

Melissa Eblen-Zayas

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EDUCATION AND PROFESSIONAL EXPERIENCE

Carleton College, Northfield, MN

Professor of Physics 2018 - present

Director, Perlman Center for Learning and Teaching &

Humphrey Doermann Professor of Liberal Learning 2016 - 2020

Chair, Department of Physics and Astronomy 2012 - 2016

Associate Professor of Physics 2011 - 2018

Assistant Professor of Physics 2005 - 2011

Ph.D., University of Minnesota, Minneapolis, MN

June 2005

Dissertation: "Electrical Modification of Disordered and Correlated Electron Systems"

Preparing Future Faculty Program

B.A. *magna cum laude*, Smith College, Northampton, MA

May 1999

Major: Physics Minor: History

Honors Thesis: "Calorimetric Investigation of Phase Transitions in Quasi-One-Dimensional Metals"

TEACHING INTERESTS & EXPERIENCE

- Teaching core courses throughout the introductory and intermediate physics curriculum, advanced courses in Electronics, Solid State Physics, and Contemporary Experimental Physics, and environmental studies elective, with a focus on increasing my use of research-based approaches to enhance inclusion and equity.
- Developed new courses in materials science (in Physics & Astronomy), materials and the environment (in Environmental Studies), and significantly redesigned the advanced lab course in physics to include a student-driven independent project component.
- Incorporated academic civic engagement projects in physics and environmental studies courses and developed new models for project streams to connect curricular and co-curricular opportunities. In 2015, received the Minnesota Campus Compact Presidents' Civic Engagement Steward Award.

RESEARCH INTERESTS & EXPERIENCE

- Interests include: 1) Scholarship of teaching and learning (SoTL) and pedagogy, with a focus on quantitative skills in introductory courses and the physics advanced laboratory curriculum, and 2) experimental condensed matter physics research on the electronic and magnetic properties of correlated electron materials.
- Mentored over 50 students in undergraduate research during the academic year and the summer.

EDUCATIONAL DEVELOPMENT INTERESTS & EXPERIENCE

- Interests include: 1) Developing approaches to on ramp students for success when they arrive with varied levels of preparation for coursework and varied understanding of how to navigate college expectations and structures, and 2) Models of peer observation of teaching and the role of peer observation of teaching in the faculty development ecosystem.
- Conceptualized and led a multi-campus educational development pilot project for LACOL consortium that created a framework for developing online modules focused on quantitative skills (QS) and their applications, and assessed faculty use of and student engagement with modules (2016-2017). This led to an externally-funded (\$290K) project (QLAB) aimed at improving understanding of effective practices for the use of online modules to support students' QS development and factors that impact faculty and departmental choices about QS support (2019-present).

- Proposed, designed, and developed the hybrid Carleton Undergraduate Bridge Experience (CUBE) beginning in 2016 to provide incoming first-year students the opportunity to review quantitative skills, explore their application to many disciplines, and create an early connection with the Carleton community. Taught CUBE from 2016-2019.

PUBLICATIONS

Book chapters

- 2022 M. Eblen-Zayas, "Reflect to Deflect: Using Metacognitive Activities to Address Student Perceptions of Instructor Competence and Caring," in *Picture a Professor: Intersectional Strategies for Interrupting Bias about Faculty and Increasing Student Learning*, ed. Jessamyn Neuhaus, West Virginia University Press.
- 2020 M. Eblen-Zayas, "Development and Supervision of Independent Projects," in *Experimental Physics: Principles and Practice for the Laboratory*, ed. W. F. Smith, CRC Press.

