Patti C. Hamerski

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Department of Physics
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EDUCATION

Ph.D. in Physics (Physics Education Research)   2021
Michigan State University   East Lansing, MI
Dissertation: *Centering students' perspectives in computation-integrated physics curricula*

B.S. in Physics   2016
B.S. in Mathematical Sciences   Pittsburgh, PA
Carnegie Mellon University

PROFESSIONAL APPOINTMENTS

Assistant Professor   2023 – Present
Department of Physics   Corvallis, OR
Oregon State University

Assistant Professor, Fixed-Term   2021 – 2023
Department of Computational Mathematics, Science and Engineering   East Lansing, MI
Michigan State University

Graduate Research Assistant   2019 – 2021
Department of Physics and Astronomy   East Lansing, MI
Michigan State University

PUBLICATIONS

P. C. Hamerski and L. Nearhood. Student-developed collective coding guides in disciplinary computing. ITiCSE 2026: Proceedings of the 31st ACM Conference on Innovation and Technology in Computer Science Education (Madrid, Spain, 2026). Accepted.

P. C. Hamerski and P. Her. Generative AI and student agency in computational physics problem-solving (funded by NSF-IUSE). Proceedings of 2026 American Society for Engineering Education Conference (Charlotte, NC, 2026). Accepted.

L. Nearhood and **P. C. Hamerski**. Student experiences in a computational physics lab through the lens of physics computational literacy. Proceedings of the 2025 Physics Education Research Conference (Washington, DC, 2025). 10.1119/perc.2025.pr.Nearhood

P. Her and **P. C. Hamerski**. Investigating student perceptions of creativity and generative AI in computational physics. Proceedings of the 2024 Physics Education Research Conference (Boston, MA, 2024). 10.1119/perc.2024.pr.Her

P. C. Hamerski. Generative AI as a Resource for Creativity in Computational Physics. SIGCSE 2024: Proceedings of the 55th ACM Technical Symposium on Computer Science Education (Portland, OR, 2024). 10.1145/3626253.3635595

D. W. Silvia, M. D. Caballero, T. Finzell, R. Frisbie, **P. C. Hamerski**, E. Bolger, S. Castle, R. Roca, and P. Tourangeau. Computing in Support of Disciplinary Learning. SIGCSE 2023: Proceedings of the 54th ACM Technical Symposium on Computer Science Education (Toronto, Canada, 2023). 10.1145/3545947.3573341

P. C. Hamerski, D. McPadden, M. D. Caballero, and P. W. Irving. Students' perspectives on computational challenges in physics class. Physical Review Physics Education Research 18, 020109 (2022). 10.1103/PhysRevPhysEducRes.18.020109

P. C. Hamerski, D. Silvia, and M. D. Caballero. Exploring Self-Efficacy in Data Science. ITiCSE 2022: Proceedings of the 27th ACM Conference on Innovation and Technology in Computer Science Education (Dublin, Ireland, 2022). 10.1145/3502717.3532131

M. Kubsch and **P. C. Hamerski**. Dynamic Energy Transfer Models, The Physics Teacher 60, 583 (2022). 10.1119/5.0037727

P. C. Hamerski, P. W. Irving, and D. McPadden. Learning assistants as student-partners in introductory physics. Physical Review Physics Education Research 17, 020107 (2021). 10.1103/PhysRevPhysEducRes.17.020107

J. N. Bumler, **P. C. Hamerski**, M. D. Caballero, and P. W. Irving. How do previous coding experiences influence undergraduate physics students? Proceedings of the 2019 Physics Education Research Conference (Provo, UT, 2019). 10.1119/perc.2019.pr.Bumler

P. C. Hamerski, P. W. Irving, and D. R. McPadden. Learning Assistants as constructors of feedback: How are they impacted? Proceedings of the 2018 Physics Education Research Conference (Washington, DC, 2018). 10.1119/perc.2018.pr.Hamerski

D. R. McPadden, **P. C. Hamerski**, M. D. Caballero, and P. W. Irving. Feedback as a mechanism for improving students' communication skills. Proceedings of the 2018 Physics Education Research Conference (Washington, DC, 2018). 10.1119/perc.2018.pr.McPadden

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INVITED PRESENTATIONS

P. C. Hamerski. Supporting Student Success in Computing and Physics (November 2024). Invited seminar presented at University of Washington Bothell Physics Seminar. Bothell, WA.

