

Reina Maruyama

Curriculum Vitae

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Professional Appointments

- 2021 – ***Professor of Physics***
Yale University
- 2016 – 2021 ***Associate Professor of Physics***
Yale University
- 2013 – 2016 ***Assistant Professor of Physics***
Yale University
- 2011 – 2013 ***Assistant Professor of Physics***
University of Wisconsin-Madison
- 2006 – 2010 ***Assistant Scientist***, IceCube Research Center
University of Wisconsin-Madison
- 2003 – 2006 ***Chancellor’s Postdoctoral Fellow, Postdoctoral Research Associate***
University of California & Lawrence Berkeley National Laboratory
- 1996 – 2003 ***Graduate Research Assistant***
Department of Physics, University of Washington, Seattle

Education

- 2003 Ph.D. Physics University of Washington, Seattle, WA, USA
“Optical Trapping of Ytterbium Atoms,”
Thesis Advisor: E. Norval Fortson
- 1996 M.S. Physics University of Washington, Seattle, WA, USA
- 1995 B.S. Applied Physics Columbia University, New York, NY, USA

Honors and Awards

- **Connecticut Academy of Science and Engineering (CASE)**, 2021.
Citation: “*World leader for seminal contributions in rare searches and fundamental physics, designing and leading novel dark matter and neutrino physics experiments.*”
- **American Physical Society (APS) Fellow**, 2020.
Citation: “*For innovative and wide-ranging contributions to the experimental study of rare events and fundamental symmetries, especially the search for neutrinoless double*

beta decay, and for leadership in understanding the signature and nature of dark matter.”

- **Sloan Research Fellow**, 2014 – 2016
- **NSF CAREER Award**, 2012 – 2017
- **Yale Junior Faculty Fellowship**, 2015 – 2016
- **Yale Public Voices Fellow**, 2013 – 2014
- **Woman Physicist of the Month**, Committee on the Status of Women in Physics (CSWP) June 2013
- **Chancellor’s Postdoctoral Fellowship**, University of California, Berkeley: 2003 – 2006

Current Research and Scientific Leadership

The following is a quick summary of the research topics and leadership positions within the scientific collaborations that Maruyama is leading or involved in. For more information, please visit <http://maruyama-lab.yale.edu>.

- Deciphering the properties of dark matter
 - PI and Spokesperson for the ALPHA experiment (2025–Present)
 - PI and Deputy Spokesperson for the ALPHA experiment (2023–2025)
 - PI and Scientific co-Spokesperson for the COSINE-100 experiment (2015 – Present).
 - PI and Scientific Spokesperson for the DM-Ice experiment (2010 – 2020).
 - Search for axion dark matter with the HAYSTAC pathfinder experiment and development of new photon detection schemes (2017 – Present).
 - Development of Rydberg atom single-photon detection above 10 GHz for axion searches (2018 – Present).
 - Co-lead for conceptualization, design, construction, and implementation of COSINE-100 dark matter experiment at the Yangyang Underground Laboratory in South Korea in 2016. Data taking since Fall 2016.
 - Led the design, construction, deployment, and operation of DM-Ice17, demonstrated long-term operation of a direct detection dark matter detector 2500 m below the surface of the Antarctic ice at the South Pole (2010 – Present)
 - DM-Ice phase-II detector in operation at Boulby Underground Laboratory in the U.K. (2015 – 2017).
 - Led R&D program and successfully demonstrated reduction of the background-inducing impurities in sodium-iodide detectors by a factor of 20.
 - Initiated and currently coordinate an international consortium of NaI experiments.
- Searching for new laws of physics through studies of neutrino properties

- CUORE U.S. Spokesperson (2023 – 2025)
- A member of the U.S. founding team of the CUORE experiment (2004 – Present).
- Institutional representative on the CUORE Collaboration Council (2014 – Present).
- Muon tagger construction for CUPID (2018 – Present).
- Precision doping of neutron transmutation-doped thermistors for the CUORE and CUPID experiments (2019 – 2025).
- CUORE Council Co-Chair (2015 – 2018).
- CUORE Physics Board lead (2013 – 2015).
 - * Led the 2015 CUORE-0 Physical Review Letters publication as a member of the CUORE Physics Board. Title: “Search for Neutrinoless Double-Beta Decay of ^{130}Te with CUORE-0” among other publications.
- IceCube Supernova Working Group convenor (2009 – 2011). A sensitivity study of the mass hierarchy and collective oscillation of neutrinos from supernovae with the IceCube experiment.
- IceCube Digital Optical Module (DOM) testing lead (2008 – 2011) to coordinate the final acceptance test prior to shipment to the South Pole.
- Lead DOM deployment team, member of the IceCube construction at the South Pole (2009 – 2011).

Professional Activities

- | | |
|---------------------|---|
| Reviews & Panels | KEK Science Advisory Committee (2024-2028); DOE High Energy Physics Advisory Panel (HEPAP) (2021-2024); International Benchmarking sub-Panel (2022-23); SLAC Institutional Review (2022); American Physical Society Francis M. Pipkin Award selection committee (vice-Chair 2022, Chair 2024); DOE DNP NSAC Long Range Planning Committee (2022); DOE Committee of Visitors to Office of Science to the High Energy Physics Advisory Panel (2020); DOE Basic Research Needs, Dark Matter Small Projects (2018); DOE: Office of High Energy Physics; HEP-QIS; Nuclear Physics; SBIR/STTR; NSF Particle Astrophysics; NSF Precision Measurements; Canada CFI; Snowmass 2021 Instrumentation Frontier Quantum Sensors Convener; Snowmass 2013 Contributor to the Cosmic Frontier |
| Journal Referee | European Physical Journal C (EPJC)
Physical Review D (PRD)
Journal of Instrumentation (JINST)
Journal of Cosmology and Astroparticle Physics (JCAP)
Astroparticle Physics |
| Outreach Activities | Conference for Women in Physics
Science on Saturdays at Yale and other public talks
IceCube Outreach Programs
2008/09 QuarkNet
Education Outreach, Lawrence Berkeley National Laboratory |

Conference & Summer School Organization

14. Convener, Asian Americans and STEM, Yale University, May 10, 2024.
13. Convener, Quantum Sensors for High Energy Physics, Yale University, April 27–28, 2023.
12. Convener, International Nuclear Physics Conference (INPC 2022), Cape Town, South Africa, September 11 – 16, 2022.
11. Organizing Committee, Phystat-DM, Stockholm, Sweden, July 31 – August 2, 2019.
10. Chair, Organizing Committee, Franco Iachello Retirement Symposium, New Haven, Connecticut, October 5 – 6, 2018.
9. Organizing Committee, National Nuclear Physics Summer School (NNPSS 2018), New Haven, Connecticut, June 17 – 30, 2018.
8. Organizing Committee, 13th Conference on the Intersections of Particle and Nuclear Physics (CIPANP 2018), Palm Springs, California, May 28 – June 03, 2018.
7. International Advisory Committee Member, Identification of Dark Matter (IDM 2016), Sheffield, UK, July 18 – 22, 2016.
6. Convener, 2015 Fall Meeting of the APS Division of Nuclear Physics, Santa Fe, New Mexico, Oct. 28 – 31, 2015.
5. Workshop on Sodium-Iodide-Based Dark Matter Detectors, Low Radioactivity Techniques 2015 (LRT 2015), Seattle, Washington, March 17, 2015.
4. Organizing Committee, 12th Conference on the Intersections of Particle and Nuclear Physics (CIPANP 2015), Vail, Colorado, May 19 – 24, 2015.
3. Convener, 37th International Conference on High Energy Physics (ICHEP 2014), Valencia, Spain, Jul. 2 – 9, 2014.
2. International Advisory Committee Member, Identification of Dark Matter (IDM 2012), Chicago, Illinois, July 23 – 27, 2012.
1. Co-organizer, Neutrinos and Dark Matter (NDM09), Madison, Wisconsin, August 31 – September 4, 2009.