Peer-reviewed articles, conference proceedings, digests

- 2023 M. Eblen-Zayas, L. J. Muller, J. S. Russell, "Possibilities and Pitfalls of Practitioners in Trying to Apply Change Theory as Viewed Through the Lens of Reinholz, White, and Andrews 'Change theory in STEM higher education: a systematic review'", Forthcoming in the *International Journal of STEM Education*
- 2022 M. Eblen-Zayas, K. M. Burson, D. McDermott, "Course modifications to support student mental health and move towards Universal Design for Learning", *The Physics Teacher* **60**, 628-631, doi:10.1119/5.0051626.
- M. Eblen-Zayas, L. Winton, "Building a Social and Academic Online Bridge to Quantitatively Rich College Coursework", *Numeracy* 15, Iss. 1: Article 3. doi:10.5038/1936-4660.15.1.1408
- 2021 M. Eblen-Zayas, "Promoting transparency when experienced faculty transition to online teaching", *Journal of Faculty Development*, **35** (2), 65
- 2020 M. Eblen-Zayas, E. Altermatt, L. Muller, J. Leamon, S. Richard, "Supporting student quantitative skills across introductory STEM courses: faculty approaches and perceived needs", *2020 Physics Education Research Conference Proceedings*, edited by S. Wolf, M. B. Bennett, and B. W. Frank, 137, doi: [10.1119/perc.2020.pr.Eblen-Zayas](https://doi.org/10.1119/perc.2020.pr.Eblen-Zayas)
- 2019 M. Eblen-Zayas and Janet S. Russell, "Making an online bridge program high touch", *Journal of College Student Development* **60**, 104, doi: [10.1353/csd.2019.0006](https://doi.org/10.1353/csd.2019.0006)
- 2018 M. Eblen-Zayas and R. C. Terrien, "Lessons learned from five years of student self-directed experimental projects in the advanced lab," *2018 Conference on Laboratory Instruction Beyond the First Year of College Proceedings* [Baltimore, MD, July 25-27, 2018], edited by M. Eblen-Zayas, E. Behringer, M. Dark McNeese, and E. Geneston, doi:[10.1119/bfy.2018.pr.003](https://doi.org/10.1119/bfy.2018.pr.003)
- 2016 M. Eblen-Zayas, "The impact of metacognitive activities on student attitudes towards experimental physics," *2016 PERC Proceedings*, edited by D. L. Jones, L. Ding, and A. Traxler, 104, doi:[10.1119/perc.2016.pr.021](https://doi.org/10.1119/perc.2016.pr.021)
- 2015 M. Eblen-Zayas, "Comparing electronic and traditional lab notebooks in the advanced lab," *2015 Conference on Laboratory Instruction Beyond the First Year of College Proceedings*, edited by M. Eblen-Zayas, E. Behringer, and J. Kozminski, doi:[10.1119/bfy.2015.pr.007](https://doi.org/10.1119/bfy.2015.pr.007)
- 2013 M. Eblen-Zayas, "Development of a materials science course to serve diverse constituencies," *ASEE Annual Conference Proceedings*, <https://peer.asee.org/19430>
- 2010 M. Eblen-Zayas, T. Brenner, B. Colwell, C. Carter, B. Schuster, S. Schlotter, "Impact of substrate heating during growth on transport and magnetization response of Eu-rich EuO thin films," *11th Joint MMM/Intermag Conference Digest*, 1170
- 2005 M. Eblen-Zayas, A. Bhattacharya, N.E. Staley, A.L. Kobrinskii, A.M. Goldman, "Ambipolar Gate Effect and Low Temperature Magnetoresistance of Ultrathin $\text{La}_{0.8}\text{Ca}_{0.2}\text{MnO}_3$ Films," *Physical Review Letters* **94**, 037204.
- A. Bhattacharya, M. Eblen-Zayas, N.E. Staley, A.L. Kobrinskii, and A.M. Goldman, "Low-temperature glassy response of ultrathin $\text{La}_{0.8}\text{Ca}_{0.2}\text{MnO}_3$ films to electric and magnetic fields," *Physical Review B* **72**, 132406
- Kevin A. Parendo, K. H. Sarwa B. Tan, A. Bhattacharya, M. Eblen-Zayas, N. E. Staley, A. M. Goldman, "Electrostatic Tuning of the Superconductor-Insulator Transition in Two Dimensions," *Physical Review Letters* **94**, 197004
- 2004 A. Bhattacharya, M. Eblen-Zayas, N.E. Staley, W.H. Huber, A.M. Goldman, "Micromachined SrTiO_3 single crystals as dielectrics for electrostatic doping of thin films," *Applied Physics Letters* **85**, 997

- 1999 N. Fortune, M. Eblen, S. Uji, H. Aoki, J. Yamada, S. Tanaka, S. Maki, S. Nakatsuji and H. Anzai, "Field dependence of the specific heat and magnetothermal effect for α -(BEDT-TTF)₂KHg(SCN)₄ in the density wave and high field ground states," *Synthetic Metals* **103**, 2078