P. C. Hamerski. Factors of Student Success in Computing and Physics (February 2024). Invited seminar presented at Michigan State University Physics Education Research Seminar. East Lansing, MI.

CONTRIBUTED PRESENTATIONS

P. Her and **P. C. Hamerski**. Can generative AI be a partner in student decision-making in computational physics? (March 2026). Contributed talk presented at the APS Global Physics Summit. Denver, CO.

P. C. Hamerski and D. Skinner. Embracing uncertainty in physics: A course for improving contemporary physics culture (March 2025). Contributed talk presented at the APS Global Physics Summit. Anaheim, CA.

L. Nearhood and **P. C. Hamerski**. A Student Centered Approach to Understanding the Dynamics of A Computational Physics Lab Course (March 2025). Contributed talk presented at the APS Global Physics Summit. Anaheim, CA.

P. Her and **P. C. Hamerski**. Characterizing creativity and generative AI in physics (March 2025). Contributed talk presented at the APS Global Physics Summit. Anaheim, CA.

P. Her and **P. C. Hamerski**. Investigating student perceptions of creativity and generative AI in computational physics (July 2024). Contributed posters presented at the AAPT 2024 Summer Meeting and PERC 2024. Boston, MA.

L. Nearhood and **P. C. Hamerski**. Computing the tension: An activity theoretic analysis of a computational physics lab (July 2024). Contributed posters presented at the AAPT 2024 Summer Meeting and PERC 2024. Boston, MA.

P. C. Hamerski. Generative AI as a Resource for Creativity in Computational Physics (March 2024). Contributed poster presented at SIGCSE 2024. Portland, OR.

P. C. Hamerski. Factors of Student Success in Computing and Physics (October 2023). Contributed talk presented at Oregon AAPT 2023 Fall Meeting. Bend, OR.

D. W. Silvia, M. D. Caballero, T. Finzell, R. Frisbie, **P. C. Hamerski**, E. Bolger, S. Castle, R. Roca, and P. Tourangeau (March 2023). Computing in Support of Disciplinary Learning. Birds of a Feather session delivered at SIGCSE 2023. Toronto, Canada.

P. C. Hamerski, D. Silvia, and M. D. Caballero (July 2022). Exploring Self-Efficacy in Data Science. Contributed poster presented at ITiCSE 2022. Dublin, Ireland.

P. C. Hamerski (June 2022). Exploring Self-Efficacy in Introductory Computational Science. Contributed talk presented at the Oslo PER Summer Institute. Oslo, Norway.

P. C. Hamerski, D. McPadden, M. D. Caballero, and P. W. Irving (March 2022). Dispositions and mindset in computation-integrated physics. Contributed poster presented at the AERA 2022 Annual Meeting. San Diego, CA.

P. C. Hamerski, D. McPadden, M. D. Caballero, and P. W. Irving (July 2021). Dispositions and mindset in computation-integrated physics. Contributed poster presented at PERC 2021. (Virtual

Conference)

P. C. Hamerski, D. McPadden, M. D. Caballero, and P. W. Irving (April 2021). "What's the Point?" Student Perspectives on Computation in Physics Class. Contributed poster presented at the AERA 2021 Summer Meeting. (Virtual Conference)

P. C. Hamerski, D. McPadden, M. D. Caballero, and P. W. Irving (April 2021). What's the Point? Student Perspectives on Computation in Physics Class. Contributed poster presented at NARST 2021. (Virtual Conference)

P. C. Hamerski, P. W. Irving, and D. McPadden (July 2020). Formative feedback mechanism shaped by Learning Assistants. Juried talk presented at PERC 2020. (Virtual Conference)

P. C. Hamerski, D. McPadden, M. D. Caballero, and P. W. Irving (July 2020). Case study on the computational experiences of high school physics students. Contributed talk presented at the AAPT 2020 Summer Meeting. (Virtual Conference)

P. C. Hamerski, M. D. Caballero, and P. W. Irving (April 2020). Multisited comparison of computational physics identity development for high school students [Structured Poster Session]. AERA 2020 Annual Meeting. San Francisco, CA. (Conference Canceled)

P. C. Hamerski, D. McPadden, and P. W. Irving (October 2019). A formative feedback mechanism shaped by Learning Assistants. Contributed talk presented at the Learning Assistant Research Symposium. Boulder, CO.