University and Department Service

2025 – 2026 *University Wide, FAS, Yale University*

- Advisory Committee for the Center for the Study of Race, Indigeneity and Transnational Migration (RITM)

Physics Department, Yale University

- Advisor for the Undergraduate Women in Physics group

2024 – 2025 *University Wide/FAS, Yale University*

- PSETAC, Physical Science and Engineering Area Committee and Tenure Appointments Committee
- Inauguration Committee for President McInnis, 2024-2025
- Past Chair, Women Faculty Forum
- CESOF 2024, Committee for the Economic Status of the Faculty in the FAS
- Advisory Committee for the Center for the Study of Race, Indigeneity and Transnational Migration (RITM)

Physics Department, Yale University

- Undergrad Prize Committee
- Advisor for the Undergraduate Women in Physics group

2023 – 2024 *University Wide, Yale University*

- Outgoing-Chair, Women Faculty Forum
- CESOF 2024, Committee for the Economic Status of the Faculty in the FAS
- Advisory Committee for the Center for the Study of Race, Indigeneity and Transnational Migration (RITM)

Physics Department, Yale University

- Undergrad Prize Committee
- Advisor for the Undergraduate Women in Physics group

2022 – 2023 *University Wide, Yale University*

- Chair, Women Faculty Forum
- Chair, Search committee for the Head of Davenport College
- Belonging at Yale Diversity, Equity + Inclusion Plan Planning Team

Physics Department, Yale University

- Faculty Search Committee, Quantum Science
- Faculty Search Committee, Astrophysics/Cosmology
- Undergrad Prize Committee
- Advisor for the Undergraduate Women in Physics group

2021 – 2022 *University Wide, Yale University*

- Chair, Women Faculty Forum

- Belonging at Yale Diversity, Equity + Inclusion Plan Planning Team
- 2020 – 2021 *University Wide, Yale University*
- Chair-Elect, Women Faculty Forum
 - Executive Committee, Minority Organization for Retention and Expansion in FAS STEM
- Physics Department, Yale University*
- Faculty Search Committee
- 2019 – 2020 *University Wide, Yale University*
- Advisory Committee on Library Policy
 - Reviewer, Undergraduate Summer Research Fellowship Applications
 - Goldwater selection committee
- Physics Department, Yale University*
- Faculty Search Committee
- 2018 – 2019 *University Wide, Yale University*
- Advisory Committee on Library Policy
 - Reviewer, Undergraduate Summer Research Fellowship Applications
- Physics Department, Yale University*
- Director of Undergraduate Studies (Interim, Spring 2019)
- 2017 – 2018 *University Wide, Yale University*
- Senator, Faculty of Arts and Sciences Senate (Elected)
 - Executive Committee, member (elected)
 - Committee on Diversity and Inclusivity
 - Elections Committee
 - Committee on Yale College Expansion
 - Advisory Committee for Diversity and Faculty Development in the Faculty of Arts and Sciences
 - Reviewer, Undergraduate Summer Research Fellowship Applications
- Physics Department, Yale University*
- Committee on Climate and Diversity
- 2016 – 2017 *University Wide, Yale University*
- Senator, Faculty of Arts and Sciences Senate (Elected)

- Executive Committee, member (elected)
- Committee on Faculty Advancement
- Committee on Diversity and Inclusivity
- Advisory Committee for Diversity and Faculty Development in the Faculty of Arts and Sciences
- Reviewer, Undergraduate Summer Research Fellowship Applications

Physics Department, Yale University

- Committee on Climate and Diversity

2015 – 2016 *University Wide, Yale University*

- Senator, Faculty of Arts and Sciences Senate (Elected)
- Reviewer, Undergraduate Summer Research Fellowship Applications

Physics Department, Yale University

- COUPE (Committee on Undergraduate Physics Education)
- Committee on Climate and Diversity

2014 – 2015 *Physics Department, Yale University*

- COUPE (Committee on Undergraduate Physics Education)
- Committee on Climate and Diversity

2012 – 2013 *Physics Department, University of Wisconsin-Madison*

- Admissions & Fellowships Committee
- Faculty Search Committee for Astrophysics
- Alumni Relations Committee
- Outreach & Museum Committee

University-Wide, University of Wisconsin-Madison

- Faculty Senate Representative

2011 – 2012 *Physics Department, University of Wisconsin-Madison*

- Alumni Relations Committee
- Outreach & Museum Committee

Teaching

Spring 2025 *PHYS 205L and 206L: Modern Physical Measurement I & II, Yale University*

Fall 2024 *PHYS 205L and 206L: Modern Physical Measurement I & II, Yale University*

Spring 2024 *PHYS 470 & 472: Independent Research in Physics, Yale University*

- Instructor for PHYS 470 & 472 to coordinate student independent research with faculty from physics and related fields.
- **Innovations:** continue the innovation in adding science communication. Students write journal-style report and present their work in a department-wide poster session.

Fall 2023 *PHYS 524: Introduction to Nuclear Physics, Yale University*

- A graduate-level course for an introduction to a wide variety of topics in nuclear physics including nuclear models, weak interactions, neutrino physics, neutrinoless double beta decay, relativistic heavy ion collisions, nuclear astrophysics and cosmology, and experimental methods. The aim is to give a broad perspective on the subject and to develop the key ideas.
- **Innovations:** interactive classroom, discussion-based paper reading, giving students historical perspective on the physicists and their work, project-based assignments to anchor students' work in modern science and innovation.

Fall 2022 *PHYS 205L and 206L: Modern Physical Measurement I & II, Yale University*

- Instructor for 205 and 206, responsible for one section of 205 and one section of 206.
- **Innovations:** We continue to address the concerns from students that the course is too demanding as a 0.5 credit class by better articulating what we are asking them to do in their lab write-ups and reducing work outside class time.

Spring 2022 *PHYS 047: Asian Americans and STEM, Yale University*

- **Innovations:** A new course initiated and taught by Maruyama in collaboration with Prof. Lui from the History Department. It was proposed and selected as a course to promote cross-disciplinary collaboration, anti-racist pedagogy, and curricular innovation in the Faculty of Arts and Sciences. Taught as a first-year seminar, we covered Asian American history and its intersection with STEM. Students read and discussed primary sources from science, sociology, and law. Students also met with guest speakers of their science as well as their scientific career in the context of Asian American history.

Fall 2021 *PHYS 382L: Advanced Labs, Yale University*

- A laboratory course on modern experimental methods and concepts in atomic, optical, particle, nuclear, and condensed matter physics. It is intended to prepare students for independent research, and fulfills SC (science) and WR (writing) credit. We continue the innovations carried out in the previous years including adding new experiments, updating the equipment, and improving the pedagogy in science writing and

communication. Course co-instructor with one other faculty to teach 19 Students. Average student contact hours: 6 hours/week (two 3 hours of labs per week, plus availability through email and office hours).

Spring 2021 *PHYS 205L and 206L: Modern Physical Measurement I & II, Yale University*

- Primary instructor for 205 and 206, responsible for one section of 205 and one section of 206.
- **Innovations:** This semester, we are continuing with PHYS 205 as we did for Fall 2020. For PHYS 206, we are adding back the in-person component, as campus safety guidelines allow. We are using one week to teach students about measurement equipment such as oscilloscopes students missed during PHYS 205 in Fall 2020, and students will be in the lab to take measurements. We will continue to strengthen the data taking and analysis techniques students learned in PHYS 205 last semester.