Other publications

- 2014 J. Kozminski, N. Beverley, D. Deardorff, R. Dietz, M. Eblen-Zayas, R. Hobbs, H. Lewandowski, S. Lindaas, A. Reagan, R. Tagg, J. Williams, B. Zwickl, "AAPT Recommendations for the Undergraduate Physics Laboratory Curriculum," Report prepared by a subcommittee of AAPT Committee on Laboratories, https://www.aapt.org/Resources/upload/LabGuidelinesDocument_EBendorsed_nov10.pdf
- 2012 M. Eblen-Zayas, "Review: *Reliability in scientific research: Improving the dependability of measurements, calculations, equipment, and software* by I. R. Walker," *MRS Bulletin* **37**, 967 (2012).
- 2005 K.E. Daniels, M. Eblen-Zayas, A. Michelman-Ribeiro, J.M. Valentine, "Research Funding and Women in Physics," Women in Physics: Second IUPAP International Conference on Women in Physics, *AIP Conference Proceedings* **795**, 41
- K.S. Budil, K.E. Daniels, T. Daniels-Race, M. Eblen-Zayas, B.K. Hartline, R. Hazeltine, A.K. Hodari, K.R. Horton, R. Ivie, L. Kay, L.J. Martinez-Miranda, A. Michelman-Ribeiro, M. Ong, J.I. Rudati, J. Valentine, B. Whitten, E. Williams, Y.V. Zastavker, "Women in Physics in the US: A Progress Report," Women in Physics: Second IUPAP International Conference on Women in Physics, *AIP Conference Proceedings* **795**, 175

PRESENTATIONS – SoTL/Pedagogy/Curricular Design (* indicates presenter)

- 2023 Contributed talk, M. Eblen-Zayas*, L. Muller*, "A Case Study of How STEM Education Practitioners Think about Change Theory, Change Strategies, and Making Relevant Project Choices", 2023 Transforming Institutions Conference, Minneapolis, MN
- Contributed poster, L. Muller*, M. Eblen-Zayas*, "Fostering inter-institutional learning to understand quantitative skills support ecosystems", 2023 Transforming Institutions Conference, Minneapolis, MN
- 2022 Facilitated discussion, Laura Muller*, Melissa Eblen-Zayas*, Lin Winton*, Jonathan Leamon, "Models for engaging faculty and staff on cross-institutional projects", AAC&U 2022 Transforming STEM Education Conference, Alexandria, VA
- Contributed poster, M. Eblen-Zayas*, Laura Muller*, Jonathan Leamon*, Sundi Richard, Ellen Altermatt, Kristin O'Connell, "Faculty impressions of multidisciplinary online modules for quantitative skills review", AAC&U 2022 Transforming STEM Education Conference, Alexandria, VA
- 2021 Contributed poster, Melissa Eblen-Zayas, Janet Russell, "Students Who Thrived: Pandemic Lessons for Sustaining Student Well-being," ISSOTL 2021 (online)
- Contributed talk, Melissa Eblen-Zayas*, Laura Muller, "Educational technology to support DEI at course and institutional levels", AAPT Summer Meeting (online)
- Facilitated discussion, Melissa Eblen-Zayas*, Laura Muller*, J. Leamon, S. Richard, E. Altermatt, E. Iverson, K. O'Connell, "How faculty support student quantitative skills development in online environments," National Numeracy Network Conference (online)
- 2020 Innovation/Ideation Session, Melissa Eblen-Zayas*, Laura Muller*, "Supporting student quantitative skills in online environments," AAC&U Transforming STEM Conference (online)
- Contributed poster, M. Eblen-Zayas*, E. Altermatt, L. Muller, J. Leamon, S. Richard, "Supporting student quantitative skills across introductory STEM courses: Faculty approaches and perceived needs," 1.E2, Physics Education Research Conference (online, paper published in proceedings)
- 2019 Invited talk, "An evolving approach to assessment in upper-level labs," AAPT Summer Meeting, Provo, UT
- 2018 Invited talk, "Experimental design in curricular labs", Conference on Laboratory Instruction Beyond the First Year of College (BFY III Conference), Baltimore, MD
- Contributed poster, R. Terrien* & M. Eblen-Zayas, "Lessons learned from five years of student self-directed experimental projects in the advanced lab", BFY III Conference, Baltimore, MD
- Panelist (with C. Topaz & E. Stevens), "Teaching online in the liberal arts", LACOL Workshop, Carleton College
- 2017 Contributed talk, M. Eblen-Zayas* & J. Russell*, "Online in Summer and Face-to-Face in Fall: An Experimental Bridge Course for Quantitative Skills," Blended Learning in the Liberal Arts Conference, Bryn Mawr College, PA
- Invited talk, "Redesigning an advanced lab course to promote experimental design," APS March Meeting, New Orleans, LA, B40.00002

