance. *American Association of Physics Teachers CO/WY Sectional Meeting*, Denver, CO

**B. Wilcox**, S. Pollock, R. Pepper, S. Chasteen (2012) Upper-Division Physics: Course Reforms and Student Difficulties. *CIRTL Network Exchange*, Vanderbilt University, Nashville, TN

**B. Wilcox**, A. Hoekstra, D. Duncan (2012) Digital Devices in the Classroom: Distraction and Student Performance. *CIRTL Network Exchange*, Vanderbilt University, Nashville, TN

D. Duncan, A. Hoekstra, **B. Wilcox** (2012). Digital Devices, Distraction and Student Performance – Does Cell Phone Use Reduce Learning? Poster, *American Astronomical Society* Meeting #219, Austin, TX

D. Gardner, **B**. **Wilcox**, I. Smalyukh (2009). Nanoparticle Decorated Cholesteric Blue Phases for Tunable Optical Metamaterials. *SPIE's Optics and Photonics Conference*, San Diego, CA.

### Contributed posters

C. Cash, **B. Wilcox** (2024) Assessing math interventions in an algebra-based introductory physics course, *2024 American Association of Physics Teachers Summer Meeting,* Boston, MA

J. Kruse, **B. Wilcox** (2024) Instructors' Views on a Flexible Assessment Design, *2024 American Association of Physics Teachers Summer Meeting,* Boston, MA

M. Freeman, J.T. Laverty, T. Garcia, B. Bridges, P. Poulos, **B. Wilcox** (2024) Providing Actionable Feedback to Instructors with a New Modular Thermodynamics Assessment, *2024 American Association of Physics Teachers Summer Meeting,* Boston, MA

M. Griston, **B. Wilcox** (2024) Homework corrections in upper-division physics courses: student and instructor motivations, *2024 American Association of Physics Teachers Summer Meeting,* Boston, MA

J.R. Plueger, **B. Wilcox** (2024) Characterizing Circumstantial Barriers to Attending Physics REUs: A Pilot Study, *2024 American Association of Physics Teachers Summer Meeting,* Boston, MA

J. Meyer, G. Passante, S. Pollock, **B. Wilcox** (2024) Quantum Computing Conceptual Survey, *2024 American Association of Physics Teachers Summer Meeting,* Boston, MA

J.R. Plueger, G. Passante, S. Pollock, **B. Wilcox** (2024) Transitioning Paper Tutorials to an Online Platform with Interactive Feedback, *2024 American Association of Physics Teachers Summer Meeting,* Boston, MA

J. Kruse, M. Griston, **B. Wilcox** (2024) Instructors' Views on a Flexible Assessment Design, In Proceedings *2024 Physics Education Research Conference*, Boston, MA

P. Poulos, **B. Wilcox**, J.T. Laverty (2024) Investigating Self-Regulated Learning as a Framework for Research-Based Assessment Feedback, In Proceedings *2024 Physics Education Research Conference*, Boston, MA

J.R. Plueger, **B. Wilcox** (2024) Perspectives from Graduate Students on Their Experiences in NSF Research Experiences for Undergraduates, In Proceedings *2024 Physics Education Research Conference*, Boston, MA

M. Griston, **B. Wilcox** (2024) Homework corrections in upper-division physics courses: student and instructor motivations, In Proceedings *2024 Physics Education Research Conference*, Boston, MA

M. Gristion, J. Kruse, B. Wilcox (2023) A characterization of existing quantum mechanics assessments, *2023 Physics Education Research Conference,* Sacramento, CA

J. Kruse, B. Wilcox (2023) Rasch Analysis of the Quantum Mechanics Concept Assessment, *2023 Physics Education Research Conference,* Sacramento, CA

J. Robbins, B. Wilcox (2023) The Tentativeness and Trustworthiness of Science, *2023 Physics Education Research Conference,* Sacramento, CA

H. Sunil, B. Wilcox (2023) Investigating Academic Burnout in Undergraduate Physics Experiences, *2023 Physics Education Research Conference,* Sacramento, CA

M. Freeman, A. Sirnookar, J.T. Laverty, B. Wilcox (2023) Using Voting Theory to Guide Assessment Feedback; A study of Faculty Interpretation of Class Score Distributions, *2023 Physics Education Research Conference,* Sacramento, CA

