



Cornell University



Meagan Sundstrom

PhD Candidate, Cornell University
Postdoctoral Researcher, Drexel University
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Dear search committee members:

I am writing to apply for the tenure-track faculty position at the rank of assistant professor in the Department of Physics and Astronomy at Texas A&M University-Commerce (TAMUC).

I am currently a fifth-year PhD candidate in the Department of Physics at Cornell University working with Prof. Natasha Holmes. My defense is scheduled for April 2024 such that I will graduate in May 2024. I have also started a postdoctoral research position at Drexel University with Profs. Eric Brewe and Adrienne Traxler. This position is half-time from July 2023 through July 2024, after which the position is scheduled to become full-time.

I am eager to apply for this position at TAMUC for several reasons. First, I am excited by the opportunity to collaborate with the discipline-based education researchers already at TAMUC. I have expertise in both qualitative and quantitative research methods and will bring an innovative research program to TAMUC with an aim of using novel methods of social network analysis to understand student identity and retention in physics. This research trajectory is ripe for collaboration with Prof. Robynne Lock, whose ongoing work uses the lens of physics identity to examine how instructors can support women and other underrepresented groups in physics. As demonstrated in my CV, I will also continue to publish my research in top scientific journals.

Second, I am excited to join a department that values evidence-based, equity-minded teaching practices. I have a range of teaching experience in undergraduate physics laboratory and recitation sections, including courses containing mostly engineering students and courses containing mostly physics majors. At the core of my teaching philosophy is adapting evidence-based recommendations and activities to create an inclusive learning environment in which diverse learners develop their critical thinking skills. As a faculty member at TAMUC, I would be happy to teach any physics course, introductory or upper level, and I would be particularly excited to teach in the studio format. I am also well-qualified to teach courses related to physics education research, for example a statistical methods course or a course specifically about social network analysis. Though I do not have direct experience with teacher preparation, I would be excited to help expand the PhysTEC and Noyce programs and to instruct courses for pre- and in-service teachers, such as "*Science Inquiry (I/II)*."

Finally, as a woman in physics, I am dedicated to diversity and inclusion efforts through my participation in service and outreach programs. I have served in a leadership role hosting a Conference for Undergraduate Women in Physics (CUWiP) at Cornell and helped organize the Expanding Your Horizons (EYH) conference for middle school girls in science. Through multiple programs, I have also mentored prospective graduate students from underrepresented groups in science as they prepare their application materials. Additionally, I have been a primary organizer of a new weekly seminar series in which physics graduate students and postdocs at Cornell present their research to one another. I plan to continue these and other efforts at TAMUC by participating in or initiating similar programs and I would be particularly eager to take the lead on a proposal to host a future CUWiP at TAMUC.

In summary, my research plans and expertise would complement and expand the existing education research community at TAMUC. This faculty position also offers fruitful avenues for me to enrich my physics education research endeavors, engage in meaningful teaching practices with new student populations, and provide support to various minority groups in physics.

I have enclosed my CV, research statement, teaching statement, references, and transcripts. Please feel free to contact me at 508-333-0167 or by email at mas899@cornell.edu if you need additional information.

Regarding my references, please note that Natasha Holmes will be out on maternity leave during the coming months. If you are unable to reach her, both Eric Brewe and Anna Phillips are available.

Thank you for considering my application. I look forward to your response.

Sincerely,

A handwritten signature in black ink that reads "Meagan Sundstrom". The signature is fluid and cursive, with a horizontal line extending from the end of the name.

Meagan Sundstrom

PhD Candidate, Department of Physics, Cornell University

Postdoctoral Researcher, Department of Physics, Drexel University

<https://sites.google.com/cornell.edu/meagansundstrom>

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Meagan Sundstrom | Curriculum Vitae

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EDUCATION AND APPOINTMENTS

Postdoctoral Researcher, Department of Physics, Drexel University July 2023 – Present

Advisors: Eric Brewster and Adrienne Traxler

Project: Characterizing active learning environments in physics using network analysis and observations

PhD Candidate, Physics, Cornell University Defense scheduled April 2024

Advisor: Natasha Holmes

Dissertation: Who is good at physics and why? The role of gender in peer recognition

MS, Physics, Cornell University 2022

BS, Mathematics-Physics (Summa Cum Laude, with Honors), University of Connecticut 2019

Advisor: Fabiana Cardetti

Thesis: Analyzing the mindsets and behaviors of physics students through intellectual humility