- Also at University of Minnesota Physics Education Seminar, Minneapolis, MN
 Discussion circle (with E. Evans, J. Russell, S. Taylor), "LACOL: A Consortium of Liberal Arts College Experimenting with Online Learning," EDUCAUSE ELI Annual Meeting, Houston, TX
- 2016 Invited talk, M. Eblen-Zayas* & J. Russell, "A Look into CUBE: Carleton Undergraduate Bridge Experience," LACOL webinar (online)
 Contributed poster, "The impact of metacognitive activities on student attitudes towards experimental physics," Physics Education Research Conference, Sacramento, CA (Paper published in proceedings.)
 Invited talk, "Designing Lab Experiences that Build Experimental Design Skills," AAPT Winter Meeting, New Orleans, LA
 Also at Physics Education Research Group, University of Colorado, Boulder (online)
- 2015 LEAP Session, M. Eblen-Zayas*, D. Gross*, & D. Walser-Kuntz*, "Civic Engagement Models to Foster Integrative Science Education," AAC&U Transforming STEM Education Conference, Seattle, WA
 Contributed poster, M. Eblen-Zayas* & M. Larson*, "Making meaningful curricular connections to campus operations and community initiatives," AASHE Conference, Minneapolis, MN
 Contributed poster, "Comparing electronic and traditional lab notebooks in the advanced lab," Conference on Laboratory Instruction Beyond the First Year of College (BFY II Conference), College Park, MD, (Paper published in proceedings.)
 Panelist (with H. Lewandowski & R. Tagg), "Implementing AAPT Recommendations for the Undergraduate Physics Lab," BFY II Conference, College Park, MD
- 2014 Contributed poster, "Engaging physics majors with academic civic engagement projects," AAPT Summer Meeting, Minneapolis, MN
 Panelist, "Preparing students for quantitative reasoning" LACOL Workshop, Pomona College, Claremont, CA
- 2013 Contributed talk, "Development of a materials science course to serve diverse constituencies," ASEE Annual Conference, Atlanta, GA (Paper published in proceedings.)
 Invited talk, "Rethinking assessment in upper-level lab courses," University of Minnesota Physics Education Seminar, Minneapolis, MN
 Also at University of St Thomas Physics Department, St Paul, MN
- 2012 Contributed talk, "Hands-on performance assessments for electronics," AAPT Summer Meeting, Philadelphia, PA
 Contributed poster, "Emphasizing oral communication skills in an upper-level electronics course," Conference on Laboratory Instruction Beyond the First Year of College, Philadelphia
- 2010 Contributed talk, "Integrating novel writing assignments in intermediate physics courses," MAAAPT/WAPT Fall Meeting, UW River Falls, River Falls, WI
- 2009 Panelist, Discussion of introductory physics labs, MAAAPT Fall Meeting, Augsburg College, Minneapolis, MN
 Contributed poster, M. Eblen-Zayas* & D. Luhman*, "Intermediate and Advanced Labs at Carleton College," APS/AAPT Topical Conference on Advanced Labs, Ann Arbor, MI
 Contributed talk, "Applying New Faculty Workshop Lessons Learned to Intermediate-Level Physics Courses," APS March Meeting, Pittsburgh, PA, D29.12
- 2006 Contributed talk, "Small steps towards incorporating nano concepts in the undergraduate physics curriculum," 2nd NCLT Faculty Workshop on Nanoscale Science & Engineering Education, Cal Poly San Luis Obispo, CA
 Contributed talk, "Networking and mentoring women in physics: Local approaches to a universal challenge", MAAAPT Spring meeting, Hamline University, St. Paul, MN

PRESENTATIONS/WORKSHOPS – Faculty Development & Educational Development

(* indicates presenter/facilitator)

- 2023 Interactive session, Melissa Eblen-Zayas, Ruth Poproski & Matthew Trevett-Smith, "The Art of Collaboration," POD Network Institute for New Educational Developers, Nevada State College
 Interactive session, Melissa Eblen-Zayas, Morgan Iommi, "Effective Practices in Peer Observation of Teaching," POD Network Institute for New Educational Developers, Nevada State College
 Interactive session, Melissa Eblen-Zayas, "Supporting STEM Faculty: Stereotypes and Surprises," POD Network Institute for New Educational Developers, Nevada State College