Fall 2020 *PHYS 205L: Modern Physical Measurement I, Yale University*

- Primary instructor for 205, responsible for one section of 205. PHYS 206 was taught by Daisuke Nagai and converted to a computations lab. 31 students in PHYS 205 (7 in my section).
- **Innovations:** We restructured the lab course entirely for remote learning, with the goal of teaching students experimental design and data analysis. Group work was encouraged and designed into the course to provide students structure to connect with one another which we hoped would help alleviate the feeling of being isolated many people felt during the COVID pandemic. The semester was divided into three parts: 1. Introduction to data, scientific measurements, data and error analysis; 2. experimental design, data collection, and data analysis; 3. student-driven experiment design, data collection, analysis, and presentation. Students learned how to optimize data taking, we guided students as they designed and carried out their own experiments, and students presented and wrote a paper on their experiments and findings. We sent each student an iOLabs kit – an integrated sensor/data acquisition wireless device they can use to design experiments around force, acceleration, magnetic field, rotation, light, sound, temperature, pressure, and rudimentary electronics. We continued development our python module instruction to help students sharpen their data analysis and programming skills.

Spring 2020 *PHYS 205L and 206L: Modern Physical Measurement I & II, Yale University*

- Primary instructor for 205 and 206, responsible for one section of 205 and one section of 206. 18 students in PHYS 205 (7 in my section), 27 students in PHYS 206 (8 in my section). We started the semester as

described below for Fall 2019, then campus shut down due to COVID-19.

- **Innovations:** Continue to develop the Python data analysis teaching techniques. When we closed the campus due to COVID-19 we moved the course to online. For PHYS 205, we moved to a combination of pre-recorded video and synchronous lab instruction. It was vital that students already had the capability of analyzing data on their own laptops via python to carry out this course. For PHYS 206, the in-person and hands-on experience of the labs were much more individualized. The lab equipment are very specialized. We pivoted the course to teach students how to read and talk about papers, talk about current topics in physics, and we focused on developing skills needed as experimental physicist in reading, assessing, and discussing peer-reviewed journal articles.

Fall 2019 *PHYS 205L and 206L: Modern Physical Measurement I & II, Yale University*

- Section lead for two sections of 205L, one section with 6 students and the other with 13 students, and one section of 206L with one student, for a total of 20 students. Students work through a series of physics experiments for hands-on experience to teach physical concepts and experimental and data analysis techniques. Students in 206L conduct labs that are significantly more advanced, with much more independence. Student contact hours per week: 6 hours + 2 hour for extra help, for a total of 8 hours/week.
- **Innovations:** Introduce Python programming and plotting using Jupyter notebooks in PHYS 205. Students learn how to do basic programming in Python, how to import, plot, fit, and analyze data using python.

Spring 2019 *PHYS 382L: Advanced Labs, Yale University*

- A laboratory course on modern experimental methods and concepts in atomic, optical, particle, nuclear, and condensed matter physics. It is intended to prepare students for independent research, and fulfills SC and WR credit. See Spring 2018 and 2017 for innovations. Course co-instructor (with Steve Lamoreaux and Nir Navon) for 19 Students. Average student contact hours: 6 hours/week (two 3 hours of labs per week, plus availability through email and office hours).

Spring 2018 *PHYS 382L: Advanced Labs, Yale University*

- A laboratory course on modern experimental methods and concepts in atomic, optical, particle, nuclear, and condensed matter physics. It is intended to prepare students for independent research, and fulfills SC and WR credit. This was the second year since we added writing (WR) credit. Students two informal lab reports and one more formal one, similar to what they would for a peer reviewed journal publication. The stu-

dents work in pairs (learn collaborative work, as is the case for most of scientific work). Students also give an oral presentation to communicate their methods and findings, an important skill as they go on in their academic or any other career. Primary instructor (with Steve Lamoreaux and Nir Navon) for 21 Students. Average student contact hours: 6 hours/week (two 3 hours of labs per week, plus availability through email and office hours).

- **Innovations:** In addition to the writing credit introduction in S2017, I introduced the use of cluster computing to carry out Ising model simulations.

Spring 2017 *PHYS 382L: Advanced Labs, Yale University*

- A laboratory course on modern experimental methods and concepts in atomic, optical, particle, nuclear, and condensed matter physics. It is intended to prepare students for independent research, and fulfills SC and WR credit. Course co-instructor (with Steve Lamoreaux and Nir Navon) for 20 Students. Average student contact hours: 6 hours/week (two 3 hours of labs per week, plus availability through email and office hours).
- **Innovations:** We introduced writing (WR) credit, a rarity in science lab courses to do so. The students work in pairs (learn collaborative work, as is the case for most of scientific work). Students two informal lab reports and one more formal one, similar to what they would for a peer reviewed journal publication. Students also give an oral presentation to communicate their methods and findings, an important skill as they go on in their academic or any other career. New innovation included instructions on keeping better lab books which resulted in better outcome overall.

Fall 2016 *PHYS 524: Introduction to Nuclear Physics , Yale University*

- A graduate-level course for an introduction to a wide variety of topics in nuclear physics including nuclear models, weak interactions, neutrino physics, neutrinoless double beta decay, relativistic heavy ion collisions, nuclear astrophysics and cosmology, and experimental methods. The aim is to give a broad perspective on the subject and to develop the key ideas. Textbook: Basdevant

Spring 2015 *PHYS 181-02: University Physics , Yale University*

- Calculus-based physics introduction course for Electricity and Magnetism. Innovation through flipped class room, frequent assessment, feedback through peer instruction, in-class individual and team problem solving sessions, online and written homework, midterms, and midterm evaluations. Primary instructor for 27 students. Average student contact hours: 6 hours/week (150 minutes for lectures, 60 min. office hour, 120

min. weekly study sessions, plus availability through email and Piazza, plus additional study sessions before midterms and final exam). 24 lectures were given. Textbook: Halliday & Resnick

- **Innovations:** Coordinated instruction with PHYS 181-01, extensive use of interactive question and answer, in-class demonstrations, group activities.

PHYS 990-10: Special Investigations, Yale University

- Independent research project for a graduate student, Estella Barbosa de Souza. We met on average 1 hr per week to discuss science and progress of her work.

Fall 2014 *PHYS 205L-01 & 206L-01 Modern Physical Measurement, Yale University*

- Section lead for two sections of 205L, one section with 6 students and the other with 13 students, and one section of 206L with one student, for a total of 20 students. Students work through a series of physics experiments for hands-on experience to teach physical concepts and experimental and data analysis techniques. Students in 206L conduct labs that are significantly more advanced, with much more independence. Student contact hours per week: 6 hours + 2 hour for extra help, for a total of 8 hours/week.

Summer 2014 *National Academies Summer Institute on Undergraduate Education at Yale*

- Participated in a workshop to develop and bring in the latest innovation in scientific teaching into classroom.

Spring 2014 *PHYS 181-01: University Physics, Yale University*

- Calculus-based physics introduction course for Electricity and Magnetism. Primary instructor for 114 students. Average student contact hours: 4 hours/week (150 minutes for lectures, 60 min. office hour, plus availability through email, plus additional study sessions before midterms and final exam). 26 lectures were given. Textbook: Smart-Physics
- **Innovations:** Flipped class room, frequent assessment through peer instruction, in-class problem solving sessions, online and written homework, and midterms.

PHYS 990-15: Special Investigations, Yale University

- Independent research project for a graduate student, Brooke Russell. We met on average 1 hr per week to discuss science and progress of her work.

Fall 2013 *SCIE 198: Perspectives on Science and Engineering, Yale University*

- Seminar for Scientists and Engineers selected from the incoming freshman class to participate. The students learn about a subject from a faculty member at Yale, and lead discussions to solve problems posed the faculty. The instructors for this course facilitate discussions, however the discussions are designed to be led by students. One of two section instructors for 18 students. Student contact hours: 1.5 hrs/week.

