

Shams El-Adawy

EDUCATION

Ph.D.: Physics, Kansas State University, Manhattan, KS, USA, May 2023

M.S.: Physics, DePaul University, Chicago, IL, USA, June 2020

B.A.: Physics & French, American University, Washington D.C., USA, May 2018

EMPLOYMENT

Postdoctoral Associate Instructor, Massachusetts Institute Technology (MIT), Aug 2023 – Present

Consultant of Public Engagement, American Physical Society (APS), June 2023 – July 2023

Post-Doctoral Fellow, Kansas State University, May 2023 – July 2023

Public Engagement Intern, American Physical Society (APS), Jan 2022 – Aug 2022

Lab Instructor, Kansas State University, Aug 2020 – May 2021

Teaching Assistant, DePaul University, Aug 2018 – June 2020

Teaching Assistant, American University, 2015 – 2018

Tutor, American University, 2015 – 2018

Peer Advisor, American University, 2017 – 2018

Research Intern, COMESA Competition Commission, Lilongwe, Malawi, Summer 2017

Guest Lecturer, University of Agriculture and Natural Resources, Malawi, June 2017

AWARDS AND HONORS

Awards:

Master of Science with Distinction, June 2020

Outstanding Physics Senior Service, May 2018

Jack Child Undergraduate Achievement Award in French, May 2018

Best Poster in the Physical Sciences by an Undergraduate Student at the 28th Annual Robyn

Raffert Mathias Student Research Conference, March 2018

Honors:

Phi Beta Kappa (most prestigious academic honor society in the United States), May 2018

Sigma Pi Sigma (oldest and only American honor society for physics and astronomy), April 2018

SERVICE & LEADERSHIP

Co-facilitator & LEAPS Fellow, Leadership and Professional Strategies Program MIT, Spring 2024

Executive committee member, Topical Group on Physics Education Research (GPER) APS, 2023

Executive committee member, Physics Education Research Consortium of Graduate Students, American Association of Physics Teachers (AAPT), 2021 –2022

International Committee Chair, Physics Student Council, Kansas State University, 2021 – 2022

President, Women in Science Student Organization, American University, 2017 –2018

President, International Student Association, American University, 2015 – 2018

Volunteer, Technology Innovation Hub (mHub), Malawi, 2017

International Orientation Coordinator, International Student & Scholar Services, American University, 2015 – 2017

Women Initiative executive board member, Student Government, American University, Washington D.C., 2015 – 2016

MINI-GRANTS

Physics Education Research Topical Group (PERLOC) Travel Grant, Summer 2019

DePaul College of Science & Health Graduate Research Fund, Summer 2019

PUBLICATIONS

Google Scholar: <https://scholar.google.com/citations?user=q7QPoXcAAAAJ&hl=fr&oi=ao>

ResearchGate: <https://www.researchgate.net/profile/Shams-El-Adawy/research>

ORCID: <https://orcid.org/0000-0003-2768-7247>

Peer-reviewed journal papers

15. **El-Adawy, S.**, Lau, A. C., Sayre, E. C., & Fracchiolla, C. (2024). Motivation and needs of informal physics practitioners. *Physical Review Physics Education Research*, 20(1), 010125.
14. **El-Adawy, S.**, Liao, I., Lad, V., Abdelhafez, M. & Dourmashkin, P. (2024). Streamlining physics problem generation to support physics teachers in using generative artificial intelligence. *The Physics Teacher*. Submitted.
13. Shvonski, A., **El-Adawy, S.**, MacDonagh, A., Drury, B., Tomasik, M., Abdelhafez, M. & Dourmashkin, P. (2024). Improving the Exam-Grading Process in Large-Enrollment Physics Courses. *The Physics Teacher*. Submitted.
12. **El-Adawy, S.**, Alexis, C. & Sayre, E.C. (2023). Emerging STEM education researchers' positioning and perception of discipline-based education research. *PlosOne*: arXiv preprint arXiv:2308.04401.
11. **El-Adawy, S.**, Franklin, S. & Sayre, E. C. (2023). Emerging Physics Education Researchers' Growth in Professional Agency: Case Study. *Physical Review Physics Education Research*: arXiv preprint arXiv:2307.06149
10. **El-Adawy, S.**, Huynh, T., Kustus, M. B., & Sayre, E. C. (2022). Context interactions and physics faculty's professional development: Case study. *Physical Review Physics Education Research*, 18(2), 020104.