- 2022 ACM Faculty Teaching Fellows Workshop, M. Eblen-Zayas*, K. Elliott*, L. Epstein*, V. Morse*, “Peer observation of teaching”, St Olaf College
Online talk, “Reflecting on confusion, collaboration, and cognition in the science classroom”, SUNY Plattsburgh Center for Teaching Excellence
- 2021 Interactive on-demand session, T. Bartholomew*, M. Eblen-Zayas*, L. Ludwig*, A. Montgomery*, “Leveraging lessons learned and relearned during COVID-19 for the future,” POD Network Annual Conference 2021 (online)
Invited talk, “TILT assignments to support the success of students from diverse backgrounds”, Denison University (online)
Online workshop, “Looking Forward: What are the ‘Keepers’ from Online and Hybrid Teaching”, Lewis & Clark College Teaching Excellence Program
Invited talk, “Effective practices in peer evaluation of teaching,” Hamilton College (online)
- 2020 Online workshop, “Engagement as a crucial element of resilient course design,” Trinity College (CT)
Online workshop, “Resilient course design that fosters engagement and builds community,” College of St Benedict/St John’s University
Online workshop series, “Resilient course design: Design your course once for multiple scenarios”, “Resilient course design: Building community even in an online environment”, “Resilient course design: Assignments, assessment, & feedback”, Wesleyan University
Online workshop, M. Eblen-Zayas*, V. Morse*, D. Steen Fatkin*, “Designing Your Course Once for Multiple Modalities,” ACM Online Course Design & Pedagogies Workshop Series
Invited talk, “Building Community in Online Environments,” Claremont Colleges Center for Teaching & Learning webinar
Online workshop, “Building Community with Students When They’re Off Campus - Lessons from Carleton’s Online Summer CUBE”, LACOL 2020 Virtual Workshop
Invited talk, “Creating a High-Touch Online Summer Bridge Program,” Academic Impressions webinar
- 2019 LACOL QLAB round robin conversations & workshops, M. Eblen-Zayas*, S. Richard*, L. Muller*, and J. Leamon*, programming that included over 75 social science and science faculty at Carleton, Davidson, and Williams Colleges in the development of prototype online modules to support student QS review and practice
Panelist (with B. Nagel & F. Rogers), “Faculty Development and Student Learning: Sustaining a faculty culture that highly values teaching”, COFHE Assembly Meeting, Williams College
- 2018 Contributed poster, Celeste Sharpe*, Sarah Calhoun*, Melissa Eblen-Zayas, Iris Jastram, Kristin Partlo, Janet Russell*, “Perspectives on Connecting SoTL across the (Co-)Curriculum at a Small Liberal Arts College”, ISSOTL18, Bergen, Norway
- 2017 Contributed poster, K. O’Connell* & M. Eblen-Zayas, “Making Connections: How a Small Learning and Teaching Center Has a Big Impact”, NSEC Conference, New Orleans, LA
- 2015 Workshop, “Communicating physics in and beyond the laboratory,” Telling it like it is: Teaching scientists how to communicate effectively, Amherst College, Amherst, MA

PRESENTATIONS – Physics (* indicates presenter; _ indicates Carleton College undergraduate)

- 2021 Invited talk, “Phase inhomogeneity in EuO_{1-x} ”, Bard College physics colloquium
- 2020 Invited talk, “Phase inhomogeneity in EuO_{1-x} ”, APS Midwest Conference for Undergraduate Women in Physics, University of Minnesota
- 2017 Invited talk, “Correlated electron materials: the fun begins when the models break down”, College of St Scholastica School of Sciences Seminar
Invited talk, “Phase inhomogeneity in EuO_{1-x} ”, Williams College physics colloquium
- 2015 Invited talk, “Eu-rich EuO and the manganites: How similar?” Kent State University Physics Department Colloquium, Kent, OH
- 2014 Contributed poster, B. Goodge*, L. Hellwig*, M. Eblen-Zayas, “Transport and magnetoresistance response of EuO_{1-x} films fabricated by two different methods,” APS March Meeting, Denver, CO, C1.00080
- 2013 Contributed poster, L. Hellwig*, C. Beckner*, M. Eblen-Zayas, “The colossal magnetoresistance response of EuO_{1-x} thin films,” APS March Meeting, Baltimore, MD, V1.00132
- 2011 Contributed poster, B. Colwell*, A. Kinsey*, S. Schlotter*, M. Eblen-Zayas, “Characterization of EuO_{1-x} thin films grown by oxidation of metallic Eu,” APS March Meeting, Dallas, TX, K1.193