P. C. Hamerski, D. McPadden, M. D. Caballero, and P. W. Irving (July 2019). The figured world of a high school physics class with integrated computation. Contributed talk and poster presented at the AAPT 2019 Summer Meeting. Contributed poster presented at PERC 2019. Provo, UT.

J. N. Bumler, **P. C. Hamerski**, M. D. Caballero, and P. W. Irving (July 2019). How do previous coding experiences influence undergraduate physics students? Contributed talk and poster presented at the AAPT 2019 Summer Meeting. Contributed poster presented at PERC 2019. Provo, UT.

P. C. Hamerski, P. W. Irving and D. McPadden (October 2018). Learning assistants as constructors of feedback: How are they impacted? Contributed talk presented at the Michigan AAPT 2018 Fall Meeting. Interlochen, MI.

P. C. Hamerski, P. W. Irving and D. McPadden (September 2018). Learning assistants as constructors of feedback: How are they impacted? Contributed poster presented at the STEM Education Alliance fall reception. East Lansing, MI.

P. C. Hamerski, P. W. Irving, and D. McPadden (July 2018). Learning Assistants as constructors of feedback: How are they impacted? Contributed talk and poster presented at the AAPT 2018 Summer Meeting. Contributed poster presented at PERC 2018. Washington, DC.

D. McPadden, **P. C. Hamerski**, M. D. Caballero, and P. W. Irving (July 2018). Feedback as a mechanism for improving students' communication skills. Contributed poster presented at PERC 2018. Washington, DC.

D. McPadden, **P. C. Hamerski**, M. D. Caballero, and P. W. Irving (July 2018). Students' experiences with skills progressions in EMP-Cubed. Contributed talk presented at the AAPT 2018 Summer Meeting. Washington, DC.

P. C. Hamerski, D. McPadden, P. W. Irving, and M. D. Caballero (March 2018). Progression of Student Feedback and Computational Skills in P-Cubed. Contributed talk presented at the joint meeting of the Ohio-Region APS and the Michigan AAPT. East Lansing, MI.

P. C. Hamerski, P. W. Irving, and M. D. Caballero (July 2016). Exploring the role of design problems in the physics classroom. Contributed posters presented at the AAPT 2016 Summer Meeting and PERC 2016. Sacramento, CA.

AWARDS AND HONORS

STEM Teaching & Learning Fellow   2022 – 2023
Michigan State University

Physical Review Physics Education Research Editor's Suggestion   2022
Article: "Students' perspectives on computational challenges in physics class"

Bailey Scholars Program Graduate Fellow   2019 – 2020
Michigan State University

Excellence-in-Teaching Citation   2019
Michigan State University
College of Natural Science

Outstanding Graduate Teaching Assistant Award   2018
Michigan State University
Department of Physics and Astronomy

Phi Beta Kappa Society 2016
Carnegie Mellon University

TEACHING

Oregon State University

PH 364: Computational Modeling in Physics	Spring 2026
PH 403: Thesis	Spring 2026
	Winter 2026
	Fall 2025
	Spring 2025
	Winter 2025
	Fall 2024
PH 367: Computational Physics Lab III	Spring 2025
	Spring 2024
PH 366: Computational Physics Lab II	Winter 2025
	Winter 2024
PH 365: Computational Physics Lab I	Fall 2024
	Fall 2023

Michigan State University

CMSE 201: Introduction to Computational Modeling and Data Analysis	Spring 2023
	Fall 2022
	Fall 2021
STT/CMSE 180: Introduction to Data Science	Spring 2023
Lead faculty instructor for multi-section course	Spring 2022
ANR 410: Integrated Learning Transitions	Spring 2020

ANR 210: Pathways in Integrated Learning	Fall 2019
PHY 184: Physics for Scientists and Engineers II	Spring 2019
Section: Electricity and Magnetism Projects & Practices in Physics	Fall 2018
	Spring 2018
	Fall 2017

FUNDING

NSF IUSE: EDU Award #2417052   2024 – 2027
Generative Artificial Intelligence as Creative Practice in Computational Physics Education
$393,865

