Theodore A. Corcovilos, Ph.D.

Associate Professor

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I Professional Preparation and Experience

I.A Education

California Institute of Technology (Pasadena, CA). Ph.D. in Physics, June 2008. Dissertation advisor: Prof. Nai-Chang Yeh. Dissertation title: *Fluid phase thermodynamics: I) Nucleate pool boiling of oxygen under magnetically enhanced gravity and II) Superconducting cavity resonators for high-stability frequency references and precision density measurements of helium-4 gas.*

University of Tennessee – Knoxville (Knoxville, TN). B.A. in College Scholars, May 1999. *Summa cum laude.*

I.B Work experience

I.B.1 Academic appointments

Duquesne University of the Holy Spirit, School of Science and Engineering, Department of Physics (Pittsburgh, PA). Associate Professor with tenure (July 2020–present); Assistant Professor, tenure track (August 2013–June 2020).

Pennsylvania State University, Dept. of Physics (University Park, PA). Postdoctoral research associate under Prof. David Weiss (April 2010–June 2013.)

Rice University, Dept. of Physics (Houston, TX). Postdoctoral research associate under Prof. Randy Hulet. (October 2007–April 2010).

I.B.2 Pertinent non-academic work

American Binary (Bellevue, WA). Advisory board member. (November 2020–present).

RJ Lee Group (Monroeville, PA). Scientific consultant. (January 2017–January 2018).

I.C Memberships in professional organizations

American Physical Society, member (1997–present).

Optica (formerly the Optical Society of America), member (2012–present).

American Association of Physics Teachers, member (2013–present).

American Society for Mass Spectrometry, member (2016–present).

Society of Physics Students, faculty member (2013–present), graduate student member (1999–2008), undergraduate student member (1996–1999).

Pittsburgh Quantum Institute, member (2013–present), executive board member (2014–present).

II Teaching

II.A Undergraduate courses taught

Course descriptions may be found at the Duquesne Registrar's website.

[1] PHYS170, Acoustics (Spring 2023), 3 credits, lecture.

[2] Phys201, Physics for Life Sciences I (Fall 2021, Fall 2022), 3 credits, lecture and recitation.

[3] Phys202, Physics for Life Sciences II (Spring 2022), 3 credits, lecture and recitation. (Spring 2023), 3 credits, lecture.

[4] Phys211, General Analytical Physics I (Fall 2023), 3 credits, lecture.

[5] Phys302, Optics (Fall 2013, Fall 2015, Fall 2017), 3 credits, lecture and recitation.

[6] Phys332, Electronics (Fall 2019, Fall 2020), 3 credits, lecture and lab.

[7] Phys470, Electromagnetism (Fall 2023), 3 credits, lecture.

[8] Phys473, Electrodynamics (Spring 2014, Spring 2016, Spring 2018, Spring 2020, Spring 2022), 3 credits, lecture and recitation.

[9] Phys474, Quantum Mechanics (Fall 2014, Fall 2016, Fall 2018, Fall 2022), 3 credits, lecture and recitation.

[10] Phys475, Advanced Quantum Mechanics (Spring 2015, Spring 2017, Spring 2019, Spring 2021), 3 credits, lecture and recitation – New class developed by myself. (Spring 2023), 3 credits, lecture.

[11] Phys487, Special Topics (Fall 2017, Spring 2020, Fall 2021), 1 credit, independent study. (Topics were Laser Optics (2017), Electrodynamics (2020), and Group Theory in Physics (2021).)

[12] Phys499W, Senior Paper (Fall 2017, Fall 2019, Spring 2021, Fall 2022), 2 credits, independent research (Various topics). Note that students register for this course with the department chair being the instructor of record, even if they are under my supervision.

II.B Academic advisement or supervision

II.B.1 Dissertation committees as a member

[1] Luke Metzler (Duquesne, Ph.D. Chemistry, Fall 2023)

[2] Khiry Patterson, "N-Terminal Derivatization for Enhanced *de Novo* Peptide Sequencing: A study of the fragmentation pattern generated from the CID of peptide-imines" (Duquesne, Ph.D. Chemistry, May 1, 2020).