- 2010 Contributed talk, S. Schlotter^{*}, T. Brenner, C. Carter, B. Colwell, A. Kinsey, B. Schuster, M. Eblen-Zayas, "Magnetic and transport properties of EuO films fabricated by oxidation of Eu metal films," APS March Meeting, Portland, OR, P37.00002
Contributed poster, M. Eblen-Zayas^{*}, T. Brenner, B. Colwell, C. Carter, B. Schuster, S. Schlotter, "Impact of substrate heating during growth on transport and magnetization response of Eu-rich EuO thin films," Joint MMM/Intermag Conference, Washington, DC, ER-15
- 2009 Invited talk, "Eu-rich EuO as a laboratory for exploring colossal magnetoresistance" Williams College physics colloquium
Also at Macalester College physics colloquium & St. Olaf College physics colloquium
Invited talk, "Transport and magnetotransport in Eu-rich EuO thin films," University of Minnesota condensed matter seminar
Contributed poster, T. Brenner^{*}, M. Eblen-Zayas, "Growth and characterization of EuO thin films," APS March Meeting, Pittsburgh, PA, K1.129
- 2008 Invited talk, "Eu-rich EuO as a laboratory for exploring colossal magnetoresistance", University of Northern Iowa physics colloquium
Contributed talk, Pinshane Huang^{*}, Tom Brenner^{*}, M. Eblen-Zayas, "Hands-on Green Physics: Making your own biodegradable plastics and dye-sensitized solar cells," MAAAPT Spring Meeting, Macalester College
- 2006 Invited talk, "CMR responses: Nanoscale inhomogeneity and colossal responses" St. Olaf Physics Colloquium, Northfield, MN
Also at Smith College Physics Lunch, Northampton, MA
Invited talk, "Electrical modulation of colossal magnetoresistive materials" Amherst College Physics Colloquium, Amherst, MA
- 2005 Invited talk, "Low temperature response of ultrathin manganite films in a field-effect geometry" Argonne National Laboratory Materials Science Division, Argonne, IL
Also at Dartmouth College Quantum/Nanophysics Seminar, Hanover, NH
Contributed poster, M. Eblen-Zayas^{*}, A. Bhattacharya, N.E. Staley, A.L. Kobrinskii, A.M. Goldman, "Low temperature response of ultrathin manganite films in a FET geometry," 2nd IUPAP International Conference on Women in Physics, Rio de Janeiro, Brazil
Contributed talk, M. Eblen-Zayas^{*}, A. Bhattacharya, N.E. Staley, A.L. Kobrinskii, A.M. Goldman, "Glassy response to gate and magnetic fields in ultrathin manganite films," APS March Meeting, Los Angeles, CA, J41.004
- 2004 Invited talk, "Low temperature response of ultrathin manganite films in a field-effect geometry," Materials Physics Branch, Naval Research Labs, Washington, DC
Contributed talk, M. Eblen-Zayas^{*}, A. Bhattacharya, N.E. Staley, A.L. Kobrinskii, A.M. Goldman, "Ultrathin manganites in FET geometry: device fabrication and characterization," APS March Meeting, Montreal, Canada, Y24.002
- 2003 Invited talk, "Electrostatic Modulation of the Superconductor-Insulator Transition", St. Olaf College Physics Department Colloquium
Contributed talk, M. Eblen-Zayas^{*}, A. Bhattacharya, N.E. Staley, "Breakdown studies of single crystal SrTiO₃ and sputtered Al₂O₃," APS March Meeting, Austin, Texas, X25.008
- 1999 Contributed talk, M. Eblen^{*}, N. Fortune, M. Naughton, "Comparative Calorimetric Study of Spin-Density-Wave Transitions in (TMTSF)₂PF₆ and (TMTSF)₂ClO₄" APS Centennial Meeting, Atlanta, Georgia, QC01.05