K. Oliver, V. Borish, B. Wilcox, H. Lewandowski (2023) ``The prettiest photos are the ones that have happy people in them": the use of photovoice in an upper-division physics capstone project course, *2023 Physics Education Research Conference,* Sacramento, CA

J. Meyer, G. Passante, S. Pollock, B. Wilcox (2023) Toward a validated assessment of quantum information science concepts, *2023 Physics Education Research Conference,* Sacramento, CA

M. Gristion, J. Kruse, B. Wilcox (2023) A characterization of existing quantum mechanics assessments, *2023 American Association of Physics Teachers Summer Meeting,* Sacramento, CA

J. Kruse, B. Wilcox (2023) Rasch Analysis of the Quantum Mechanics Concept Assessment, *2023 American Association of Physics Teachers Summer Meeting,* Sacramento, CA

J. Robbins, B. Wilcox (2023) The Tentativeness and Trustworthiness of Science, *2023 American Association of Physics Teachers Summer Meeting,* Sacramento, CA

H. Sunil, B. Wilcox (2023) Investigating Academic Burnout in Undergraduate Physics Experiences, *2023 American Association of Physics Teachers Summer Meeting,* Sacramento, CA

M. Freeman, A. Sirnookar, J.T. Laverty, B. Wilcox (2023) Using Voting Theory to Guide Assessment Feedback; A study of Faculty Interpretation of Class Score Distributions, *2023 American Association of Physics Teachers Summer Meeting,* Sacramento, CA

K. Oliver, V. Borish, B. Wilcox, H. Lewandowski (2023) ``The prettiest photos are the ones that have happy people in them": the use of photovoice in an upper-division physics capstone project course, *2023 American Association of Physics Teachers Summer Meeting,* Sacramento, CA

J. Meyer, G. Passante, S. Pollock, B. Wilcox (2023) Toward a validated assessment of quantum information science concepts, *2023 American Association of Physics Teachers Summer Meeting,* Sacramento, CA

M. Vignal, K. Rainey, **B. Wilcox**, M. Caballero, H. Lewandowski, (2022) Affordances of Articulating Assessment Objectives in Research-based Assessment Development, *2022 Physics Education Research Conference*, Grand Rapids, MI

J.T. Laverty, A. Sirnoorkar, A. Jambuge, K. Rainey, J. Weaver, A. Adamson, and **B. Wilcox**, (2022) A New Paradigm for Research- Based Assessment Development, *2022 Physics Education Research Conference*, Grand Rapids, MI

**B. Wilcox**, K. Rainey, M. Vignal, (2022) Methods for utilizing Item response theory with Coupled, Multiple-Response assessments, *2022 Physics Education Research Conference*, Grand Rapids, MI

J. Meyer, G. Passante, S. Pollock, **B. Wilcox**, (2022) Investigating student interpretations of the differences between classical and quantum computers: Are quantum computers just analog classical computers?, *2022 Physics Education Research Conference*, Grand Rapids, MI

J. Meyer, G. Passante, S. Pollock, **B. Wilcox**, (2022) Investigating student interpretations of the differences between classical and quantum computers, *2022 American Association of Physics Teachers Conference*, Grand Rapids, MI

G. Corsigilia, S. Pollock, **B. Wilcox**, (2022) Effectiveness of an online homework tutorial about changing basis in quantum mechanics, *2022 Physics Education Research Conference*, Grand Rapids, MI

**B. Wilcox**, A. Sirnoorkar, J.T. Laverty (2022) Developing actionable feedback statements for research-based assessments, *2022 American Association of Physics Teachers Conference,* Grand Rapids, MI

J. Meyer, G. Passante, S. Pollock, M. Vignal, **B. Wilcox** (2021) Investigating students' strategies for interpreting quantum states in an upper-division quantum computing course, *2021 Physics Education Research Conference*, Virtual Meeting

M. Vignal, **B. Wilcox** (2021) Physics problem solvers on why they generate unprompted student diagrams, *2021 American Association of Physics Teachers Summer Meeting,* Virtual Meeting