PEER-REVIEWED PUBLICATIONS

* Indicates mentored undergraduate student author

- 11 **Meagan Sundstrom**, Rebeckah K. Fussell, Anna McLean Phillips, Mark Akubo, Scott E. Allen, David Hammer, Rachel E. Scherr, and N. G. Holmes. Instructing nontraditional physics labs: Toward responsiveness to student epistemic framing. *Physical Review Physics Education Research*, 19(2):020140 (2023). [[Link](#)]
- 10 **Meagan Sundstrom**, Ashley B. Heim, Barum Park, and N. G. Holmes. Introductory physics students' recognition of strong peers: Gender and racial or ethnic bias differ by course level and context. *Physical Review Physics Education Research*, 18(2):020148 (2022). [[Link](#)]
- 9 **Meagan Sundstrom**, Andy Schang*, Ashley B. Heim, and N. G. Holmes. Understanding interaction network formation across instructional contexts in remote physics courses. *Physical Review Physics Education Research*, 18(2):020141 (2022). [[Link](#)]
- 8 **Meagan Sundstrom**, Rebeckah Fussell, Rachel E. Scherr, and N. G. Holmes. Students' varying responses to instructor prompts for frame shifts in physics labs. In *Proceedings of the Physics Education Research Conference, 2022*, edited by Brian W. Frank, Dyan Jones, and Qing Ryan (2022). [[Link](#)]
- 7 Mark Akubo, **Meagan Sundstrom**, and N. G. Holmes. Exploring diverse students' negotiation of lab roles through positioning. In *Proceedings of the Physics Education Research Conference, 2022*, edited by Brian W. Frank, Dyan Jones, and Qing Ryan (2022). [[Link](#)]
- 6 Emily M. Wollmuth, Trevor J. L. Sless, Montana E. Airey, Ethan D. France, Emily M. Stump, **Meagan A. Sundstrom**, Rachel L. Wilkins, and Michelle K. Smith. Is Earth currently undergoing a sixth mass extinction? *CourseSource*, (2022). [[Link](#)]
- 5 David G. Wu*, Ashley B. Heim, **Meagan Sundstrom**, Cole Walsh, and N. G. Holmes. Instructor interactions in traditional and nontraditional labs. *Physical Review Physics Education Research*, 18(1):

010121 (2022). [[Link](#)]

- 4 **Meagan Sundstrom**, David G. Wu*, Cole Walsh, Ashley B. Heim, and N. G. Holmes. Examining the effects of lab instruction and gender composition on intergroup interaction networks in introductory physics labs. *Physical Review Physics Education Research*, 18(1):010102 (2022). [[Link](#)]
- 3 **Meagan Sundstrom** and Fabiana Cardetti. Exploring the introductory physics classroom through the lens of intellectual humility: Handling what you do not know. *Physical Review Physics Education Research*, 17(2): 020135 (2021). [[Link](#)]
- 2 Anna McLean Phillips, **Meagan Sundstrom**, David G. Wu*, and N. G. Holmes. Not engaging with problems in the lab: Students' navigation of conflicting data and models. *Physical Review Physics Education Research*, 17(2): 020112 (2021). [[Link](#)]
- 1 **Meagan Sundstrom**, Anna McLean Phillips, and N. G. Holmes. Problematizing in inquiry-based labs: how students respond to unexpected results. In *Proceedings of the Physics Education Research Conference, 2020*, edited by S. Wolf, M. B. Bennett, and B. W. Frank (2020). [[Link](#)]

PUBLICATIONS UNDER REVIEW

- 15 **Meagan Sundstrom**, L. N. Simpferdoerfer*, Annie Tan*, and Ashley B. Heim, and N. G. Holmes. Who and what gets recognized in peer recognition. (Submitted to *Physical Review Physics Education Research*) [[ArXiv](#)]
- 14 **Meagan Sundstrom** and N. G. Holmes. Bias in peer recognition does not explain differences in how men and women perceive recognition in undergraduate physics courses. (Submitted to *Physical Review X*) [[ArXiv](#)]
- 13 **Meagan Sundstrom** and Logan Kageorge. Do first impressions last? Investigating peer recognition across an introductory physics sequence. (Submitted to *Physical Review Physics Education Research*) [[ArXiv](#)]
- 12 L. N. Simpferdoerfer*, **Meagan Sundstrom**, Matthew Dew, and N. G. Holmes. What topics of peer interactions correlate with student performance in physics courses? (Submitted to *European Journal of Physics*) [[ArXiv](#)]