[3] Binbin Tian (University of Pittsburgh, Ph.D. Physics, May 24, 2019).

[4] Joyce Konigsburg, "Relational Interreligious Dialogue: Interdisciplinary Arguments from Creator/Creature Theology and Quantum Entanglement," (Duquesne, Ph.D. Theology, March 28, 2017).

II.B.2 Thesis committees as a member

[1] Mackenzie Powell, TBD, (Duquesne, M.S. Forensic Science and Law, Spring 2024).

[2] Gabriella Zuccolotto, "Assessing the risk of land subsidence in the lower Limpopo River basin, Mozambique, with remote sensing", (Duquesne, M.S. Environmental Science and Management, June 30, 2022).

[3] Alanna Bachtlin, "Turbulent Transport of Dissolved Oxygen in Natural Channels." (Duquesne, M.S. Environmental Science and Management, April 7, 2022).

[4] Kara Okular, "Fluoride Removal in Drinking Water with Augmented Bentonite and Community Perceptions in Arusha, Tanzania." (Duquesne, M.S. Environmental Science and Management, November 5, 2020).

[5] Madeleine Wood, "Identification and detection of peroxide explosive compounds and their degradation markers using gas chromatography–mass spectrometry." (Duquesne, M.S. Forensic Science and Law, April 12, 2019).

[6] Aria Parangi, "Utilization of Fluorescent Chemosensors to Quantify Pb^{2+} in Aqueous Media." (Duquesne, M.S. Environmental Science, October 24, 2016).

II.C Publications pertaining to teaching activities

[1] ***Theodore A. Corcovilos***. "A Simple game simulating quantum measurements of qubits". *American Journal of Physics* 86.7 (June 19, 2018), pp. 510–517. DOI: 10.1119/1.5036620. arXiv: 1804.08417.

II.D Grants/funding received for teaching activities

II.D.1 Grants received

[1] (Internal) Bayer School of Natural and Environmental Sciences, "Entering Mentoring" travel stipend, (July 1, 2017, $400).

II.E Presentations pertaining to teaching

[1] ***Theodore A. Corcovilos***. "A Quantum Measurement Game for Undergraduates". American Association of Physics Teachers, Summer Meeting (Cincinnati, OH), July 25, 2017. (National conference).

[2] ***Theodore A. Corcovilos***. "A Quantum Measurement Game for Undergraduate Students". PQI2017: Quantum Revolutions (Pittsburgh, PA), Apr. 26, 2017. URL: http://www.pqi.org/pqi2017. (Regional conference).

[3] ***Theodore A. Corcovilos***. "A Quantum state guessing game". American Association of Physics Teachers, Western Pennsylvania Section (Erie, PA), Oct. 8, 2016. (Regional conference).

II.F Other activities relevant to teaching

II.F.1 Undergraduate research mentees

I have mentored 23 undergraduate research students while at Duquesne, including 8 from underrepresented populations.

II.F.2 High school student mentees

I have mentored 2 high school students in summer research projects.

II.F.3 Undergraduate senior papers/projects supervised

The Bachelor of Science degree in Physics at Duquesne requires the completion of at least one semester of research with a faculty member resulting in a written report and oral presentation. Also, the Bachelor of Science degrees in engineering at the University of Pittsburgh require a group senior design project. The following students have completed senior papers or projects under my supervision.

[1] **Rebecca Nelson,** (Fall 2022) "Color-based detection of fluoride and iron in drinking water with a home-built colorimeter"

[2] **Jahnavee Mittal,** (Spring 2021) "Polarization and Frequency Stabilization of a Helium-Neon Laser using an Arduino Microcontroller"

[3] **Connor Apa,** (Fall 2019) "Development of a laser-induced fluorescence instrument for quantification of protein cross-linking"

[4] **Isaac Davies,** (Fall 2017) "Simulation of Ion Energy Loss in an Ion Mobility Spectrometry and Optical Spectroscopy Combination System."