Spring 2013 *Advanced Laboratory (Physics 407), University of Wisconsin-Madison*

Spring 2012 *Advanced Laboratory (Physics 407), University of Wisconsin-Madison*

Summer 2011 *Workshop for New Physics and Astronomy Faculty by AAPT, AAS, and APS*

Spring 2011 *General Physics II (Physics 202), University of Wisconsin-Madison*

Advising and Mentoring

Research Scientists

4. Michael Jewell, 2023 – 2025
3. Sidney Cahn, 2018 – 2023
2. James Nikkel, 2017 – 2024
1. Ke Han, Oct. 2014 – Feb. 2016
Current position: Associate Professor, Physics, Shanghai Jiao Tong University

Postdocs

12. Tyler Johnson, November 2024 – Present
11. Maximiliano Silva-Feaver, Mossman Fellow, August 2023 – Present
10. Sabrina Zacarias, April 2023 – September 2024
Current position: Postdoc, University of California, Santa Barbara
9. Jorge Torres, July 2021 – June 2024
Current position: Postdoc, University of Utah
8. Michael Jewell, Mar. 2020 – November 2023
Current position: Assistant Research Scientist, Yale University
7. Pranava Teja Surukuchi, Feb. 2019 – October 2023
Current position: Assistant Professor, University of Pittsburgh
6. Yuqi Zhu, April 2021 – January 2022
Current position: Scientist, Apple
5. Govinda Adhikari, February 2022 – July 2023
Current position: Senior Scientist, RMD, Boston, MA

4. Danielle Speller, Feb. 2017 – June 2020
Current position: Assistant Professor, Physics, Johns Hopkins University
3. Jay Hyun Jo, Dec. 2015 – Sep. 2022
Current position: Research Scientist, Brookhaven National Laboratory
2. Kyungeun Lim, Mar. 2013 – Jul. 2017
Current position: Senior Data Scientist, CloudTrucks
1. Matthew Kauer, 2012 – 2015
Current position: Research Scientist, University of Wisconsin-Madison

Graduate Students: PhD

19. Eduardo Castro Muñoz, PhD expected: 2028*, Yale University
Thesis: Axion Search with Rydberg Atoms at Yale
18. Eunice Beato, PhD expected: 2028*, Yale University, NSF Graduate Research Fellow
Thesis: ALPHA Axion Search Experiment
17. Maya Moore, PhD expected: 2027*, Yale University
Thesis: CUORE
16. Claire Laffan, PhD expected: 2027*, Yale University, NSF Graduate Research Fellow
Thesis: HAYSTAC
15. Eleanor Graham, PhD expected: 2027*, Yale University
Thesis: Axion Search with Rydberg Atoms
14. Ridge Liu, PhD expected: 2026*, Yale University
Thesis: CUORE
13. Xiran Bai, PhD expected: 2026*, Yale University
Thesis: HAYSTAC
12. Sophia Hollick, PhD: 2025, Yale University
Thesis: COSINE-100 and ANAIS-112: Two Experiments, One Search for the Annual Modulation of Dark Matter
Current employment: Postdoc, University of Zaragoza
11. Samantha Pagan, PhD: 2024, Yale University (co-advisor),
NSF Graduate Research Fellow
Thesis: Physics at the keV Energy Scale with CUORE: A Search for Solar Axions
10. Sumita Ghosh (Applied Physics), PhD: 2023, Yale University
Thesis: Development of Rydberg Photon Detection for Axion Searches
Current employment: Postdoc, LLNL

9. Kelly Backes, PhD: 2021, Yale University (co-advisor)
Thesis: A quantum-enhanced search for dark matter axions
Current employment: Senior Quantum Analyst, MITRE
8. William Thompson, PhD: 2022, Yale University, NSF Graduate Research Fellow
Thesis: Searching for Dark Matter with COSINE-100
Current employment: Postdoc, Harvard
7. Estella Barbosa de Souza, PhD, Dec. 2020, Yale University
Thesis: A Model Independent Search for Dark Matter Annual Modulation with COSINE-100
Current employment: Consultant, Boston Consulting Group, New York, NY
6. Christopher Davis, PhD 2020, Yale University
Thesis: Search for Neutrinoless Double-Beta Decay with Majoron Emission in CUORE
Current employment: Senior Data Scientist, CarMax, Richmond, VA
5. Jeremy Cushman, PhD, Dec. 2017 Yale University (co-advisor)
Thesis: A Search for Neutrinoless Double-Beta Decay in Tellurium-130 with CUORE
Current position: Senior Software Development Engineer at Amazon, Greater Minneapolis-St. Paul Area
4. Antonia Hubbard, PhD, Jun. 2015, University of Wisconsin-Madison
Thesis: Muon-Induced Backgrounds in the DM-Ice17 NaI(Tl) Dark Matter Detector
NSF Graduate Research Fellow
Current position: Project Manager - Electron, Rocket Lab, Wallops Island, VA
3. Walter Pettus, PhD, Jun. 2015, University of Wisconsin-Madison (co-advisor)
Thesis: Cosmogenic Activation in NaI Detectors for Dark Matter Searches.
DOE NNSA SSGF Fellow
Current employment: Assistant Professor, Physics, Indiana University Bloomington
2. Benedikt Riedel, PhD, Oct. 2014, University of Wisconsin-Madison
Thesis: Modeling and Understanding Supernova Signals in the IceCube Neutrino Observatory
Current employment: Scientific Computing Specialist, University of Wisconsin–Madison
1. Bethany Reilly, PhD, Aug. 2014, University of Wisconsin-Madison
Thesis: Background Simulation and Verification for DM-Ice
Current employment: Senior Lecturer of Physics and Astronomy, UW–Fox Valley

Graduate Students: Masters

2. Lauren Wielgus, Jul. 2012 – Sep. 2013, University of Wisconsin-Madison
Detector Calibration Control System for CUORE.
1. Zachary Pierpoint, Jul. 2011 - Dec. 2015, University of Wisconsin-Madison
Thesis: Search for Annual Modulation Signature from Dark Matter with DM-Ice17

Undergraduate Students

**expected degree award date*

30. Swarna Navaratnam-Tomayko, Jan. 2026 – May 2029*
Project: HAYSTAC/ALPHA
29. Emery Cunningham, Dec. 2025 – May 2028*
Project: HAYSTAC/ALPHA
28. Emely Rivas, Dec. 2025 – May 2028*
Project: RAY
27. Kelly Dai, Jan. 2024 – May 2027*
Project: HAYSTAC/ALPHA
26. Michael Li, Jan. 2024 – May 2024
Project: HAYSTAC
25. Sophia Getz, Sept. 2020 – May 2024
Project: Laser locking for Rydberg Atoms
24. Annie Gimán, Sept. 2020 – May 2024
Project: Rydberg Atoms
23. Claire Laffan, June 2021 – May 2022 (Postbac)
Project: HAYSTAC
Current position: Physics PhD student at Yale
22. Caitlin Gainey, Sept. 2019 – May 2023
Project: CUORE and CUPID, muon tagger
21. Laura Zhou, June 2021 – May 2022
Project: Laser locking for Rydberg Atoms
Current position: Physics PhD student at Stanford
20. Huaijin (Jean) Wang, Jan. 2019 – May 2022
Project: Data Acquisition System for HAYSTAC
Current position: Physics PhD student at Stanford
19. Andrew Zheng, Jan. 2019 – May 2022
Project: Measurement of Nuclear Recoil Quenching Factor in NaI(Tl)

