

Daniel Ang

QTC SCIENTIST · QUANTUM TECHNOLOGY CENTER · UNIVERSITY OF MARYLAND

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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)

Professional Experience

2023-
present

QTC Scientist, Walsworth Group, Quantum Technology Center, University of Maryland

2018-2023

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

2015-2023

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

Publications

- S. Liu, **D.G. Ang**, M. Watts, B. Hao, C. Meisenhelder, C. Diver, A. Hiramoto, T. Masuda, P. Hu, Z. Han, X. Wu, D. DeMille, J.M. Doyle, X. Fan, and G. Gabrielse, “Actively-Shielded Magnetic Field Coil within Mu-Metal Shields”, in preparation.
- 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).
- 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).
- 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).
- 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).
- 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).
- 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).

- 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).
- 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)
- 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).
- L.R. Hunter, **D.G. Ang**, “Using Geoelectrons to Search for Velocity-Dependent Spin-Spin Interactions,” *Physical Review Letters* **112**, 091803 (2014).
- 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

- “Progress in directional DM detection with quantum diamond sensors”
Mineral Detection of Neutrinos and Dark Matter Meeting, Arlington, VA, January 9, 2024 (oral presentation)
- “Progress in directional DM detection with quantum diamond sensors”
8th CYGNUS Workshop on Directional Recoil Detection, Sydney, Australia, December 14, 2023 (oral presentation)
- “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 (oral presentation)
- “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 (oral presentation)
- “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 (oral presentation)
- “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

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| 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
 current Maryland
- 2023- **Xingxin Liu, Maximilian Shen**, 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*