[5] **Timothy Ireland,** (Summer 2017) "Development of a picometer resolution optical wavemeter."

[6] **Gage Tiber,** (Spring 2017) "Design of a portable, homemade, and inexpensive LED-based fluorometer."

[7] **Robert Brooke, Maxwell Praniewicz, Garrett Ott, and Guilherme Tamassia,** (Summer 2016, Pitt) "Laser polarization controller."

[8] **Julie Gillis,** (Fall 2015) "Optimization of the diode-pumped solid state Nd:YLF amplifier chain for the 263 nm drive laser at the FAST facility."

II.F.4 Professional development related to teaching

External workshops attended:

[1] American Association of Physics Teachers, Faculty Online Learning Community (biweekly meetings, Dec. 2015–Dec. 2016).

[2] American Association of Physics Teachers, New Faculty Workshop (11/19/2015). (National workshop).

[3] American Association of Colleges & Universities networking conference: "Transforming STEM education" (11/12/2015). (National workshop).

III Scholarship

Universal scholarship IDs

Orcid ID: 0000-0001-5716-1188

Thomson Reuters ResearcherID: G-8699-2012

Scopus Author ID: 6506655683

Google Scholar: GN4H15kAAAAJ

Note on bibliography entries

Undergraduate student coauthors are indicated by *. Graduate student coauthors are indicated by †. High school student coauthors are indicated by §. The corresponding author is indicated by *italics*.

III.A Scholarly publications

III.A.1 Refereed articles

In current appointment

[1] ***Theodore A. Corcovilos***. "Beyond the ABCDs: A Better Matrix Method for Geometric Optics by Using Homogeneous Coordinates". *American Journal of Physics* 91.6 (June 1, 2023), pp. 449–457. DOI: 10.1119/5.0083069. arXiv: 2205.09746 [physics].

[2] Luke J. Metzler†, Christopher T. Farmen*, Allison Fry*, ***Theodore A. Corcovilos***, and *Michael J. Van Stipdonk*. "Synthesis of $[OUS]^+$ by Reaction of $[OUCH]^+$ with CS_2". *Rapid Communications in Mass Spectrometry* 36 (8 Jan. 17, 2022), e9260. DOI: 10.1002/rcm.9260.

[3] Evan Perez*, Irena Tatosian†, Amanda Bubas*, Anna Iacovino*, Susan Kline*, Luke Metzler†, Arpad Somogyi, ***Theodore Corcovilos***, and *Michael Van Stipdonk*. "Creation of $[OUF]^+$ Using Gas-Phase Reactions of $[UO_2(C_6F_5)]^+$". *International Journal of Mass Spectrometry* 469 (Nov. 1, 2021), p. 116664. DOI: 10.1016/j.ijms.2021.116664.

[4] *Michael J. Van Stipdonk*, Evan Perez*, Luke J. Metzler†, Amanda R. Bubas*, ***Theodore Corcovilos***, and Arpad Somogyi. "Destruction and reconstruction of UO_2^{2+} using gas-phase reactions". *Physical Chemistry Chemical Physics* 23 (20 May 7, 2021), pp. 11844–11851. DOI: 10.1039/D1CP01520F.

[5] Luke James Metzler†, Christopher T. Farmen*, **Theodore A. Corcovilos**, and *Michael J. Van Stipdonk*. "Intrinsic Chemistry of $[OUCH]^+$: Reactions with H_2O, $CH_3C{\equiv}N$ and O_2". *Physical Chemistry Chemical Physics* 23 (8 Feb. 11, 2021), pp. 4475–4479. DOI: 10.1039/D1CP00177A.

[6] Irena Tatosian[†], Luke Metzler[†], Connor Graca[†], Amanda Bubas[*], ***Theodore Corcovilos***, Jonathan Martens, Giel Berden, Jos Oomens, and *Michael J. Van Stipdonk*. "Measurement of the asymmetric UO_2^{2+} stretching frequency for $[U^{VI}O_2(F)_3]^-$ using IRMPD spectroscopy". *International Journal of Mass Spectrometry* 446 (Dec. 1, 2019), p. 116231. DOI: 10.1016/j.ijms.2019.116231.

