

Anna Wang-Holtzen, Ph.D.

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Education

2011–2015 B.S. in Physics – University of California, Los Angeles

2017–2022 PhD. in Applied Physics – Stanford University
 Advisors: Philip Bucksbaum and James Cryan

Employment History and Research Experience

Sept. 2026 Department of Physics, University of Massachusetts Dartmouth, MA
– **Present** *Assistant Teaching Professor*

Nov. 2022 Department of Physics, Harvard, MA
– **Aug. 2026** *Preceptor*

As a Preceptor at Harvard University, my teaching interests center on helping students develop scientific and evidence based thinking. I supervise teaching fellows and course assistants, and work in a team of instructors on the broader physics laboratory education program.

Jul. 2025 Department of Continuing Education, Harvard, MA
 Head Instructor

Designed and taught an accelerated optics and applications course for high school students in the pre-college summer program.

Aug. 2023 Department of Continuing Education, Harvard, MA
– **Jun. 2024** *Head Instructor*

Head instructor for the Harvard Extension School's introductory physics series.

Sept. 2017 PULSE Institute, Stanford, CA
– **Oct. 2022** *Graduate Research Assistant*

My research interests involve using attosecond metrology to probe dynamic properties of molecular systems. In particular, my Ph.D. work focused on using interferometric measurements of photoionization phase, which may reveal dynamic molecular phenomena such as continuum channel coupling. I used a combination of tabletop, XUV and XFEL, X-ray attosecond light sources to access valence and core ionization in molecules.

Mar. 2017 – UCSB Jayich Lab, Santa Barbara, CA

Sept. 2017 *Research Assistant*

Built laboratory infrastructure in preparation for ion trapping experiments. Worked on frequency stabilization for lasers. Wrote code for experiment control and data acquisition. Assisted and supervised undergraduate researchers. Supervised by Andrew Jayich.

Jul. 2015 HRL Laboratories, Malibu, CA

– **Feb. 2017** *Development Engineer, Sensors and Electronics*

Conducted cryogenic materials testing of superconducting metals and semiconductors. Performed semiconductor device screening.

Teaching

- **Assistant Teaching Professor, UMass Dartmouth**

Beginning Fall 2026, I am teaching a variety of physics courses including introductory electromagnetism, advanced classical mechanics, and the intermediate electronics lab.

- **Preceptor for Harvard Physical Sciences 12a and 12b**

Spring 2025 - Spring 2026. Organized lab teaching, managed teaching fellows and CAs, assisted in materials design, held office hours, and gave lectures in the introductory physics series for engineers. In Spring 2026 I was the lead instructor for the course and have redesigned the skills-based assessment system to improve learning goal transparency for students.

- **Preceptor for Introductory Labs (Harvard Physics 15A, 15B, 15C)**

Fall 2022 - Fall 2025. Taught lab sections, guiding students through concepts and techniques using inquiry based teaching and a framework of model building. Contributed to lesson design. Advised students during work on independent projects. Mentored graduate teaching fellows.

- **Head Instructor for Harvard DCE Physics P-17240**

Summer 2025 & 2026. Accelerated course in optics theory and applications for high school students in the pre-college program. Included active learning elements and hands-on laboratory exploration, with professional development and research outreach.

- **Head Instructor for Harvard DCE Physics 1A and 1B**

Fall 2023 - Spring 2026. An introductory physics series for life science students.

- **Teaching Assistant for Physics Communication (Stanford Physics 191)**

Winter 2021. For this new course, offered for the first time in Winter 2021, I assisted in course organization and helped students craft physics writing across several formats through direct feedback and group discussions.

- **Course Assistant for Undergraduate Online Laboratories**

Summer 2020. Helped prototype, test, and write laboratory materials for new online lab courses.

- **Teaching Assistant for Undergraduate Lasers Lab (Stanford Physics 107)**

Winter 2020. Guided and instructed students through lab activities. Tutored students individually and in groups. Helped students develop writing skills for scientific communication.