18. Gabe Hoshino, Sep. 2018 – May 2021
Project: Single Photon Detection with Rydberg Atoms, muon tagging with CUORE
Current position: Physics PhD student at University of Chicago
17. Daniel Heimsoth, Sep. 2018 – May 2020
Project: Pulse Shape Discrimination in Sodium Iodide Detectors
Current position: Physics PhD student at University of Wisconsin–Madison
16. Elizabeth (Liz) Ruddy, Sep. 2018 – Aug 2020 (B.S. 2020)
Project: Annual Modulation in Sodium Iodide Detectors
Current position: Physics PhD Program at University of Colorado at Boulder
15. John Gunderson, Sept. 2019 – August 2020 (expected graduation 2023*)
Project: Compton spectrometer at Wright Lab
14. Neal Ma, Sept. 2019 – May 2020 (graduation 2023)
Project: CUORE and CUPID, muon tagger
13. Cady van Assendelft, Jun. 2018 – May 2019
Project: HAYSTAC Phase 2 Upgrade
Current position: Physics PhD Program at Stanford
12. Katherine Melbourne, Jun. 2017 – Dec 2019
Project: Simulation for CUORE
11. Byron Daniel, Jun. 2016 – May 2019
Project: Simulation of the CUORE Detector Calibration System
 - STARS-II Fellow, 2018
 - MIT Summer Research Program (MSRP), 2017
 - STARS-I and Summer Research Fellow, 2016
 - Current position: Physics PhD program at Carnegie Mellon
10. Suryabrata Dutta, Tetelman Fellow, 2016, Jun. 2016 – May 2018, B.S. May 2018
Projects: CUORE onsite detector installation, calibration system
Accepted, differed, and declined Physics PhD Program at UC Berkeley
9. Lauren Chambers, Edward A. Bouchet-Robertson Fellow, Sep. 2015 – May 2017, B.S. May 2017
Project: Characterization of Sodium-Iodide Detectors
8. Ivy Wanta, Jan. 2015 – May 2017, B.S. 2017
Project: Development of a muon veto system for improved double beta decay measurements in ^{130}Te
7. Nikita Dutta, STARS II Fellow, Jan. 2015 - May 2016j, May 2016
Senior Thesis: *Development of muon veto system for improved double beta decay measurements in ^{130}Te*

- Went onto Princeton for PhD in Mechanical Engineering.
 - 2017 NSF Graduate Research Fellow Honorable Mention
6. Field Rogers, Sep. 2014 – May 2015, B.S. 2015 (Post Bach through May 2016)
Senior Thesis: *Pulse-shape discrimination in NaI detectors*
 - Went onto MIT for PhD in Physics.
 - 2017 NSF Graduate Research Fellow
 5. Tomas Albergo, Jan. 2015 – May 2015
Project: Optimization of the CUORE Calibration System with Monte Carlo Simulations
 4. Chris Hilgenberg, Sep. 2011 – 2013
Project: Effect of temperature on NaI pulse shape
 - Recipient of the 2012-2013 Wisconsin Space Grant Consortium Undergraduate Research Award
 - Went onto Physics PhD program at Colorado State
 3. Aleks Cianciara, Sep. 2011 – 2013
Project: DM-Ice17 detector stability
 2. Minghui (Maggie) Wu, Jan. – Jun. 2013
Project: Background estimates for DM-Ice
 1. Benjamin Broerman (co-advisor), Jun. 2010 – 2012
Project: Modeling of the thermal mass and gradient profile of the DM-Ice prototype, PMT characterization, waveform characterization, detector stability
 - Recipient of the 2011 UW Hilldale Research Fellowship.
 - Went onto Physics PhD program at Queens University, Canada

Plenary and Invited Talks at Conferences and Workshops

49. “Axion Dark Matter Search with the HAYSTAC Experiment,” 20th Patras Workshop on Axions WIMPs and WISPs, Instituto de Astrofísica de Canarias (IAC), Tenerife, Spain, September 22 – 26, 2025.
48. “Haloscopes and the Search for Axion Dark Matter,” Keynote at Axions in Stockholm, NORDITA, Stockholm, Sweden, June 30 – July 5, 2025.
47. “Axion Searches with HAYSTAC, ALPHA, and RAY,” Berkeley Axion Workshop 2025, University of California, Berkeley, Berkeley, CA, May 7 – 9, 2025.
46. “Single-Photon Detection for Axion Haloscopes with RAY,” 19th Patras Workshop on Axions WIMPs and WISPs, University of Patras, Patras, Greece, September 16 – 20, 2024.

45. "Search for Axions: HAYSTAC & ALPHA" The Future of High Energy Physics: A New Generation, A New Vision, Aspen Center for Physics, Aspen, CO. March 24 – 29, 2024.
44. "Resolving DAMA" Nobel Symposium on Dark Matter, Rånäs Slott, Stockholm, Sweden, August 24 – 29, 2023.
43. "Dark Matter, Axions, and Quantum Sensors" The 26th Science in Japan Forum: Quantum Taste of the Universe, Washington, DC, June 9, 2023.
42. "Resolving DAMA" UCLA Dark Matter Conference 2023, University of California, Los Angeles, CA, March 29 – April 1, 2023.
41. "The COSINE Experiment," 2022 Korean Physical Society Spring Pioneer Symposium: Dark Matter and Neutrino Searches with Scintillating Detectors. Virtual. April 20, 2022.
40. "Quantum Sensors and Axion Dark Matter Searches," Quantum Information Science Mini-Workshop, Yale University, New Haven, CT. April 8, 2022.
39. "Rydberg Atom-Based Photon Detectors for Axion Searches," New Methods and Ideas at the Frontiers of Particle Physics, Aspen Center for Physics, Aspen, CO. March 20 – 25, 2022.
38. "Photon Detectors and Readout for Axion Searches," Lawrence Workshop on Tunable Plasmonic Haloscopes, Virtual. May 5 – 7, 2021.
37. "Quantum Sensors for Particle Physics," APS April Meeting 2021, Virtual. Apr. 17 – 20, 2021.
36. "HAYSTAC and the Search for Dark Matter Axions Above $10 \mu\text{eV}$," Quantum Information and Systems for Fundamental Physics, Aspen, CO. Feb. 17 – 22, 2020.
35. "Review: Direct Detection of Dark Matter," Uppsala Workshop on Particle Physics with Neutrino Telescopes (PPNT19), Uppsala, Sweden. Oct. 7 – 9, 2019.
34. "Neutrinoless Double Beta Decay, a Review," SLAC Summer School, Palo Alto, CA. Aug. 12 – 23, 2019.
33. "Recent results from COSINE-100," 54th Rencontres de Moriond, Electroweak Interactions and Unified Theories, La Thuile, Aosta Valley, Italy, Mar. 16 – 23, 2019.
32. "Double Beta Decay and Neutrino Physics," Plenary Lecture for Conference Experience for Undergraduate Students, 5th Joint Meeting of the APS Division of Nuclear Physics and the Physical Society of Japan, Waikoloa, HI, October 23 – 27, 2018.
31. "Testing DAMA/LIBRA with COSINE-100," Pacific 2018.9, U.C. Berkeley Richard B. Gump South Pacific Research Station, Moorea, French Polynesia, Aug. 31 – Sep. 04, 2018.
30. "COSINE-100 and tests of DAMA," CIPANP 2018, 13th Conference on the Intersections of Particle and Nuclear Physics, Palm Springs, CA, May 28 – June 3, 2018.

29. "COSINE-100," UCLA Dark Matter Conference 2018, UCLA, Los Angeles, CA. Feb. 21 – 23, 2018 (Plenary).
28. "Lectures on Neutrinoless Double Beta Decay," TRISEP2017, SNOLAB Summer School, Sudbury, ON, Canada. July 10 – 21, 2017.
27. "Neutrinoless Double Beta Decay," Institute for Nuclear Theory, Double Beta Decay Workshop, University of Washington, Seattle, WA, June 13 – 16, 2017.
26. "COSINE Experiment," Lake Louise Winter Institute 2017, Lake Louise, Canada. Feb. 19 – 25, 2017 (Plenary).
25. "Testing DAMA with COSINE-100," Miami 2016, Fort Lauderdale, FL. Dec. 14 – 20, 2016 (Plenary).
24. "Status and prospect for NaI dark matter experiments," 38th International Conference on High Energy Physics (ICHEP 2016), Chicago, IL. Aug. 3 – 10, 2016 (IBS Satellite Session).
23. "DM-Ice," UCLA Dark Matter 2016, Sources and Detection of Dark Matter and Dark Energy in the Universe, UCLA, Los Angeles, CA. Feb. 17 – 19, 2016 (Plenary).
22. "First Data from DM-Ice17, Prospects for DM-Ice," Mini-Workshop on direct search of dark matter, Institute for Basic Science, Daejeon, Korea. Jul. 7, 2015.
21. "Results from the search for neutrinoless double beta decay of ^{130}Te with CUORE-0, Status of CUORE," International Workshop on Baryon & Lepton Number Violation (BLV 2015), University of Massachusetts Amherst, Amherst, MA, Apr. 26 - 30, 2015.
20. "Results from CUORE-0, Status of CUORE," International Workshop on Double Beta Decay and Underground Science (DBD 2014) and the 4th Joint Meeting of the APS Division of Nuclear Physics and the Physical Society of Japan, Hawaii Island, USA, Oct. 5 - 7, 2014.
19. "Dark Matter Searches at the South Pole," Neutrinos Beyond IceCube, Arlington, VA, USA, Apr. 24, 2014 (Plenary).
18. "First Data from DM-Ice," Lake Louise Winter Institute, Lake Louise, Canada, Feb. 16 - 22, 2014 (Plenary).
17. "DM-Ice," Carolina International Symposium on Neutrino Physics 2013, Columbia, SC, May 20 - May 22, 2013 (Plenary).
16. "DM-Ice," Aspen Winter Workshop 2013 - Closing in on Dark Matter, Aspen Center for Physics, Aspen, CO, Jan. 28 - Feb. 3, 2013 (Plenary).
15. "DM-Ice," Dark Matter Silver Jubilee Symposium, PNNL, Richland, Washington, June 19-21, 2012 (Plenary).
14. "DM-Ice: DM Search with NaI," NDM12, Neutrinos and Dark Matter in Nuclear Physics 2012, Nara, Japan, June 11-15, 2012 (Plenary).