[7] ***Theodore A. Corcovilos*** and Jahnavee Mittal[*]. "Two-dimensional optical quasicrystal potentials for ultracold atom experiments". *Applied Optics* 58.9 (Mar. 15, 2019), pp. 2256–2263. DOI: 10.1364/AO.58.002256. arXiv: 1903.06610.

[8] Evan Perez[*], **Theodore Corcovilos**, John Gibson, Jonathan Martens, Giel Berden, Jos Oomens, and *Michael Van Stipdonk*. "Isotope labeling and infrared multiple-photon photodissociation investigation of product ions generated by dissociation of $[ZnNO_3(CH_3OH)_2]^+$: Conversion of methanol to formaldehyde". *European Journal of Mass Spectroscopy* 25.1 (Feb. 18, 2019), pp. 58–72. DOI: 10.1177/1469066718809881.

[9] *Wibe A. de Jong*, Phuong D. Dau, Richard E. Wilson, Joaquim Marçalo, Michael J. Van Stipdonk, **Theodore A. Corcovilos**, Giel Berden, Jonathan Martens, Jos Oomens, and John K. Gibson. "Revealing Disparate Chemistries of Protactinium and Uranium. Synthesis of the Molecular Uranium Tetroxide Anion, UO_4^-". *Inorganic Chemistry* 56.6 (Mar. 9, 2017), pp. 3686–3694. DOI: 10.1021/acs.inorgchem.7b00144.

[10] *Michael J. Van Stipdonk*, Cassandra Hanley[†], Evan Perez[*], Jordan Pestok[§], Patricia Mihm[*], and **Theodore A. Corcovilos**. "Collision-induced dissociation of uranyl-methoxide and uranyl-ethoxide cations: Formation of UO_2H^+ and uranyl-alkyl product ions". *Rapid Communications in Mass Spectrometry* 30 (Aug. 30, 2016), pp. 1879–1890. DOI: 10.1002/rcm.7668.

[11] Phuong D. Dau, Daniel Rios, Yu Gong, Maria C. Michelini, Joaquim Marçalo, David K. Shuh, Mejdi Mogammman, Michael J. Van Stipdonk, **Theodore A. Corcovilos**, Jonathan K. Martens, Jos Oomens, Britta Redlich, and *John K. Gibson*. "Synthesis and hydrolysis of uranyl, neptyl and plutonyl gas-phase complexes exhibiting discrete actinide-carbon bonds". *Organometallics* 35.9 (May 9, 2016), pp. 1228–1240. DOI: 10.1021/acs.organomet.6b00079.

[12] *Michael J. Van Stipdonk*, Catherine O'Malley[*], Alexandra Plaviak[*], Dean Martin[†], Jordan Pestok[§], Patricia A. Mihm[*], Cassandra G. Hanley[†], **Theodore A. Corcovilos**, John K. Gibson, and Benjamin J. Bythell. "Dissociation of gas-phase, doubly-charged uranyl-acetone complexes by collisional activation and infrared photodissociation". *International Journal of Mass Spectrometry* 396 (Feb. 25, 2016), pp. 22–34. DOI: 10.1016/j.ijms.2015.12.005.

[13] Yang Wang[†], Xianli Zhang, **Theodore A. Corcovilos**, Aishwarya Kumar[†], and *David S. Weiss*. "Coherent addressing of individual neutral atoms in a 3D optical lattice". *Physical Review Letters* 115 (July 24, 2015), p. 043003. DOI: 10.1103/PhysRevLett.115.043003. Selected as an *Editor's Suggestion* and featured in *Physics* newsletter, July 23, 2015.

Prior to current appointment

[14] Xiao Li, **Theodore A. Corcovilos**, Yang Wang[†], and *David S. Weiss*. "3D Projection Sideband Cooling". *Physical Review Letters* 108.10 (Mar. 9, 2012), p. 103001. DOI: 10.1103/PhysRevLett.108.103001.

