

Daniel Ang

QTC SCIENTIST · QUANTUM TECHNOLOGY CENTER · UNIVERSITY OF MARYLAND

✉ dga@umd.edu | 🏠 danielang.net

Employment

- 2023-present **Quantum Technology Center Scientist**, Walsworth Group, Quantum Technology Center, University of Maryland
- 2018-23 **Visiting Pre-Doctoral Fellow in Physics**, Gabrielse Lab, Center for Fundamental Physics, Northwestern University
- 2020 **Teaching Fellow, Applied Physics 50A**, Department of Physics (under Eric Mazur), Harvard University
- 2015-23 **Graduate Research Assistant**, Gabrielse Lab & ACME collaboration, Department of Physics, Harvard University
- 2013 **Visiting Undergraduate Fellow in Physics**, ACME Collaboration, Harvard University
- 2012-15 **Research Assistant**, Hunter Lab, Amherst College

Education

Harvard University

Cambridge, MA

PHD, PHYSICS

2023

- Member, ACME collaboration
- Dissertation: *Progress towards an Improved Measurement of the Electron Electric Dipole Moment*
- PhD committee: Gerald Gabrielse (main advisor), Roxanne Guenette, Isaac Silvera, Ronald Walsworth

Harvard University

Cambridge, MA

MA, PHYSICS

2017

Amherst College

Amherst, MA

BA WITH HONORS, MATHEMATICS, MUSIC, PHYSICS

2015

- Summa cum laude with Distinction
- Senior thesis in physics: *In Search of New Geometries for Probing Spin-Spin Interactions* (advisor: Larry Hunter)
- Senior thesis in music: *In Pursuit of Feeling* (advisor: Eric Sawyer)

Publications

* denotes equal contribution.

14. **D. G. Ang***, J. Tang*, and R.L. Walsworth, “Design of a quantum diamond microscope with efficient scanning confocal readout,” arXiv:2503.00252 (2025).
13. **D.G. Ang**, X.X. Liu, J.S. Tang, M. Shen, R. Ebadi, R. Walsworth, “Progress towards a solid-state directional dark matter detector,” in S. Baum, P. Huber, P. Stengel et al., *Mineral Detection of Neutrinos and Dark Matter 2024 Proceedings*, arXiv:2405.01626 (2024).
12. A. Hiramoto, T. Masuda, **D.G. Ang**, C. Meisenhelder, C. Panda, N. Sasao, S. Uetake, X. Wu, D. DeMille, J.M. Doyle, G. Gabrielse, K. Yoshimura, “SiPM module for the ACME III electron EDM search,” *Nuclear Instruments and Methods in Physics Research A* **1045**, 167513 (2023).
11. T. Masuda, A. Hiramoto, **D.G. Ang**, C. Meisenhelder, C. D. Panda, N. Sasao, S. Uetake, X. Wu, D. P. DeMille, J. M. Doyle, G. Gabrielse, K. Yoshimura, “High-sensitivity low-noise photodetector using large-area silicon photomultiplier,” *Optics Express* **31**(2), 1943–1957 (2023).
10. **D.G. Ang**, C. Meisenhelder, C. Panda, X. Wu, D. DeMille, J. Doyle, G. Gabrielse, “Measurement of the $H^3\Delta_1$ Radiative Lifetime in ThO,” *Physical Review A* **106**, 022808 (2022).
9. X. Wu, P. Hu, Z. Han, **D.G. Ang**, C. Meisenhelder, G. Gabrielse, J.M. Doyle, D. DeMille, “Electrostatic focusing of cold and heavy molecules for the ACME electron EDM search,” *New Journal of Physics* **24**, 073043 (2022).

8. T. Masuda, **D.G. Ang**, N. R. Hutzler, C. Meisenhelder, N. Sasao, S. Uetake, X. Wu, D. DeMille, G. Gabrielse, J.M. Doyle, K. Yoshimura, "Suppression of the optical crosstalk in a multi-channel silicon photomultiplier array," *Optics Express* **29**(11), 16914–16926 (2021).
7. X. Wu, Z. Han, J. Chow, **D.G. Ang**, C. Meisenhelder, C.D. Panda, E. West, G. Gabrielse, J.M. Doyle, D. DeMille, "The metastable $Q^3 \Delta_2$ state of ThO: A new resource for the ACME electron EDM search," *New Journal of Physics* **22**, 023013 (2020).
6. C.D. Panda, C. Meisenhelder, M. Verma, **D.G. Ang**, J. Chow, Z. Lasner, X. Wu, D. DeMille, J.M. Doyle, G. Gabrielse, "Attaining the shot-noise-limit in the ACME measurement of the electron electric dipole moment," *Journal of Physics B* **52**, 235003 (2019).
5. The ACME Collaboration: V. Andreev, **D.G. Ang**, D. DeMille, J.M. Doyle, J. Haefner, N.R. Hutzler, Z. Lasner, C. Meisenhelder, B.R. O'Leary, C.D. Panda, A.D. West, E.P. West, X. Wu, "Improved limit on the electric dipole moment of the electron," *Nature* **562**, 355–360 (2018).
4. S.K. Peck, N. Lane, **D.G. Ang**, and L.R. Hunter, "Using Tensor Light Shifts to Measure and Cancel a Cell's Quadrupolar Frequency Shift," *Physical Review A* **93**, 023426 (2016).
3. L.R. Hunter, S.K. Peck, **D.G. Ang**, D.K. Kim, D. Stein, D. Orbaker, A. Foss, M.T. Hummon, J.E. Gordon, J.F. Lin, "Bounds on LLI violation and long-range spin-spin interactions using Hg, Cs, and the earth," *Proceedings of the 6th Meeting on CPT and Lorentz Symmetry, CPT 2013* (2014).
2. L.R. Hunter, **D.G. Ang**, "Using Geoelectrons to Search for Velocity-Dependent Spin-Spin Interactions," *Physical Review Letters* **112**, 091803 (2014).
1. L.R. Hunter, J. Gordon, S. Peck, **D. Ang**, and J.-F. Lin, "Using the Earth as a polarized electron source to search for long-range spin-spin interactions," *Science* **339**, 928 (2013).