13. "Dark matter signatures and limits," CIPANP 2012, 11th Conference on the Intersections of Particle and Nuclear Physics, St. Petersburg, Florida, May 28-June 3, 2012 (Plenary).
12. "DM-Ice: a Search for Dark Matter at the South Pole," APS April Meeting, Atlanta, Georgia, March 31-April 3, 2012.
11. "On Testing DAMA," Unraveling Dark Matter, a workshop at Perimeter Institute, Waterloo, Canada, September 22-24, 2011 (Plenary).
10. "DM-Ice," Dark Matter Underground and in the Heavens, DMUH11, CERN, Switzerland, July 18-29, 2011 (Plenary).
9. "DM-Ice A Direct Dark Matter Search at the South Pole," Antarctic Science Symposium 2011, Madison, Wisconsin, April 27-28, 2011 (Plenary).
8. "DM-Ice: A Search for Dark Matter in the Antarctic Ice," Astrophysics from the South Pole: Status and Future Prospects, Washington, D.C., April 4-5, 2011 (Plenary).
7. "DM-Ice: A Search for Dark Matter in the Antarctic Ice," Indirect and Direct Detection of Dark Matter, Aspen Center for Physics, Aspen, Colorado, February 6-12, 2011 (Plenary).
6. "Supernova Neutrino Detection with IceCube," UCLA/UCSD Supernova Physics and DUSEL Workshop, UCLA, Los Angeles, CA, September 16-17, 2009 (Plenary).
5. "Neutrinoless Double Beta Decay," Gordon Research Conference in Nuclear Physics, Bryant University, Smithfield, Rhode Island, July 12-17, 2009 (Plenary).
4. "Probing the neutrino particle nature and mass scale with CUORICINO and CUORE," Workshop on Next generation Nucleon decay and Neutrino detectors 2006 (NNN06), Seattle, Washington, September 21-23, 2006 (Plenary).
3. "Cryogenic Double Beta Decay Experiments: CUORE and CUORICINO," Neutrino 2006, Santa Fe, New Mexico, June 13-19, 2006 (Plenary).
2. "Status of CUORICINO, Prospects for CUORE," Workshop on Exploring The Physics Frontier At The Deep Underground Laboratories, Institute for Nuclear Theory, University of Washington, Seattle, Washington, June 23-24, 2005.
1. "Prospects for an Atomic Clock Using the 1S_0 - 3P_0 Line in Atomic Yb," Second Workshop on Cold Alkaline-Earth Atoms, Copenhagen, Denmark, 2003.

Invited Seminars and Colloquia

43. Queen's University, Physics Colloquium, Kingston, Ontario, Canada, November 7, 2025.
42. Loyola University Chicago, Physics Colloquium, Chicago, IL, October 23, 2025.

41. MIT Physics Colloquium, Boston, MA, October 2, 2025.
40. MPP Colloquium, Max Planck Institute for Physics, Munich, Germany, May 17, 2024.
39. UConn Physics Colloquium, University of Connecticut, Storrs, CT, April 26, 2024.
38. SNOLab Seminar, virtual, September 11, 2023.
37. Seminar, Kavli Institute for the Physics and Mathematics of the Universe (IPMU), University of Tokyo, August 8, 2023.
36. Seminar, Barnard College, Columbia University, Virtual, July 1, 2021.
35. Seminar, International Center for Hadron Astrophysics, Chiba University, Japan May 18, 2021.
34. Physics Colloquium, Physics Department, Stanford University, Jun. 4, 2019.
33. Physics Colloquium, Physics Department, University of Chicago, Jan. 10, 2019.
32. Physics Colloquium, Physics Department, Harvard University, Nov. 5, 2018.
31. Physics Colloquium, Physics Department, University of Rochester, May. 10, 2017.
30. Physics Seminar, Trinity College, Hartford, CT, Apr. 28, 2017.
29. Physics Colloquium, Physics Department, Columbia University, Mar. 27, 2017.
28. Physics Colloquium, Williams College, Apr. 8, 2016.
27. AstroParticle Physics Seminar, Sungkyunkwan University, South Korea, Apr. 6, 2016.
26. Physics Colloquium, University of Washington, Seattle, WA, Feb. 29, 2016.
25. Physics Club (Colloquium), Yale University, Dec. 14, 2015.
24. Physics Colloquium, Rensselaer Polytechnic Institute, Nov. 4, 2015.
23. Joint Stony Brook/Brookhaven Cosmology Seminar, Sep. 23, 2015.
22. Nuclear Particle Astrophysics Seminar, Wright Lab, Yale University, New Haven, CT, Apr. 16, 2015.
21. Physics Department/INFN Particle Physics Seminar, University of Rome “La Sapienza”, Italy, May 12, 2014.
20. MIT Laboratory for Nuclear Science Lunch Time Seminar, Mar. 18, 2014.
19. Colloquium, Department of Physics, Drexel University, Dec. 5, 2013.
18. Weak Interactions Discussion Group at Yale, Yale University, Sep. 23, 2013.
17. Astroparticle Seminar, McGill University, Montreal, Canada, November 14, 2012.

16. High Energy Physics Seminar, Yale University, New Haven, Connecticut, September 5, 2012.
15. SLAC Astrophysics Colloquium, Kavli Institute for Particle Astrophysics and Cosmology, Stanford University, California, May 24, 2012.
14. KIPAC Friday Noon Seminar, University of Chicago, Chicago, Illinois, May 4, 2012.
13. Physics Department Colloquium, University of Arizona, Tucson, Arizona, April 13, 2012.
12. HEP/AstroPhysics Seminar, Physics Department, University of Michigan, Ann Arbor, Michigan, September 19, 2011.
11. Department of Physics Special Seminar, University of Wisconsin, Madison, September 30, 2010.
10. Special Medium Energy Seminar, University of Illinois at Urbana-Champaign, July 9, 2010.
9. Argonne National Laboratory High Energy Physics Division Seminar, March 17, 2010.
8. Sunday Evening Talk, Amundson-Scott South Pole Station, South Pole, Antarctica, December 5, 2010.
7. Harvard University Laboratory for Particle Physics and Cosmology Seminar Series, February 24, 2009.
6. MIT Laboratory for Nuclear Science Lunch Time Seminar, February 24, 2009.
5. Joint Astrophysics/Nuclear Physics Seminar, Ohio University, April 10, 2007.
4. Nuclear Physics Seminar, University of Maryland, March 30, 2007.
3. Argonne National Laboratory Physics Division Seminar, December 12, 2006.
2. Cosmology and Astrophysics Seminars, University of Wisconsin, Madison, Wisconsin, April 3, 2006.
1. Colloquium, Physics Department, University of North Carolina, Chapel Hill, North Carolina, March 9, 2006.