[15] P. M. Duarte[†], R. A. Hart, J. M. Hitchcock[†], **T. A. Corcovilos**, T.-L. Yang[†], A. Reed, and *R. G. Hulet*. "All-optical production of a lithium quantum gas using narrow-line laser cooling". *Physical Review A* 84.6 (Dec. 21, 2011), p. 061406. DOI: 10.1103/PhysRevA.84.061406. Featured in *Physics* newsletter, Dec. 21, 2011.

[16] ***T. A. Corcovilos***, S. K. Baur[†], J. M. Hitchcock[†], E. J. Mueller, and R. G. Hulet. "Detecting antiferromagnetism of atoms in an optical lattice via optical Bragg scattering". *Physical Review A* 81.1 (Jan. 26, 2010), p. 013415. DOI: 10.1103/PhysRevA.81.013415.

[17] *Yong P. Chen*, J. Hitchcock[†], D. Dries[†], M. Junker[†], C. Welford[†], S. E. Pollack, **T. A. Corcovilos**, and R. G. Hulet. "Experimental studies of Bose–Einstein condensates in disorder". *Physica D: Nonlinear Phenomena* 238.15 (July 15, 2009), pp. 1321–1325. DOI: 10.1016/j.physd.2009.01.015.

[18] S. E. Pollack, D. Dries†, M. Junker†, Y. P. Chen, **T. A. Corcovilos**, and *R. G. Hulet*. "Extreme tunability of interactions in a ^{7}Li Bose-Einstein condensate". *Physical Review Letters* 102.9 (Mar. 6, 2009), p. 090402. DOI: 10.1103/PhysRevLett.102.090402. Selected as an *Editor's Suggestion*.

[19] *A. J. Sanders*, A. D. Alexeev, S. W. Allison, V. Antonov, K. A. Bronnikov, J. W. Campbell, M. R. Cates, **T. A. Corcovilos***, D. D. Earl, T. Gadfort*, G. T. Gillies, M. J. Harris, N. I. Kolosnitsyn, M. Yu. Konstantinov, V. N. Melnikov, R. J. Newby†, R. G. Schunk, and L. L. Smalley. "Project SEE (Satellite Energy Exchange): An international effort to develop a space-based mission for precise measurements of gravitation". *Classical and Quantum Gravity* 17.12 (June 21, 2000), p. 2331. DOI: 10.1088/0264-9381/17/12/305.

[20] *A. J. Sanders*, A. D. Alexeev, S. W. Allison, K. A. Bronnikov, J. W. Campbell, M. R. Cates, **T. A. Corcovilos***, D. D. Earl, T. Gadfort*, G. T. Gillies, M. J. Harris, N. I. Kolosnitsyn, M. Yu. Konstantinov, V. N. Melnikov, R. J. Newby†, R. G. Schunk, and L. L. Smalley. "Project SEE (Satellite Energy Exchange): Proposal for space-based gravitational measurements". *Measurement Science and Technology* 10.6 (June 1999), p. 514. DOI: 10.1088/0957-0233/10/6/317.

III.A.2 Conference proceedings

Prior to current appointment

[1] *R. G. Hulet*, D. Dries†, M. Junker†, S. E. Pollack, J. M. Hitchcock†, Y. P. Chen, **T. A. Corcovilos**, and C. Welford†. "Tunable interactions in a Bose-Einstein condensate of lithium: Photoassociation and disorder-induced localization". In: *Proceedings of the XXI International Conference on Atomic Physics*. Ed. by R. Cote, P. L. Gould, M. Rozman, and W. W. Smith. World Scientific, 2009, pp. 150–159.

[2] *N.-C. Yeh*, C.-T. Chen†, A. D. Beyer†, C. R. Hughes†, **T. A. Corcovilos**†, and S. I. Lee. "Experimental investigation of the asymmetric spectroscopic characteristics of electron-and hole-doped cuprates". *Physica C: Superconductivity* 408–410 (2004): *Proceedings of the International Conference on Materials and Mechanisms of Superconductivity. High Temperature Superconductors VII*, pp. 792–793. DOI: 10.1016/j.physc.2004.03.133.