N. Crossette, M. Vignal, **B. Wilcox** (2021) Comparing undergraduate and graduate student reasoning on a conceptual entropy questionnaire, *2021 Physics Education Research Conference,* Virtual Meeting

K. Oliver, **B. Wilcox** (2021) Understanding combinatorics challenges in an upper-division thermodynamics course, *2021 Physics Education Research Conference,* Virtual Meeting

A.P. Jambuge, K. Rainey, A. Sirnookar, **B. Wilcox**, J.T. Laverty, (2021) Conceptualizing Assessments in PER Informed by Explicit Feedback for Instructors, *2021 Physics Education Research Conference,* Virtual Meeting

K. Rainey, A.P. Jambuge, A. Sirnookar, J.T. Laverty, **B. Wilcox**, (2021) Faculty Perceptions of Three-Dimensional Learning Performances Addressing Thermal Physics, *2021 Physics Education Research Conference,* Virtual Meeting

N. Crossette, M. Vignal, **B. Wilcox** (2021) Comparing undergraduate and graduate student reasoning on a conceptual entropy questionnaire, *2021 American Association of Physics Teachers Summer Meeting,* Virtual Meeting

N. Crossette, M. Vignal, **B. Wilcox** (2021) Network Analysis of Collaboration in Upper-Division Remote and Hybrid Courses, *2021 American Association of Physics Teachers Summer Meeting,* Virtual Meeting

M. Vignal, **B. Wilcox** (2020) Comparing unprompted and prompted student-generated diagrams, *2020 American Association of Physics Teachers Summer Meeting,* Virtual Meeting

N. Crossette, M. Vignal, **B. Wilcox** (2020) Investigating how graduate students connect microstates and macrostates with entropy, *2020 Physics Education Research Conference,* Virtual Meeting

N. Crossette, M. Vignal, **B. Wilcox** (2020) Investigating how graduate students connect microstates and macrostates with entropy, *2020 American Association of Physics Teachers Summer Meeting,* Virtual Meeting

A. P. Jambuge, K. Rainey, **B. Wilcox**, J. T. Laverty, (2020) Assessment feedback: A tool to promote scientific practices in upper-division, *2020 Physics Education Research Conference,* Virtual Meeting

K. Rainey, A. P. Jambuge, J.T. Laverty, **B. Wilcox**, (2020) Developing coupled, multiple-response assessment items addressing scientific practices, *2020 Physics Education Research Conference,* Virtual Meeting

K. Rainey, A. P. Jambuge, J. T. Laverty, **B. Wilcox**, (2020) Addressing Scientific Practices with Upper-Division Physics Assessment Items, *2020 American Association of Physics Teachers Summer Meeting,* Virtual Meeting

A. P. Jambuge, K. Rainey, **B. Wilcox**, J. T. Laverty, (2020) Assessing Scientific Practices in an Upper-Division Thermal Physics Course, *2020 American Association of Physics Teachers Summer Meeting,* Virtual Meeting

**B. Wilcox,** M. Vignal (2020) Understanding the student experience with emergency remote teaching, *2020 Physics Education Research Conference,* Virtual Meeting

**B. Wilcox,** M. Vignal (2020) Understanding the student experience with emergency remote teaching, *2020 American Association of Physics Teachers Summer Meeting,* Virtual Meeting

K. Rainey, **B. Wilcox**, (2019) Survey on Upper-Division Thermal Physics Content Coverage, *2019 American Association of Physics Teachers Summer Meeting,* Provo, UT

K. Rainey, **B. Wilcox**, (2019) Survey on Upper-Division Thermal Physics Content Coverage, *2019 Physics Education Research Conference,* Provo, UT

**B. Wilcox,** S. Pollock (2019) Student behavior and test security in online conceptual assessment, *2019 Physics Education Research Conference,* Provo, UT

K. Callan, **B. Wilcox**, W. Adams (2017) Testing group composition within the studio learning environment. *2017 Physics Education Research Conference,* Cincinnati, OH

**B. Wilcox**, H. Lewandowski (2017) Impact of grading practices on student's beliefs about experimental physics, *2017 Physics Education Research Conference,* Cincinnati, OH