Contributed Talks & Posters

20. "Status and Updates for CUPID" DNP 2021, Virtual, October 11 – 14, 2021.
19. "COSINE-100" TAUP 2017, Sudbury, ON, Canada, Jul. 24 – 28, 2017.
18. "Results from the DM-Ice17 Dark Matter Experiment," Z. Pierpoint for DM-Ice. Division of Nuclear Physics of the American Physical Society, Oct. 28 - 31, 2015, Santa Fe, NM.
17. "Results from the DM-Ice17 Dark Matter Experiment at the South Pole," TAUP 2015, Torino, Italy, September 7 - 11, 2015.

16. "Status of CUORE," Aspen Winter Workshop 2013 - New Directions in Neutrino Physics, Aspen Center for Physics, Aspen, CO, Feb. 3 - 9, 2013 (Poster).
15. "DM-Ice," IAU Beijing IAU XXVIII, International Astronomical Union, Astrophysics from Antarctica, Beijing, China, August 20-24, 2012.
14. "DM-Ice," SCAR 2012, Scientific Committee on Antarctic Research Open Science Conference, Portland, Oregon, July 16-19, 2012.
13. "DM-Ice," UCLA DM 2012, Marina del Rey Marriott, Los Angeles, California, February 22 - 24, 2012.
12. "DM-Ice: A Search for Dark Matter at the South Pole," TAUP 2011, Munich, Germany, September 5-9, 2011.
11. "DM-Ice: A Search for Dark Matter at the South Pole," Pheno Symposium, Madison, WI, May 9-11, 2011.
10. "Studying neutrinos from nearby supernovae with IceCube," Poster for Neutrino 2010, Athens, Greece, June 14-19, 2010.
9. "Production of Neutron Transmutation Doped Germanium Thermistors for CUORE," Fall Meeting of the Division of Nuclear Physics of the American Physical Society, Oakland, California, October 23-26, 2008.
8. "Updates on β - ν correlation measurement of optically trapped ^{21}Na atoms" Fall Meeting of the Division of Nuclear Physics of the American Physical Society, Maui, Hawaii, September 18-22, 2005.
7. "Status of CUORICINO, Prospects for CUORE" Frontiers in Contemporary Physics III, Vanderbilt University Nashville, Tennessee, May 23-28, 2005.
6. "The β - ν Correlation of Optically Trapped ^{21}Na Atoms" Fall Meeting of the Division of Nuclear Physics of the American Physical Society, Chicago, Illinois, 2004.
5. "Beta-Neutrino Correlation Measurement with Sodium-21 in a Magneto-Optical Trap Using Shake-off Electrons" Fall Meeting of the Division of Nuclear Physics of the American Physical Society, Tucson, Arizona, 2003.
4. "Sisyphus Cooling in Ytterbium Intercombination MOT" Division of Atomic, Molecular and Optical Physics of the American Physical Society, Boulder, Colorado, 2003.
3. "Investigation of an Ytterbium MOT Using an Intercombination Transition" Division of Atomic, Molecular and Optical Physics of the American Physical Society, Williamsburg, Virginia, 2002.
2. "Trapping Ytterbium Atoms for an EDM Experiment" Centennial Meeting of the American Physical Society, Atlanta, Georgia, 1999.
1. "Trapping Ytterbium Atoms for an EDM Experiment" Division of Atomic, Molecular and Optical Physics of the American Physical Society, Santa Fe, New Mexico, 1998.

Public Outreach, Public Talks, TV & Radio Appearances, Notable Public Media

Representative list can be found at <http://maruyama-lab.yale.edu/news-media>

Publications

<http://www.researcherid.com/rid/A-1064-2013>

Books, Chapters, and Edited Volumes

- [1] Reina Maruyama. “Phenomenology of Gamma Ray and Charged Particles Interactions”. In: *Encyclopedia of Nuclear Energy*. Ed. by Ehud Greenspan. Oxford: Elsevier, 2021, pp. 117–124. ISBN: 978-0-12-819732-5. DOI: <https://doi.org/10.1016/B978-0-12-819725-7.00127-6>. URL: <https://www.sciencedirect.com/science/article/pii/B9780128197257001276>.
- [2] Reina Maruyama, ed. *Proceedings, Symmetries and Order: Algebraic Methods in Many Body Systems: In honor of Francesco Iachello, on the occasion of his retirement*. Vol. 2150. 1. 2019. ISBN: 9780735418950.

Selected Publications with Significant Contributions by Maruyama

- [3] K. Alfonso et al. “CUPID, the Cuore upgrade with particle identification”. In: *Eur. Phys. J. C* 85.7 (2025), p. 737. DOI: 10.1140/epjc/s10052-025-14352-1. arXiv: 2503.02894 [physics.ins-det].
- [4] Xiran Bai et al. “Dark Matter Axion Search with HAYSTAC Phase II”. In: *Phys. Rev. Lett.* 134.15 (2025), p. 151006. DOI: 10.1103/PhysRevLett.134.151006. arXiv: 2409.08998 [hep-ex].
- [5] N. Carlin et al. “Combined Annual Modulation Dark Matter Search with COSINE-100 and ANAIS-112”. In: *Phys. Rev. Lett.* 135.12 (2025), p. 121002. DOI: 10.1103/9j7w-qp1c. arXiv: 2503.19559 [astro-ph.IM].
- [6] Nelson Carlin et al. “COSINE-100 full dataset challenges the annual modulation signal of DAMA/LIBRA”. In: *Sci. Adv.* 11.36 (2025), adv6503. DOI: 10.1126/sciadv.adv6503. arXiv: 2409.13226 [hep-ex].
- [7] Doohyeok Lee et al. “Upgrading the COSINE-100 experiment for enhanced sensitivity to low-mass dark matter detection”. In: *Commun. Phys.* 8.1 (2025), p. 135. DOI: 10.1038/s42005-025-02067-4. arXiv: 2409.15748 [hep-ex].
- [8] Maya Moore et al. “Performance of a SiPM-based, plastic scintillator muon veto prototype for CUPID”. In: *JINST* 20.08 (2025), P08020. DOI: 10.1088/1748-0221/20/08/P08020. arXiv: 2505.06129 [physics.ins-det].
- [9] G. H. Yu et al. “Improved background modeling for dark matter search with COSINE-100”. In: *Eur. Phys. J. C* 85.1 (2025), p. 32. DOI: 10.1140/epjc/s10052-025-13775-0. arXiv: 2408.09806 [astro-ph.IM].
- [10] G. H. Yu et al. “Limits on WIMP Dark Matter with NaI(Tl) Crystals in Three Years of COSINE-100 Data”. In: *Phys. Rev. Lett.* 135.23 (2025), p. 231001. DOI: 10.1103/77p2-rnbw. arXiv: 2501.13665 [hep-ex].