[3] ***T. A. Corcovilos***†, D. M. Strayer, N. Asplund, and N.-C. Yeh. "Multi-frequency Superconducting Cavity Stabilized Oscillators (SCSO) for quantum-gas measurements and gravitational physics". *Journal of Low Temperature Physics* 134.1-2 (2004): *Proceedings of the Symposium on Quantum Fluids and Solids, QFS2003*, pp. 431–436. DOI: 10.1023/B:JOLT.0000012591.58110.9c.

[4] *N.-C. Yeh*, C.-T. Chen†, C. C. Fu†, Z. Huang*, **T. A. Corcovilos**†, R. P. Vasquez, and D. M. Strayer. "Recent developments in the science and technology of superconductivity". In: *Commemorating the Past and Looking Towards the Future. OCPA 2000 - Proceedings of the Third Joint Meeting of Chinese Physicists Worldwide*. Ed. by N-P Chang, K. Young, H. M. Lai, and C-Y Wong. World Scientific, 2002, pp. 72–86. DOI: 10.1142/9789812776785_0008.

III.A.3 Unpublished works

In current appointment

[1] *Marshall Perrin*, Joseph Long†, Ewan Douglas, Neil Zimmerman, Anand Sivaramakrishnan, Kyle Douglass, Maciek Grochowicz, and **Ted Corcovilos**. *POPPY (Physical Optics Propagation in PYthon)*. Open source software package. 2017. URL: https://github.com/mperrin/poppy (visited on 07/17/2017).
I contributed code for the description of custom optics for the simulation.

Prior to current appointment

[2] ***Theodore Allen Corcovilos***†. "Fluid phase thermodynamics. I) Nucleate pool boiling of oxygen under magnetically enhanced gravity and II) Superconducting cavity resonators for high-stability frequency references and precision density measurements of helium-4 gas". Ph.D. Dissertation. Pasadena, CA: California Institute of Technology, 2008. 216 pp. URL: http://resolver.caltech.edu/CaltechETD:etd-07172007-132955.

[3] ***T. A. Corcovilos***†, M. E. Turk*, D. M. Strayer, N. N. Asplund, and N.-C. Yeh. "Saturated nucleate pool boiling of oxygen under magnetically-enhanced effective gravity" (2007). Whitepaper submitted to NASA, p. 15. arXiv: cond-mat/0702012 [cond-mat].

III.B Grants and awards

III.B.1 Grants received (Previous)

[1] (Internal) Duquesne University Grefenstette Center for Ethics in Science, Technology, and Law Faculty Scholarship (Aug. 2022–May 2023, $2,000).

[2] (Internal) Duquesne Faculty Development Fund, "Development of a microfluidic/laser induced fluorescence platform for parallel protein quantification with mass spectrometry studies," as co-PI with Michael Cascio, Duquense Dept. of Chemistry and Biochemistry (May 2021–Apr. 2022, $10,000).

[3] Charles E. Kaufman Foundation, "Experimental quantum emulation of two-dimensional topological insulators and Majorana fermions using ultra-cold atoms," (Aug. 2015–Aug. 2017, $150,000). Grant number KA2015-79202. https://kaufman.pittsburghfoundation.org/Awards/Investigator/2015/Corcovilos

[4] InnovationWorks/U.S. Department of Defense Technology Commercialization Consortia grant, "Development of a hand-held device for detecting lead in environmental samples." (May 2016–Aug. 2016, $25,000).

[5] (Internal) Duquesne Faculty Development Fund, "Creation of Bose-Einstein condensates of potassium atoms for the quantum emulation of material junctions," (June 2014–May 2016, $9,808).

[6] (Internal) Charles Henry Leach II Fund, "Mobile automated sampling of the Three Rivers," (Aug. 2015–July 2016, $25,000), as Joint PI with Michael Van Stipdonk (Duquesne, Dept. of Chemistry and Biochemistry). I am responsible for writing 50% of the proposal. I received $5,000 of this grant.