PROJECTS

Generative AI in Computational Physics   2023 – Present
Oregon State University
- Leading an NSF-funded project, Generative Artificial Intelligence as Creative Practice in Computational Physics Education
- Planned integration of generative AI-based activities into computational physics courses and designed research to investigate connections between generative AI and development of creativity
- Mentoring graduate student researcher Pachi Her on curriculum development, research design, and qualitative research methods

Transfer Advocacy Alliance for Physics Success   2024 – Present
Oregon State University
- Conducted interviews with undergraduate physics transfer students to build understanding of a diverse set of transfer-based challenges
- Formed a working group and initiated meetings of the Transfer Advocacy Alliance for Physics Success (TAAPS), a group of faculty and undergraduate transfer students in the OSU physics department committed to improving support for transfer experiences
- Negotiated shared vision with TAAPS group for improving departmental culture and streamlining flow of information to transfer students considering physics at OSU
- Continuing to work with TAAPS to build out plan for institutional change through a peer men-

torship program

Computational Science Self-efficacy   2021 – 2023
Michigan State University
- Collaborated as a member of the Computation Education Research Lab in the Department of Computational Mathematics, Science and Engineering (CMSE)
- Designed a research study on characterizing computational science self-efficacy for students in an introductory CMSE course
- Conducted research interviews, carried out theory-driven and data-driven coding for self-efficacy, developed a codebook, and crafted findings from students' experiences

Integrating Computation in Science Across Michigan   2018 – 2021
Michigan State University and high schools throughout Michigan
- Carried out research and facilitated teacher professional development as a member of an NSF-funded project, Integrating Computation in Science Across Michigan (ICSAM)
- Recruited teachers for professional development around integrating computing into physics, supported teacher efforts during the academic year, and ran data collection for related research projects
- Co-designed and facilitated ICSAM workshops to help teachers create and share computational physics curricular materials and address equity imbalances using data collected from their classrooms
- Carried out my own research agenda on building qualitative case studies of the perspectives of high school students who were learning newly implemented computing-integrated physics content in their courses

Learning Assistant Partnerships   2018 – 2020
Michigan State University
- Carried out a research project for a graduate-level physics education research course and expanded it into a larger qualitative study
- Interviewed Learning Assistants (LAs) in physics about how their teaching role impacted their professional development and group work skills in other contexts
- Expanded the project into a case study on the partnership-like nature of being an LA, collecting additional data from a faculty member interview, email correspondences with LAs, and teaching artifacts
- Disseminated findings and implications, which spanned different ways to leverage LA expertise through their partnerships across the broader teaching staff and their membership within the course community.

CURRICULUM DEVELOPMENT

Computational Physics Courses   2023 – Present

Oregon State University

- Aligned learning objectives of computational physics labs with best practices in disciplinary computing and relevant content in simultaneously offered junior-level physics courses
- Updated all course activities and wrote several in-class assignments and instructor solution guides from scratch to meet the needs of re-aligned learning objectives and fill in missing materials
- Developing new course on computational modeling in physics to support physic curricular changes to increase the computational offerings of the undergraduate physics program

Careers in Physics and Thesis Writing   2024 – Present

Oregon State University

- Redesigned syllabi and course schedules to convert physics thesis writing course sequence into one career engagement writing course and a shorter sequence of thesis writing courses
- Developing content for new course on career engagement and updated courses on thesis writing

Difference, Power, and Oppression   2024 – Present

Oregon State University

- Attended workshops from OSU's Difference, Power, and Oppression (DPO) Program to learn how to develop inclusive curriculum that addresses institutionalized systems of power, privilege, and inequity, both broadly and within the physics discipline
- Co-developed new course from scratch with a physics colleague to meet need for a course that addresses DPO within the field of physics
- Designed course around best practices in inclusive curriculum development, including citational justice, Universal Design for Learning, and labor-based grading
- Developing finer grain day-to-day course materials in an ongoing collaborative manner

STEM Teaching & Learning Fellowship   2022 – 2023

Michigan State University

- Joined the STEM Teaching & Learning Fellowship team, a group of faculty curriculum developers in STEM departments supported by an NSF-funded project, Extending A Coherent Gateway to STEM Teaching and Learning
- Learned backwards design as a tool to promote and structure three-dimensional learning in scientific disciplines
- Collaborated with other faculty fellows to redesign introductory computational modeling and data science assignments where students learn to clean dirty data and use compartmental modeling to explore relationships between differential equations