Peer-reviewed conference proceedings

9. **El-Adawy, S.**, MacDonagh, A., Abdelhafez, M. (2024). Exploring Large Language Models as Formative Feedback Tools in Physics. Physics Education Research Conference (2024), Boston, MA.
8. **El-Adawy, S.**, Hass, C.A.F, Vasserman, E., Kustus, M.B, Franklin, S.& Sayre, E.C. A Professional Development for Emerging STEM Education Researchers. American Society for Engineering Education Annual Conference & Exposition (2023), Baltimore, MD.

7. **El-Adawy, S.**, Alexis, C. & Sayre, E.C. Figured Worlds of Emerging STEM Education Researchers. International Conference of the Learning Sciences (2023), Canada.
6. Kostadinova, E. G., Greco, S., Murdock, M., Barraza-Valdez, E., Hasson, H. R., West-Abdallah, I. Z., ... **El-Adawy, S.** & Anderson, C. (2023). Summary report from the mini-conference on workforce development through research-based, plasma-focused activities. *Physics of Plasmas*, 30(6).
5. **El-Adawy, S.**, Sayre E.C., Lau A.C., & Fracchiolla, C. Personas for supporting physicists' engagement in informal education. Physics Education Research Conference (2022), Grand Rapids, MI.
4. **El-Adawy, S.**, Vogel, V., & Larkin, T. Women in the Physics and STEM Pipelines: Recruiting, Retaining, and Returning in the Aftermath of a Global Pandemic. American Society for Engineering Education Annual Conference & Exposition (2022), Minneapolis, MN.
3. Hass, C.A.F, **El-Adawy, S.**, Hancock, E., Milos Savic & Sayre, E.C. Emerging Mathematics Education Researchers Conception of Theory in Education Research. Research in Undergraduate Mathematics Education (2022) Boston, MA.
2. Hass, C.A.F, Hancock, E., Wilson, S., **El-Adawy, S.** & Sayre, E.C. Community Roles for Supporting Emerging Education Researchers. Physics Education Research Conference (2021), Online.
1. Khong, H., **El-Adawy, S.** & Sayre, E.C. Community of Practice in a physics department: double-majored students' perspectives. International Conference of the Learning Sciences (2021), Online.

CONTRIBUTED TALKS

Abdelhafez, M., & **El-Adawy, S.** Exploring the Impact of Pre-Class Reflection on Student Engagement and Persistence in Introductory Physics. American Association of Physics Teachers (2024), Boston, MA.

MacDonagh, A., Shvonski, A., Drury, B., **El-Adawy, S.**, Abdelhafez, M., & Tomasik, M. Benefits of Electronic Rubrics and Consistency Checks for Large-Enrollment Physics Exam Grading. American Association of Physics Teachers (2024), Boston, MA.

Abdelhafez, M., Dourmashkin, P., MacDonagh, A., & **El-Adawy, S.** Integrating Generative AI as a Tool for Formative Feedback in Large Enrollment Physics Courses. Bulletin of the American Physical Society (2024), Sacramento, CA.

El-Adawy, S., Sayre, E., Lau, A., & Fracchiolla, C. Physicists' motivations and needs in informal physics. APS April Meeting (2023), Minneapolis, MN.

El-Adawy, S., & Sayre, E. DBER as Imagined by Emerging STEM Education Researchers. X-Disciplined-Based Education Conference (2023), Online.

El-Adawy, S., Esmat M.H., Iskander, G. Informal physics with the Middle Eastern and North African region and public, Proceedings of the IUPAP International Conference on Physics Education, ICPE 2022 5-9 December 2022, page 80, ISBN: 978-1-74210-532-1.

El-Adawy, S., Sayre E.C., Lau A.C., & Fracchiolla, C. Personas for supporting a network for engagement in informal physics education, Mini-Conference: Workforce Development Through Research-Based, Plasma-Focused Science Education and Public Engagement, APS Division of Plasma Physics Annual Meeting (2022), Spokane, WA.

El-Adawy, S., Sayre E.C., Lau A.C., & Fracchiolla, C. Personas for supporting physicists' engagement in informal education, American Association of Physics Teachers (2022), Grand Rapids, MI.

Hass, C.A.F, Hancock, E., Wilson, S., **El-Adawy, S.**, Sayre, E.C. & Franklin S. V. How Can PERers Support Emerging Community Members' Self-efficacy? American Association of Physics Teachers (2022), Grand Rapids, MI.