- [11] D. Q. Adams et al. “Search for Fractionally Charged Particles with CUORE”. In: *Phys. Rev. Lett.* 133.24 (2024), p. 241801. DOI: 10.1103/PhysRevLett.133.241801. arXiv: 2406.12380 [hep-ex].
- [12] N. Carlin et al. “COSINE-100 Full Dataset Challenges the Annual Modulation Signal of DAMA/LIBRA”. In: (Sept. 2024). arXiv: 2409.13226 [hep-ex].
- [13] D. Cintas et al. “Measurement of the sodium and iodine scintillation quenching factors across multiple NaI(Tl) detectors to identify systematics”. In: *Phys. Rev. C* 110.1 (2024), p. 014613. DOI: 10.1103/PhysRevC.110.014613. arXiv: 2402.12480 [hep-ex].
- [14] Eleanor Graham et al. “Rydberg-atom-based single-photon detection for haloscope axion searches”. In: *Phys. Rev. D* 109.3 (2024), p. 032009. DOI: 10.1103/PhysRevD.109.032009. arXiv: 2310.15352 [hep-ex].
- [15] R. Abbasi et al. “Observation of high-energy neutrinos from the Galactic plane”. In: *Science* 380.6652 (2023), adc9818. DOI: 10.1126/science.adc9818. arXiv: 2307.04427 [astro-ph.HE].
- [16] B. Acharya et al. “Fundamental Symmetries, Neutrons, and Neutrinos (FSNN): Whitepaper for the 2023 NSAC Long Range Plan”. In: (Apr. 2023). arXiv: 2304.03451 [nucl-ex].
- [17] G. Adhikari et al. “Alpha backgrounds in NaI(Tl) crystals of COSINE-100”. In: (Nov. 2023). arXiv: 2311.05010 [astro-ph.IM].
- [18] G. Adhikari et al. “Search for Boosted Dark Matter in COSINE-100”. In: *Phys. Rev. Lett.* 131.20 (2023), p. 201802. DOI: 10.1103/PhysRevLett.131.201802. arXiv: 2306.00322 [hep-ex].
- [19] G. Adhikari et al. “Search for bosonic super-weakly interacting massive particles at COSINE-100”. In: *Phys. Rev. D* 108.4 (2023), p. L041301. DOI: 10.1103/PhysRevD.108.L041301. arXiv: 2304.01460 [hep-ex].
- [20] G. Adhikari et al. “Search for inelastic WIMP-iodine scattering with COSINE-100”. In: *Phys. Rev. D* 108.9 (2023), p. 092006. DOI: 10.1103/PhysRevD.108.092006. arXiv: 2307.09814 [hep-ex].
- [21] G. Adhikari et al. “Search for solar bosonic dark matter annual modulation with COSINE-100”. In: *Phys. Rev. D* 107.12 (2023), p. 122004. DOI: 10.1103/PhysRevD.107.122004. arXiv: 2302.10267 [hep-ex].
- [22] Govinda Adhikari et al. “An induced annual modulation signature in COSINE-100 data by DAMA/LIBRA’s analysis method”. In: *Sci. Rep.* 13.1 (2023), p. 4676. DOI: 10.1038/s41598-023-31688-4. arXiv: 2208.05158 [hep-ex].
- [23] K. Alfonso et al. “CUPID: The Next-Generation Neutrinoless Double Beta Decay Experiment”. In: *J. Low Temp. Phys.* 211.5-6 (2023), pp. 375–383. DOI: 10.1007/s10909-022-02909-3.
- [24] Xiran Bai et al. “On the use of dielectric elements in axion searches with microwave resonant cavities”. In: *JINST* 18.07 (2023), P07017. DOI: 10.1088/1748-0221/18/07/P07017. arXiv: 2304.06562 [physics.ins-det].

- [25] Aaron Chou et al. “Quantum Sensors for High Energy Physics”. In: Nov. 2023. arXiv: 2311.01930 [hep-ex].
- [26] M. J. Jewell et al. “New results from HAYSTAC’s phase II operation with a squeezed state receiver”. In: *Phys. Rev. D* 107.7 (2023), p. 072007. DOI: 10.1103/PhysRevD.107.072007. arXiv: 2301.09721 [hep-ex].
- [27] R. Saldanha et al. “Cosmogenic activation of sodium iodide”. In: *Phys. Rev. D* 107.2 (2023), p. 022006. DOI: 10.1103/PhysRevD.107.022006. arXiv: 2209.14898 [hep-ex].
- [28] Yuqi Zhu et al. “An improved synthetic signal injection routine for the Haloscope At Yale Sensitive To Axion Cold dark matter (HAYSTAC)”. In: *Rev. Sci. Instrum.* 94.5 (2023), p. 054712. DOI: 10.1063/5.0137870. arXiv: 2212.00732 [physics.ins-det].
- [29] C. B. Adams et al. “Axion Dark Matter”. In: *2022 Snowmass Summer Study*. Mar. 2022. arXiv: 2203.14923 [hep-ex].
- [30] D. Q. Adams et al. “An energy-dependent electro-thermal response model of CUORE cryogenic calorimeter”. In: *JINST* 17.11 (2022), P11023. DOI: 10.1088/1748-0221/17/11/P11023. arXiv: 2205.04549 [physics.ins-det].
- [31] D. Q. Adams et al. “CUORE opens the door to tonne-scale cryogenics experiments”. In: *Prog. Part. Nucl. Phys.* 122 (2022), p. 103902. DOI: 10.1016/j.pnpnp.2021.103902. arXiv: 2108.07883 [physics.ins-det].
- [32] D. Q. Adams et al. “New Direct Limit on Neutrinoless Double Beta Decay Half-Life of Te128 with CUORE”. In: *Phys. Rev. Lett.* 129.22 (2022), p. 222501. DOI: 10.1103/PhysRevLett.129.222501. arXiv: 2205.03132 [nucl-ex].
- [33] D. Q. Adams et al. “Search for Majorana neutrinos exploiting millikelvin cryogenics with CUORE”. In: *Nature* 604.7904 (2022), pp. 53–58. DOI: 10.1038/s41586-022-04497-4. arXiv: 2104.06906 [nucl-ex].
- [34] D. Q. Adams et al. “Search for neutrinoless β +EC decay of Te120 with CUORE”. In: *Phys. Rev. C* 105.6 (2022), p. 065504. DOI: 10.1103/PhysRevC.105.065504. arXiv: 2203.08684 [nucl-ex].
- [35] G. Adhikari et al. “Searching for low-mass dark matter via the Migdal effect in COSINE-100”. In: *Phys. Rev. D* 105.4 (2022), p. 042006. DOI: 10.1103/PhysRevD.105.042006. arXiv: 2110.05806 [hep-ex].
- [36] G. Adhikari et al. “Three-year annual modulation search with COSINE-100”. In: *Phys. Rev. D* 106.5 (2022), p. 052005. DOI: 10.1103/PhysRevD.106.052005. arXiv: 2111.08863 [hep-ex].
- [37] K. Alfonso et al. “Optimization of the first CUPID detector module”. In: *Eur. Phys. J. C* 82.9 (2022), p. 810. DOI: 10.1140/epjc/s10052-022-10720-3. arXiv: 2202.06279 [physics.ins-det].
- [38] D. Antypas et al. “New Horizons: Scalar and Vector Ultralight Dark Matter”. In: (Mar. 2022). arXiv: 2203.14915 [hep-ex].

- [39] Phillip S. Barbeau et al. “Report of the Instrumentation Frontier Working Group for Snowmass 2021”. In: *2022 Snowmass Summer Study*. Sept. 2022. arXiv: 2209.14111 [hep-ex].
- [40] Thomas Cecil et al. “Snowmass 2021 IF01: Quantum Sensors Topical Group Report”. In: *2022 Snowmass Summer Study*. Aug. 2022. arXiv: 2208.13310 [physics.ins-det].
- [41] H. Kim et al. “The environmental monitoring system at the COSINE-100 experiment”. In: *JINST* 17.01 (2022), T01001. DOI: 10.1088/1748-0221/17/01/T01001. arXiv: 2107.07655 [physics.ins-det].
- [42] Yuqi Zhu et al. “Electromagnetically-induced-transparency spectroscopy of high-lying Rydberg states in K39”. In: *Phys. Rev. A* 105.4 (2022), p. 042808. DOI: 10.1103/PhysRevA.105.042808. arXiv: 2112.04614 [physics.atom-ph].
- [43] M. G. Aartsen et al. “IceCube-Gen2: the window to the extreme Universe”. In: *J. Phys. G* 48.6 (2021), p. 060501. DOI: 10.1088/1361-6471/abbd48. arXiv: 2008.04323 [astro-ph.HE].
- [44] D. Q. Adams et al. “High sensitivity neutrinoless double-beta decay search with one tonne-year of CUORE data”. In: (Apr. 2021). arXiv: 2104.06906 [nucl-ex].
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