**B. Wilcox,** H. Lewandowski (2016) Impact of instructional approach on students' epistemologies about experimental physics, *8th Annual Symposium of STEM Education*, Boulder, CO

**B. Wilcox**, H. Lewandowski (2016) Impact of instructional approach on students' epistemologies about experimental physics, *2016 Physics Education Research Conference*, Sacramento, CA

**B. Wilcox,** H. Lewandowski (2015) Correlating students' beliefs about experimental physics with lab course success. Poster, *7th Annual Symposium of STEM Education*, Boulder, CO

**B. Wilcox**, H. Lewandowski (2015) Correlating students' beliefs about experimental physics with lab course success, *2015 Physics Education Research Conference*, College Park, MD

S. Pollock, **B. Wilcox** (2015) Student difficulties with separation of variables, *2015 Physics Education Research Conference*, College Park, MD

Q. Ryan, **B. Wilcox**, S. Pollock (2015) Student difficulties with Boundary Conditions, *2014 Physics Education Research Conference,* College Park, MD

**B. Wilcox**, S. Pollock (2015) Student difficulties with separation of variables, *2015 Foundations and Frontiers in Physics Education Research*, Bar Harbor, ME

**B. Wilcox,** S. Pollock (2014) Coupled Multiple-response vs. Free-response Formats in Upper-division Conceptual Assessment, *6th Annual Symposium of STEM Education*, Boulder, CO

**B. Wilcox,** S. Pollock (2014) Student Difficulties with the Dirac Delta Function. *2014 Physics Education Research Conference*, Minneapolis, MN

**B. Wilcox,** S. Pollock (2014) Coupled Multiple-response vs. Free-response Formats in Upper-division Conceptual Assessment. *2014 American Association of Physics Teachers Summer Meeting*, Minneapolis, MN

**B. Wilcox,** S. Pollock (2013) Multiple-choice Assessment for Upper-division Electricity and Magnetism. Poster, *5th Annual Symposium of STEM Education*, Boulder, CO

**B. Wilcox,** S. Pollock (2013) Large-scale Assessment for Upper-division Electricity and Magnetism. *2013 Physics Education Research Conference*, Portland, OR

**B. Wilcox,** S. Pollock (2013) Large-scale Assessment for Upper-division Electricity and Magnetism. *2013 American Association of Physics Teachers Summer Meeting*, Portland, OR

**B. Wilcox** (2013) University of Colorado Physics Education Research, *Conference on Undergraduate Women in Physics*, Golden, CO

**B. Wilcox**, D. Duncan, A. Hoekstra, E. Sperandeo (2012) Digital Distraction and Student Performance. *4th Annual Symposium on STEM Education*, Boulder, CO

A. Hoekstra, D. Duncan, **B. Wilcox**, E. Sperandeo (2012) Put Your Phones Down Please: Digital Devices and Student Performance. *Center for STEM Learning Launch: VIP Reception*, Boulder, CO

**B. Wilcox**, M. Caballero, R. Pepper, S. Pollock (2012) Upper-division Student Understanding of Coulomb's Law: Difficulties with Continuous Charge Distributions. *Physics Education Research Conference*, Philadelphia, PA

M. Caballero, **B. Wilcox**, R. Pepper, S. Pollock (2012) ACER: A Framework on the use of Mathematics in Upper-Division Physics. *Physics Education Research Conference*, Philadelphia, PA

**B. Wilcox**, D. Duncan, A. Hoekstra, E. Sperandeo (2012) Distraction in the Classroom: Digital Devices and Student Performance. *American Association of Physics Teachers Summer Meeting*, Philadelphia, PA

D. Duncan, A. Hoekstra, **B. Wilcox**, E. Sperandeo (2012) The Nexus between Teaching and Communication Technology: How Clickers, Laptops, and Cell Phones affect Student Learning. *SEI/iSTEM End-of-year-Event*, Boulder, CO

**B**. **Wilcox**, A. Hoekstra, D. Duncan (2011). Digital Devices and Distractions: Student Behavior and Learning Outcomes. *CIRTL National Forum*, Madison, WI

G. Harp, **B**. **Wilcox**, J. Arbunich (2010). PiHI Observations at the ATA, Conventional and Unconventional SETI. Poster, *American Astronomical Society* Meeting #215, Washington, DC

D. Gardner, **B. Wilcox**, I. Smalyukh (2009). Self-Assembly of Quantum Rods into Defects of Cholesteric Liquid Crystals. *Inter-Continental Advanced Materials for Photonics Summer School*, Beijing, China.