Service and Advising

- **Pre-concentration Advisor, Harvard College**

I advise first year students on a variety of topics related to their concentration (major) planning, including course choices, student research, and career options. I advise between 2-4 students each year up to their concentration declaration in October of their second year.

- **Teaching Fellow Training, Harvard Physics**

I participated in two teaching fellow training programs; the teaching practicum course Physics 302 and a two-day lab teaching training workshop at the beginning of every semester. In Physics 302 I lead teaching practice groups and give feedback on lesson design and delivery. In the lab teaching training workshop, I lead discussions on socratic teaching and group work.

Awards & Honors

- **(2023) White Teaching Prize**

Excellence in teaching introductory physics at Harvard University.

- **(2017) Stanford VPGE EDGE Fellowship**

Enhancing Diversity in Graduate Education (EDGE) Doctoral Fellowship Program.

Selected Publications

- Brock Graftstrom, **Anna Wang-Holtzen**, Jun Wang, Philip H. Bucksbaum, James P. Cryan, and Alexandra S. Landsman.
Relativistic effects in molecular photoemission delays
Phys. Rev. A 110, L061101, 2024
- Nicholas J. Brennan, Joseph Piedle, **Anna Wang-Holtzen**, Jieping Fang, Kathryn Ledbetter, Matteo Mitrano.
Probing Coherent Phonons in the Advanced Undergraduate Laboratory
American Journal of Physics Vol.92, Issue 9, 2024
- A. S. Kheifets, R. Wielan, V. V. Serov, I. A. Ivanov, **A. Li Wang**, A. Marinelli, and J. P. Cryan.
Ionization phase retrieval by angular streaking from random shots of XUV radiation.
Phys. Rev. A 106, 033106, 2022
- P. Walter, T. Osipov, M.-F. Lin, J. Cryan, T. Driver, A. Kamalov, A. Marinelli, J. Robinson, M. H. Seaberg, T. J. A. Wolf, J. Aldrich, N. Brown, E. G. Champenois, X. Cheng, D. Cocco, A. Conder, I. Curiel, A. Egger, J. M. Glowina, P. Heimann, M. Holmes, T. Johnson, L. Lee, X. Li, S. Moeller, D. S. Morton, M. L. Ng, K. Ninh, J. T. O'Neal, R. Obaid, A. Pai, W. Schlotter, J. Shepard, N. Shivaram, P. Stefan, X. Van, **A. L. Wang**, H. Wang, J. Yin, S. Yunus, D. Fritz, J. James and J.-C. Castagna.
The time-resolved atomic, molecular and optical science instrument at the Linac Coherent Light Source.
J. Synchrotron Rad. 29, 957-968, 2022
- **Anna L. Wang**, Vladislav V. Serov, Andrei Kamalov, Philip H. Bucksbaum, Anatoli Kheifets, and James P. Cryan.
Role of nuclear-electronic coupling in attosecond photoionization of H₂.
Phys. Rev. A 104, 063119., 2021
- Andrei Kamalov, **Anna L. Wang**, Philip H. Bucksbaum, Daniel J. Haxton, and James P. Cryan.
Electron correlation effects in attosecond photoionization of CO₂.
Phys. Rev. A 102, 023118., 2020
- M. Fan, C. A. Holliman, **A. L. Wang**, A. M. Jayich.
Laser Cooling of Radium Ions.
Phys. Rev. Lett. 122, 223001., 2019

Presentations

- **A. L. Wang**, J. Wang, E. Isele, P. H. Bucksbaum, J. P. Cryan.
Molecular spin-orbit delays from attosecond photoionization.
International Conference on Ultrafast Phenomena contributed poster, 2022
- **A. L. Wang**, A. Kamalov, P. H. Bucksbaum, and J. P. Cryan; V. Serov, A. Bray, A. Kheifets.
Investigation of Coupled Nuclear and Electronic Motion in H_2 Photoionization.
DAMOP contributed poster, 2020
- A. Kamalov, **A. L. Wang**, P. H. Bucksbaum, D. J. Haxton, J. P. Cryan.
Observing Multichannel Effects in Molecular Photoionization Delays.
ATTO poster, 2019