Presentations and Colloquia Given

- "Quantum Sensing with Diamond Defects: From Navigation to Dark Matter Detection"
Naval Surface Warfare Center - Carderock Division, Carderock, MD, October 31, 2024 (invited presentation)
- "Progress in directional DM detection with quantum diamond sensors"
Mineral Detection of Neutrinos and Dark Matter Meeting, Arlington, VA, January 9, 2024
8th CYGNUS Workshop on Directional Recoil Detection, Sydney, Australia, December 14, 2023
- "ACME EDM: Probing TeV-Scale New Physics in a Tabletop Experiment"
Naval Research Laboratory (invited presentation), Washington, DC, May 16, 2023
MIT LNS Lunchtime seminar (invited presentation), May 16, 2023
- "Progress in the ACME III Search for the Electron EDM"
53rd Annual Meeting of the APS Division of Atomic, Molecular and Optical Physics, Orlando, FL, June 1, 2022
- "A New Lifetime Measurement of the $H^3 \Delta_1$ state of Thorium Monoxide for the ACME electron EDM experiment"
52nd Annual Meeting of the APS Division of Atomic, Molecular and Optical Physics (virtual), June 2, 2021
- "New H-state lifetime measurement for the ACME electron EDM search"
51st Annual Meeting of the APS Division of Atomic, Molecular and Optical Physics (virtual), June 3, 2020
- "Beyond the ACME II Limit on the Electron EDM"
Gordon Research Conference (Atomic Physics) on Cold Controlled Atoms and Molecules, Ultrafast Spectroscopy and Precision Measurements, Newport, RI, June 9-14, 2019 (poster)
- "Characterization and Suppression of Systematic Errors in the ACME II Measurement of the Electron Electric Dipole Moment"
49th Annual Meeting of the APS Division of Atomic, Molecular and Optical Physics APS Meeting, Ft. Lauderdale, FL, May 28 - June 1, 2018 (poster)
- "Progress Towards an Order of Magnitude Improvement on the Measurement of the Electron Electric Dipole Moment"
48th Annual Meeting of the APS Division of Atomic, Molecular and Optical Physics, Sacramento, CA, June 5-9, 2017 (poster)

Awards & Fellowships

2019-22	Harvey Fellowship , Mustard Seed Foundation	\$ 48,000
2015-18	Rufus B. Kellogg Amherst Graduate Fellowship , Amherst College	\$ 90,000

- 2015 **Joint Quantum Institute Graduate Fellowship (declined)**, University of Maryland
Stifler Prize in physics, Amherst College
Sundquist Prize in music composition and performance, Amherst College
Elected to Phi Beta Kappa, Amherst College
Elected to Sigma Xi, Amherst College
- 2014 **Winner, Third Degree (National category) and Honorary Mention (International category)**, Golden Key Festival Piano Composition Competition, Vienna, Austria
Finalist, ASCAP Morton Gould Young Composers' Awards
- 2012 **Schupf Scholarship**, Amherst College \$ 25,000
Bassett Prize in physics, Amherst College
- 2011-15 **International Student Scholarship**, Amherst College
- 2007-10 **School-Based Scholarship, Anglo-Chinese School (Independent)**, Ministry of Education, Singapore

Teaching Experience

- Fall 2020 **Physics as a Foundation for Science and Engineering, Part I**, Teaching Fellow (under Eric Mazur) *Harvard University*
- Fall 2012 **Introductory Physics I: Mechanics**, Grader *Amherst College*
- Spring 2012 **Introductory Physics I: Mechanics**, Teaching Assistant & Grader *Amherst College*

Mentoring

- 2023- **Leader**, directional dark matter detection subgroup, Walsworth group, University of Maryland current
- 2023- **Andrew Beling, Smriti Bhalerao, Xingxin Liu, Niko Reed, Maximilian Shen, Jiashen Tang**, Graduate research assistants, University of Maryland current
- 2022 **Maya Watts, Collin Diver, John Mitchell**, Graduate research assistants, Northwestern University
- 2018-2019 **Piroz Bahar**, Undergraduate research assistant, Harvard University
- 2018 **Elizabeth Choi**, High school research assistant, Harvard University
- 2017 **Paules Zakhary, Siyuan Liu**, Undergraduate research assistants, Harvard University

Extracurricular Activities

- 2016-18 **Dudley World Music Ensemble, Dudley House**, Music Director & Dudley Fellow *Harvard University*
- 2018-19 **Philosophy of Science Discussion Group**, Organizer *Harvard University*
- 2011-15 **Amherst College Symphony Orchestra**, Principal Cellist *Amherst College*