III.C Scholarly presentations

Undergraduate student coauthors are indicated by *. Graduate student coauthors are indicated by †.

III.C.1 Invited talks

In current appointment

[1] ***Theodore A. Corcovilos***. "Using light to measure water quality". Kenyon College Physics Department Seminar (Gambier, OH), Feb. 3, 2023.

[2] ***Theodore A. Corcovilos***. "Quantum simulation of 2D quasicrystals using ultracold atoms". Penn State University Electro-Optics Center (Freeport, PA), May 2, 2019.

[3] ***Theodore A. Corcovilos***. "Two-dimensional optical quasicrystal potentials for ultracold atom experiments". Radboud University Free Electron Laser group colloquium (Nijmegen, the Netherlands), Dec. 17, 2018.

[4] ***Theodore A. Corcovilos***. "Building quasicrystal analogs with ultracold atoms". Charles E. Kaufman Foundation Symposium (Pittsburgh, PA), Oct. 27, 2018. (Regional conference).

[5] ***Ted Corcovilos***. "Ultracold atoms in two-dimensional quasicrystal potentials". Washington State University (Pullman, WA), Summer Chemistry Seminar, Aug. 3, 2017.

Prior to current appointment

[6] ***T. A. Corcovilos***. "A Quantum Mechanics Toolbox: Using ultracold atoms in optical potentials to create a quantum computer and to simulate materials". (2 times). Duquesne University (Pittsburgh, PA), Physics Dept. Seminar, Feb. 12, 2013. Bates College (Lewiston, ME) Physics Dept. Seminar, Feb. 28, 2013.

[7] ***T. A. Corcovilos***, X. Li†, Y. Wang, and D. S. Weiss. "Quantum computing with neutral atoms". Bates University (Lewiston, ME) Physics Dept. Seminar, Apr. 1, 2011.

[8] ***T. A. Corcovilos***, S. Baur †, J. M. Hitchcock †, E. Duarte † P. M. Mueller, and R. G. Hulet. "Detection of antiferromagnetic ordering of ultracold atoms in an optical lattice". (3 times). Rice University (Houston, TX) Laboratory for Ultracold Phyiscs Seminar, Oct. 16, 2009. Duke University (Durham, NC) Atomic Physics Seminar, Sept. 2, 2009. National Institute of Standards and Technology (Gaithersburg, MD) Laser Cooling and Trapping Group Seminar, July 15, 2009.

[9] ***T. A. Corcovilos***, J. M. Hitchcock†, A. Signoles*, F. Emaury*, and R. G. Hulet. "Detection of magnetic ordering in a lattice of ultracold atoms". DARPA Optical Lattice Emulator workshop (Lansdowne, VA), May 2009. (National workshop).

[10] ***T. A. Corcovilos***, J. M. Hitchcock†, P. M. Duarte†, and R. G. Hulet. "3D Fermi-Hubbard model at half filling". DARPA Optical Lattice Emulator workshop (Las Vegas, NV), Dec. 17, 2008. (National workshop).

[11] ***T. A. Corcovilos***, J. M. Hitchcock†, P. M. Duarte†, and R. G. Hulet. "Optical lattice simulations of correlated fermions". DARPA Optical Lattice Emulator workshop (State College, PA), June 2008. (National workshop).

[12] ***T. A. Corcovilos***†. "Two experiments in fluid-phase thermodynamics". (4 times). Rice University (Houston, TX) Laboratory for Ultracold Physics Seminar, Aug. 28, 2007. Vanderbilt University (Nashville, TN) Condensed Matter Physics Seminar, Aug. 22, 2007. University of Chicago (Chicago, IL) Atomic Physics Seminar, June 29, 2007. Argonne National Laboratory (Argonne, IL) Materials Science Seminar, June 27, 2007.

III.C.2 Contributed talks, as presenter

In current appointment

[1] ***Theodore A. Corcovilos***. "The equations match the drawings: Geometric algebra for geometric optics". American Association of Physics Teachers, Summer Meeting (online), Aug. 2, 2021. (National Conference).