INVITED TALKS

- 6 Physics Department Seminar, University of Connecticut. October 26, 2023.
Rethinking the role of instructional physics labs
- 5 Physics Education Research Seminar, University of Maryland. October 19, 2023.
Who is good at physics and why?
- 4 Physics and Astronomy Department Colloquium, Bucknell University. August 24, 2023.
Rethinking the role of instructional physics labs
- 3 Physics Education Research Conference. Sacramento, CA. July 19-20, 2023.
Quantifying student collaboration in labs using social network analysis
- 2 American Association of Physics Teachers Summer Meeting. Sacramento, CA. July 15-19, 2023.
Toward equitable peer recognition in labs: Implications from multiple social network analysis studies
- 1 Physics Graduate Student Seminar Series, Cornell University. April 26, 2023.
Statistical modeling of social networks in physics courses

CONTRIBUTED TALKS

- Meagan Sundstrom**, L. N. Simpfendorfer, Annie Tan, and N. G. Holmes. “Using networks to relate student interactions to their recognition of strong peers.” American Physical Society April Meeting. Minneapolis, MN. April 15-18, 2023.
- Meagan Sundstrom** and N. G. Holmes. “Women perceive less peer recognition than men controlling for actual peer recognition.” International Conference on Physics Education. Virtual. December 5-9, 2022.
- Meagan Sundstrom**, Ashley B. Heim, Barum Park, and N. G. Holmes. “Gender bias in peer recognition across course levels and contexts.” American Association of Physics Teachers Summer Meeting. Grand Rapids, MI. July 9-13, 2022.
- Meagan Sundstrom**, Andy Schang, Ashley B. Heim, and N. G. Holmes. “Characterizing the interaction networks of physics students during remote teaching.” American Association of Physics Teachers Winter Meeting. Virtual. January 6-8, 2022.
- Meagan Sundstrom**, David G. Wu, Cole J. Walsh, Ashley B. Heim, and N. G. Holmes. “Patterns of introductory physics students’ interactions during remote learning: a network approach.” American Physical Society April Meeting. Virtual. April 17-20, 2021.
- Meagan Sundstrom**, Anna McLean Phillips, and N. G. Holmes. “Problematizing in inquiry-based labs: how students respond to unexpected results.” American Association of Physics Teachers Summer Meeting. Virtual. July 19-22, 2020.
- Meagan Sundstrom** and Fabiana Cardetti. “Assessing the mindsets of physics students through intellectual humility.” American Association of Physics Teachers Summer Meeting. Provo, UT. July 20-24, 2019.
- Meagan Sundstrom** and Fabiana Cardetti. “How do interactive physics learning environments foster intellectual humility?” American Physical Society March Meeting. Boston, MA. March 4-8, 2019.

CONTRIBUTED POSTERS

- Meagan Sundstrom**, Rebeckah Fussell, Rachel E. Scherr, and N. G. Holmes. “Students’ varying responses to instructor prompts for frame shifts in physics labs.” Physics Education Research Conference. Grand Rapids, MI. July 13-14, 2022.
- Meagan Sundstrom**, David G. Wu, Cole J. Walsh, Ashley B. Heim, and N. G. Holmes. “Social network analysis of group interactions in introductory physics labs.” Cross Disciplinary-based Education Research (X-DBER) Conference. Virtual. March 1-3, 2021.
- Meagan Sundstrom**, Anna McLean Phillips, and N. G. Holmes. “Problematizing in inquiry-based labs: how students respond to unexpected results.” Physics Education Research Conference. Virtual. July 22-23, 2020.
- Meagan Sundstrom** and Fabiana Cardetti. “Intellectual humility: Mindsets and behaviors of introductory physics students.” Physics Education Research Conference. Provo, UT. July 24-25, 2019.