D. Gardner, **B. Wilcox**, I. Smalyukh (2009). Self-Assembly of Quantum Rods into Defects of Cholesteric Liquid Crystals. *Soft Matter Workshop on Liquid Crystals and Colloidal Dispersions*, Livi, Ukraine.

D. Gardner, **B. Wilcox**, I. Smalyukh (2008). Self-Organization and Self-Alignment of Fluorescent Nanoparticles by Liquid Crystal Elasticity and Defects. *Colorado Photonics Industry Association Conference*, Boulder, CO

## PROFESSIONAL MEMBERSHIPS

**American Physical Society** (APS), 2012-Present
Topical Group on Physics Education Research (GPER)
Four Corners Section of APS

**American Association of Physics Teachers** (AAPT), 2012-2024
Physics Education Research Topical Group (PERTG)
CO/WY Section of AAPT

# SERVICE

**Faculty Advising Roles**

COSMOS (Community of Support for Marginalized Students) Student group

**Professional Activities**

Physical Review Physics Education Research Journal Statistical Modeling Review Committee (2023-Present)
University of Colorado Boulder, Representation, Recruitment, and Retention committee (2020-present)
University of Colorado Boulder, Junior Faculty Advisory committee (2018-Present)
University of Colorado Boulder, Student Groups committee (Chair, 2022-Present)
University of Colorado Boulder, APS Climate Site Visit committee (2024-Present)
University of Colorado Boulder, The Best Should Teach Selection Committee (2024)
University of Colorado Boulder, Student groups committee (Chair, 2022-Present)
University of Colorado Boulder, Physics Department 5-year Hiring Plan Committee, (2021-2022)
University of Colorado Boulder, Leeds School of Business, 2021 Selection Committee for the Joseph L Frascona Teaching Excellence Award (2021)
Elected Physics Education Research Leadership and Organizing Council, (2020-2022, co-Chair 2022)
APS Nominating Committee of the Forum on Education (2019)
University of Colorado Boulder, Graduate Program Revision (2020-2021)
University of Colorado Boulder, Physics Advising committee (2018-2022)
University of Colorado Boulder, Graduate Research Opportunity Seminar (Chair, 2019-2020)
University of Colorado Boulder, Strategic Planning committee (2019-2020)
University of Colorado Boulder, Graduate committee (2018-2019)
APS Topical Group in PER, GPER Grants committee (Chair, 2017-2020)
Colorado School of Mines, Readmissions committee (2017-2018)
Colorado School of Mines, Assessment committee (2017-2018)

**CO/WY Sectional AAPT**

Past President: 2016-2017, President: 2015-2016, President Elect: 2014-2015, Vice President: 2013-2014
Planned, organized, and hosted the 2014 spring meeting of the CO/WY section of the AAPT.

**2025 APS Conference for Undergraduate Women and Gender Minorities in Physics**

Chair of Local Organizing Committee

**2017 APS Conference for Undergraduate Women in Physics**

Executive Organizing Committee member, Advertising Committee Chair, Application Committee Chair

# OUTREACH

**Society of Women Engineers Girls Lead the Way:** 2018

Organized and led the Physics portion of the event.

**CU' (CU Prime) Volunteer Mentor:** 2014-2015

Participated as a mentor in a one-on-one, graduate-led mentoring program designed to provide graduate mentors for undergraduate physics majors.

**PISEC Summer Science Camp:** Casa de la Esperanza Community Center, Longmont, CO

Worked as a volunteer with children ages 6-15 at a low-income housing project on science activities designed to let the students explore optics. Guided field-trip groups to visit physics labs CU Boulder.

**Volunteer Panelist:** Rocky Mountain Conference for Undergraduate Women in Physics, Golden, CO

Sat on the 'Life of a Graduate Student' Panel to answer questions from conference participants on how to prepare for graduate school.