GRANTS, FELLOWSHIPS, & AWARDS

External

- 2019- National Science Foundation Division of Education IUSE: "Online modules for quantitative skill building:
2024 Exploring adaption and adoption across a consortium", PI: Melissa Eblen-Zayas, Co-PIs: Sundi Richard, Davidson College, Laura Muller & Jonathan Leamon-Morgan, Williams College, Amount: \$290,940
- 2022- Associated Colleges of the Midwest Faculty Career Enhancement (FaCE) Grant: "The Faculty Teaching Fellows
2023 Program", PI: Louis Epstein, St Olaf College, Co-PIs: Melissa Eblen-Zayas & Victoria Morse, Carleton College, Kate Elliot, Luther College, Amount: \$32,500.
- 2017- Associated Colleges of the Midwest Hybrid and Online Curricular Resources Grant: "Supporting Student
2018 Quantitative Skills Development across the Curriculum with Qbit Online Modules", Melissa Eblen-Zayas, Nathan Grawe, Deborah Gross, Daniela Kohen, Aaron Swoboda, Amount: \$16,975.

- 2010- National Science Foundation Major Research Instrumentation MRI-R²: “Acquisition of an x-ray diffractometer for
2013 powder and thin film materials characterization”, PI: Melissa Eblen-Zays, Co-PIs: Cam Davidson & Steve Drew, Amount: \$305,000.
- 2008- National Science Foundation Division of Materials Research RUI: “EuO Thin Films as a Laboratory for Exploring
2013 Metal-Insulator Transitions and Colossal Magnetoresistance”, PI: Melissa Eblen-Zayas Amount: \$144,590.
- 2007- Research Corporation Cottrell College Science Award: “Exploration of possible phase inhomogeneity in EuO thin
2010 films exhibiting a colossal magnetoresistance response” Amount: \$22,911 with \$10,035 in matching funds.
- 2001- National Science Foundation Graduate Research Fellowship
2004

Institutional

- 2015 Carleton College HHMI Curriculum Development Grant, “Integrating Electronics, Robotics, and Intro Computer
Science”, with S. Mohring and D. Musicant
Minnesota Campus Compact Presidents’ Civic Engagement Steward Award
- 2014 Broadening the Bridge Grant (Carleton-St Olaf Mellon-funded initiative), “Exploring opportunities for
departmental resonance in physics and astronomy,” with B. Borovsky of St. Olaf.
Carleton College Curriculum Innovation Grant, “Combining computation and experimentation to visualize physical
systems,” with B. Titus and M. Baylor.
Carleton College HHMI Course Development Grant, “Expanding community partner networks around energy and
materials life cycle issues.”
- 2013 Carleton College HHMI Course Development Grant, “Connecting CS and physics through computer
microarchitecture”, with S. Goings.
- 2009 Carleton College HHMI Course Development Grant, “Modeling and measuring materials’ properties in
introductory physics.”
- 2008-09 Carleton College Large Faculty Development Grant – Eugster and Class of ’49 Fellowships
- 2004-05 University of Minnesota Doctoral Dissertation Fellowship
- 1999-00 University of Minnesota First-year Graduate School Fellowship
- 1999 Smith College Phi Beta Kappa; Smith College Sigma Xi

PROFESSIONAL COMMUNITY INVOLVEMENT

- Service to American Association of Physics Teachers (AAPT), American Physical Society (APS):*
- Elected APS/AAPT Member-at-large, APS Forum on Education Executive Committee 2021-2023
 - Reviewer for “Introductory Courses for STEM Majors” in “A Guide to Effective Practices
for Physics Programs (EP3)”, S. McKagan, D.A. Craig, M. Jackson, and T. Hodapp, Eds.,
(American Physical Society, College Park, MD, Version 2021.1) 2021
 - Committee for the *American Journal of Physics* Five-Year Review 2019-2020
 - Minnesota AAPT Chapter President 2016-2018
 - Minnesota AAPT Chapter Vice-President 2014-2016
 - Reviewer, APS & AAPT Joint Task Force on Undergraduate Physics
Programs, *Phys21: Preparing Physics Students for 21st Century Careers* 2016
 - AAPT Committee on Laboratories 2013-2016
 - Selection Committee, APS Reichert Award for Advanced Lab Instruction 2013-2014
 - Minnesota AAPT Chapter Treasurer 2006-2014
 - AAPT Committee on Graduate Education 2006-2009

External reviewer:

- Physics program/department reviews at Loyola University (New Orleans, LA),
Marquette University (Milwaukee, WI), Nebraska Wesleyan University (Lincoln, NE),
Reed College (Portland, OR), Simpson College (Indianola, IA), Wellesley College
(Wellesley, MA), and Ursinus College (Collegeville, PA)
- Reviewer for promotion and tenure files at eight different liberal arts colleges

Additional professional involvement and professional development:

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|---|--------------|
| Science consulting team, Sherman Fairchild Foundation | 2017-present |
| HERS Leadership Institute | 2023 |
| POD Network Institute for New Educational Developers Faculty | 2023 |
| AAC&U Teaching to Increase Diversity & Equity in STEM (TIDES) Institute | 2021 |
| Organizing Committee, Conference on Laboratory Instruction Beyond the First Year of College (BFY III) | 2017-2018 |
| Editor, BFY III Conference Proceedings | 2018 |
| Organizing Committee, LACOL QS/QR Hack-a-thon | 2016-2017 |
| Organizing Committee, Conference on Laboratory Instruction Beyond the First Year of College (BFY II) | 2014-2015 |
| Editor, BFY II Conference Proceedings | 2015 |
| PKAL Summer Leadership Institute for STEM Faculty | 2011 |
| US delegation to 2 nd IUPAP International Conference on Women in Physics | 2005 |

INSTITUTIONAL INVOLVEMENT at Carleton College

Administrative roles:

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|--|-----------|
| Director, Perlman Center for Learning and Teaching | 2016-2020 |
| Department Chair, Physics & Astronomy | 2012-2016 |
| Coordinator, Science Fellows Program | 2011-2014 |

College-wide committees:

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|---|--------------|
| Education and Curriculum Committee | 2022-present |
| Community, Equity, Diversity, Inclusion Leadership Board | 2021-present |
| Faculty co-chair | 2022-present |
| Future Learning Technology Group | 2013-2017 |
| Faculty Personnel Committee | 2014-2016 |
| Budget Committee | 2010-2012 |
| Budget Committee Representative to Faculty Compensation Committee | 2010-2012 |
| Junior Faculty Affairs Committee | 2009-2010 |
| Institutional Animal Care and Use Committee | 2007-2008 |
| Learning and Teaching Center Advisory Board | 2006-2008 |

Additional campus involvement:

| | |
|---|--------------|
| STEM Board | 2021-present |
| Strategic Planning Community Advisor: Community of Belonging Task Force | 2022-2023 |
| Faculty Working Group: Student Sampling Procedures | 2019-2020 |
| Public Works Grant Committee (Mellon-funded grant initiative) | 2017-2020 |
| Maker Space Planning Group | 2017-2018 |
| Environmental Studies Steering Committee | 2015-2018 |
| Civic Engagement Advisory Board | 2016-2017 |
| Science Facilities Planning Group | 2014-2016 |
| Science and Math Steering Committee (formerly CISMI) | 2006-2016 |
| Facilities Master Planning – Science and Math Facilities Subcommittee | 2013-2014 |
| Environmental Studies Curriculum Committee | 2011-2014 |
| Strategic Planning Working Group: Faculty and Staff Compensation | 2011-2012 |
| Clare Booth Luce Scholars Coordinator | 2011-2012 |

Faculty development facilitation:

| | |
|---|-----------|
| Workshop organizer/facilitator: | |
| On-ramping Students for Success Workshop | 2021 |
| New Faculty Workshop | 2016-2019 |
| Active Learning Spaces Workshop | 2019 |
| Effective & Efficient Feedback Workshop | 2018 |
| Inclusive Classrooms Faculty Learning Community | 2017 |

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| Book group facilitator: | |
| Eaton et al., <i>Improving Learning and Mental Health in the College Classroom</i> | 2023 |
| Stewart & Valian, <i>An Inclusive Academy: Achieving Diversity & Excellence</i> | 2019 |
| Gazzaley & Rosen, <i>The Distracted Mind: Ancient Brains in a High-Tech World</i> | 2019 |
| Ross, <i>Everyday Bias: Identifying and Navigating Judgments in our Daily Lives</i> | 2017 |
| Massé & Hogan, <i>Over Ten Million Served: Gendered Service...</i> | 2013 |
| New faculty mentor | 2011-13, 2021-22 |

PROFESSIONAL MEMBERSHIPS

American Physical Society, American Association of Physics Teachers, Council on Undergraduate Research, POD Network