Hass, C.A.F, **El-Adawy, S.** Hancock, E., Milos Savic & Sayre, E.C.. "Emerging Mathematics Education Researchers Conception of Theory in Education Research" Research in Undergraduate Mathematics Education (2022) Boston, MA.

CONTRIBUTED POSTERS

El-Adawy, S., MacDonagh, A., Abdelhafez, M. (2024). Exploring Large Language Models as Formative Feedback Tools in Physics. Physics Education Research Conference (2024), Boston, MA.

Lad, V., Liao, I., Abdelhafez, M., Dourmashkin, P., & **El-Adawy, S.** Exploring the integration of AI into Physics Education: Leveraging ChatGPT for Problem Generation. Bulletin of the American Physical Society, Sacramento, CA.

El-Adawy, S., Alexis, C. & Sayre, E.C. "Figured Worlds of Emerging STEM Education Researchers" International Conference of the Learning Sciences (2023), Canada.

El-Adawy, S., Hass, C., Vasserman, E., Kustus, M. B., Franklin, S., & Sayre, E. "A Professional Development Program for Emerging Physics Education Researchers" APS April Meeting (2023), Minneapolis, MN.

Hass, C.A.F, **El-Adawy, S.** Franklin S.V., Kustus M.B. & Sayre, E.C. " PEER and Faculty Development Lessons from the Pandemic" Research in Undergraduate Mathematics Education (2023) Omaha, NE.

El-Adawy, S., Sayre E.C., Lau A.C., & Fracchiolla, C. "Personas for supporting physicists' engagement in informal education", Physics Education Research Conference (2022), Grand Rapids, MI.

Hass, C.A.F, Hancock, E., Wilson, S., **El-Adawy, S.**, Sayre, E.C. & Franklin S. V. How Can PERers Support Emerging Community Members' Self-efficacy? American Association of Physics Teachers (2022), Grand Rapids, MI.

El-Adawy, S., Hass, C. A.F. & Sayre, E.C. "Development of Physics and Math Faculty during Online Professional Development Experience" Physics Education Research Conference (2021), Online.

El-Adawy, S., Hass, C. A.F. & Sayre, E.C. "Growth of Emerging Education Researchers in Virtual Professional Development Program" American Association of Physics Teachers Summer Conference (2021), Online.

Hass, C.A.F, **El-Adawy, S.** Hancock, E., Sayre, E.C. & Wilson, S. "How STEM faculty enter Discipline-Based Education Research" American Association of Physics Teachers Summer Conference (2021), Online.

Khong, H., **El-Adawy, S.** & Sayre, E.C. "Life and career planning of undergraduate students after graduation" American Association of Physics Teachers Summer Conference (2021), Online.

El-Adawy, S., Kustusich, M.B., Huynh, T. & Sayre, E.C. "Case Study: Context Interactions & Physics Faculty Professional Development" X-Disciplined-Based Education Conference (2021), Online.

El-Adawy, S. & Kustusich, M.B. "Faculty as Learners and Educators: Interactions between Community of Practice, Individual Experience and Teaching Philosophy" Physics Education Research Conference (2019), Provo, UT.

INVITED TALKS, PANELS & WORKSHOPS

Local host, PEER Boston at MIT in partnership with Harvard Medical and Harvard Physics – July 2024

Speaker, TEAL Blended Learning Workshop, AAPT Workshop at MIT – July 2024

Speaker, MIT Jameel World Education Lab workshop in Uzbekistan, Support structures: Leveraging Technology & Building a Learning Community – April 2024

Panelist, Pathways in Physics Education, Conferences for Undergraduate Women in Physics (CUWiP), Boston College and Wellesley College – January 2024

Speaker, Teaching Center Professional Development series, Kansas State University – February 2022

Title: Getting engaged in the Scholarship of Teaching and Learning: A discussion about things to know getting started

Talk: <https://www.youtube.com/watch?v=yDRZjr0IYY0>

Panelist, Women in Science, The American University in Washington D.C. – February 2022

Panel: <https://www.youtube.com/watch?v=xIXiCXVZB1U>

Colloquium Speaker, Physics Department, The American University in Cairo, Egypt – September 2019

Title: My Journey in Physics Education Research (PER)

MEMBERSHIP OF PROFESSIONAL ORGANIZATIONS

- a) Member of the American Physical Society (APS)
- b) Member of the American Association of Physics Teachers (AAPT)

ADDITIONAL SKILLS

- Languages: Fluent in Arabic, French, and English
- Mathematical computing languages: Mathematica and MATLAB
- Qualitative Analysis Software: MaxQDA