MAJOR AWARDS AND SCHOLARSHIPS

National Science Foundation Graduate Research Fellow , Cornell University	Sept. 2021 – Present
Hartman Memorial Scholarship , Cornell University	2019
University Scholar , University of Connecticut	2018

PROFESSIONAL DEVELOPMENT

NextGen Professors Program, Cornell University Oct. 2023 – Present

- Year-long career development program to prepare graduate students and postdocs for faculty careers

NetHike: Social Network Analysis Summer School, ETH Zurich 2022

- 5-day lecture and workshop series covering network modeling and visualization using R

Professional Development for Emerging Education Researchers (PEER), Virtual 2021

- Workshop series for faculty and graduate students to develop education research practices
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TRAVEL GRANTS

Physics Education Research Leadership and Organizing Council (PERLOC) Travel Grant to present at the 2023 American Association of Physics Teachers Summer Meeting

Physics Education Research Leadership and Organizing Council (PERLOC) Travel Grant to attend the 2022 NetHike Summer School

American Physical Society Topical Group on Physics Education Research (GPER) Mini-grant to present at the 2021 American Physical Society April Meeting

Physics Education Research Leadership and Organizing Council (PERLOC) Travel Grant to present at the 2019 American Association of Physics Teachers Summer Meeting

TEACHING AND MENTORING EXPERIENCE

Graduate Teaching Assistant, Department of Physics, Cornell University

- **Introduction to Experimental Physics** (PHYS 1110) Fall 2022
Introductory laboratory course covering experimental design and practices, intended for students planning to major in physics or engineering. I instructed one laboratory section.
- **Physics I: Mechanics and Special Relativity** (PHYS 1116) Fall 2020
Introductory, calculus-based mechanics course covering Newtonian mechanics and topics in special relativity, intended for physics majors. I instructed two discussion sections and designed the activities for these sections.
- **Physics I: Mechanics and Heat** (PHYS 1112) Fall 2019 & Spring 2020
Introductory, calculus-based mechanics course covering Newtonian mechanics and topics in thermodynamics, intended for engineering students. I instructed three laboratory sections.

Undergraduate Student Research Mentor, Department of Physics, Cornell University

- I have supervised work by six undergraduate students: Sabrina McDowell, Andy Schang, Lee Simpfendorfer, Annie Tan, Le-Qi Tang, and David Wu.

Graduate Student Research Mentor, Department of Physics, Drexel University

- I have supervised work by Justin Gambrell.

SERVICE AND OUTREACH

Journal Referee

Jan. 2022 – Present

Physical Review Physics Education Research, Instructional Science, International Journal of Innovation in Science and Mathematics Education

Physics Student Seminar Series, Cornell University

Jan. 2023 – Aug. 2023

Organizer

- One of the primary organizers of a new weekly seminar series where graduate students and postdocs in the Physics Department share their research in a pedagogical way. Responsible for inviting speakers, arranging food and location for the talks, and evaluating survey feedback from attendees.

Conference for Undergraduate Women in Physics, Cornell University

Dec. 2021 – Jan. 2023

Local Organizing Committee Graduate Student Co-Chair

- One of the primary organizers of a 3-day conference for students of historically marginalized genders in physics. Responsible for overseeing the local organizing committee, supervising volunteers, planning the conference agenda, and communicating with all invited speakers.

Expanding Your Horizons Conference (EYH), Cornell University

Sept. 2020 – Apr. 2023

Social Media and Community Building Co-chair (2020-2022)

Evaluations Chair (2022-2023)

- EYH engages 7th–9th grade students of historically marginalized genders in science in hands-on workshops. Responsible for designing ways for participants to interact, publishing social media content, and revising, administering, and analyzing survey data from conference participants.

Project SHORT, Virtual

Sept. 2021 – Present

Graduate School Application Mentor

- Project SHORT (Students for Higher-Ed Opportunities and Representation in Training) provides one-on-one mentoring to prospective graduate students from historically underrepresented groups in physics. Responsible for providing feedback on personal statements, offering advice about the application process, and sustaining communication via email and virtual meetings.

Physics Department Application Workshop, Cornell University

Sept. 2020 – Dec. 2021

Graduate School Application Mentor

- One-on-one mentoring of prospective graduate students from historically underrepresented groups in physics. Responsible for providing feedback on personal statements, offering advice about the application process, and sustaining communication via email and virtual meetings.

IN THE MEDIA

Collins, Grace (2023, February 3). Accelerating the Power of Women in Physics. *IC News*. [\[Link\]](#)

Chuang, Ya-Wen (2022, September 14). How to promote intergroup student interaction in an introductory lab. *PERBites*. [\[Link\]](#)

Ramanujan, Krishna (2020, April 23). Lab instructors adapt to remote teaching. *Cornell Chronicle*. [\[Link\]](#)