Introductory Computational Science Courses   2021 – 2023

Michigan State University
- Taught and developed curriculum in the Department of Computational Mathematics, Science and Engineering (CMSE)'s introductory computational science courses
- Updated instructor solution guides to incorporate facilitation questions and strategies, rewrote out-of-date in-class project assignments, and recorded a lecture series for an introductory data science course
- Incorporated activities and discussions on data justice into multiple CMSE courses

Liberty Hyde Bailey Scholars Program   2019 – 2020
Michigan State University
- Joined the Liberty Hyde Bailey Scholars Program community as a graduate fellow course convener, meaning co-instructor for Bailey courses, which students took as part of earning a minor in Leadership in Integrated Learning
- Co-led in-class curriculum development together with another graduate fellow and students by facilitating discussions and enabling students share their interests and passions by planning class periods and constructing co-learning opportunities
- Co-organized course activities with students and guided their development of curricular agency and leadership among their peers
- Participated in community activities hosted by students in the Bailey community space

Electricity and Magnetism Projects & Practices in Physics   2017 – 2019
Michigan State University
- Helped develop materials for Electricity and Magnetism Projects & Practices in Physics (EMP-Cubed), a flipped course that incorporates VPython computational problems into introductory physics
- Co-planned the development of weekly notes and video lectures, pre-/post-class homework sets, weekly in-class projects, and instructor solution guides
- Created in-class projects, solution guides, and example problems to accompany the weekly notes

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RESEARCH MENTORSHIP

Oregon State University

Graduate Students
Pachi Her   Winter 2024 – Present
Luke Nearhood   Fall 2023 – Present

Undergraduate Students

Michigan State University

Undergraduate Students
Paige Tourangeau   Spring 2022 – Summer 2023
Jake Rodgers   Summer 2022 – Spring 2023
Jacqueline N. Bumler   Spring 2019 – Fall 2019
Matthew Dew   Summer 2019

PROFESSIONAL WORKSHOPS AND TRAININGS

Career Champions   Spring 2025
Difference, Power, and Oppression Academy II: Advanced   Summer 2024
Difference, Power, and Oppression Academy I: Foundations   Spring 2024
Core Education Course Adaptation and Design Institute   Spring 2024
Entering Mentoring Workshop 1   Spring 2024
Teaching and Artifical Intelligence Faculty Learning Community   Winter 2024
Writing Intensive Course Faculty Seminar   Fall 2023

PROFESSIONAL SERVICE

Department Service
Diversity, Inclusion, Climate, and Equity Committee (Chair)   Fall 2024 – Present
Core Advising Committee   Fall 2024 – Present
Physicists for Inclusion Faculty Advisor   Fall 2024 – Present
Promotion and Tenure Committee   Fall 2024 – Present
Upper Division Curriculum Committee   Fall 2023 – Present
Graduate Curriculum Committee   Fall 2023 – Present
Graduate Admissions Committee   Fall 2024 – Winter 2024

University Service
Group on Exploring Virtual Reality & Immersive Learning   Spring 2025
Faculty Senate Administrative Appointments Committee   Fall 2024 – Present
Beaver Connect Faculty Mentor   Fall 2024

Panel Reviewing
National Science Foundation   2024

Journal Reviewing
Journal for STEM Education Research   2023
Physical Review Physics Education Research   2021 – 2023
Computer Science Education   2022
The Physics Teacher   2021 – 2022

Conference Reviewing
Physics Education Research Conference   2018 – 2019, 2024
Technical Symposium on Computer Science Education   2022
National Association for Research in Science Teaching   2020 – 2021
Learning Assistant Research Symposium   2019

Professional Memberships
American Physical Society   2024 – Present
Association for Computing Machinery   2022 – Present
American Association of Physics Teachers   2016 – 2021, 2024 – Present
American Educational Research Association   2019 – 2022

PUBLIC OUTREACH

Presenter   2021
"The Physics of Javelin"
Michigan Science Festival

Mentor and Co-organizer   2020
TARDIS High School Outreach Program
Michigan State University and East Lansing High School

Volunteer   2018 – 2019
Physics and Astronomy Day
Impression 5 Science Center
Lansing, MI