[2] ***Theodore A. Corcovilos***. "Quasicrystal studies using ultracold atoms". Pittsburgh Quantum Institute (Pittsburgh, PA) Annual Event, Apr. 19, 2018. URL: https://www.pqi.org/pqi2018. (Regional conference).

[3] ***T. A. Corcovilos***. "A proposal for studying interface physics with ultracold atoms". Pittsburgh Quantum Institute (Pittsburgh, PA) Annual Event, Apr. 9, 2014. URL: http://www.pqi.org/pqi2014. (Regional conference).

Prior to current appointment

[4] ***Theodore A. Corcovilos***, Yang Wang†, Xiao Li, David S. Weiss, and Jungsang Kim. "Single qubit gates in a 3D array of neutral atoms". American Physical Society, Division of Atomic, Molecular, and Optical Physics Annual Meeting (Anaheim, CA), June 6, 2012. URL: http://meetings.aps.org/Meeting/DAMOP12/Event/171635. (National conference).

[5] ***T. A. Corcovilos***, J. M. Hitchcock †, P. M. Duarte †, and R. G. Hulet. "Experimental investigation of the Fermi-Hubbard model in a 3D optical lattice of ^{6}Li atoms". American Physical Society, Division of Atomic, Molecular, and Optical Physics Annual Meeting (Charlottesville, VA), May 22, 2009. URL: http://meetings.aps.org/Meeting/DAMOP09/Session/S3.1. (National conference).

[6] ***T. A. Corcovilos***, D. Dries †, J. Hitchcock †, M. Junker †, Y. P. Chen, and R. G. Hulet. "Weakly interacting Bose-Einstein condensate in a disordered optical potential". American Physical Society, Division of Atomic, Molecular, and Optical Physics Annual Meeting (State College, PA), May 30, 2008. URL: http://meetings.aps.org/link/BAPS.2008.DAMOP.P4.3. (National conference).

[7] ***T. A. Corcovilos***†, D. M. Strayer, N. N. Asplund, and N.-C. Yeh. "Precise equation of state measurements of ^{4}He near the λ-point, using dual-mode Superconducting Cavity Stabilized Oscillators". American Physical Society, March Meeting (Los Angeles, CA), Mar. 22, 2005. URL: http://meetings.aps.org/link/BAPS.2005.MAR.L33.6. (National conference).

[8] ***T. A. Corcovilos*** †. "Density measurements of helium-4 using superconducting cavity stabilized oscillators". California Institute of Technology/University of Southern California Condensed Matter Symposium (Pasadena, CA), June 2004. (Regional conference).

[9] ***T. A. Corcovilos***†, D. M. Strayer, N. Asplund, and N.-C. Yeh. "Multi-frequency Superconducting Cavity Stabilized Oscillators (scso) for quantum-gas measurements and gravitational physics". Symposium on Quantum Fluids and Solids, QFS2003 (Albuquerque, NM), Aug. 2003. URL: http://dx.doi.org/10.1023/B:JOLT.0000012591.58110.9c. (National conference).

III.C.3 Contributed talks, as coauthor

These are oral presentations for which I made a significant contribution and was listed as a coauthor.

In current appointment

[1] *Katelyn R. Spadavecchia** and **Theodore Corcovilos**. "Projective Geometric Algebra for Paraxial Geometric Optics". National Conference on Undergraduate Research (online), Apr. 13, 2021. URL: https://apps.cur.org/ncur2021/search/Display_NCUR.aspx?id=110936. (National Conference).

[2] *Katelyn R. Spadavecchia** and **Theodore Corcovilos**. "Projective Geometric Algebra for Paraxial Geometric Optics". Ohio State University Young Mathematicians' Conference (Columbus, OH), Aug. 14, 2020. URL: https://youtu.be/cKfC2ZBJulg. (Regional Conference).

[3] *Connor Apa**, **Theodore A. Corcovilos**, and Michael Cascio. "Development of a laser-induced fluorescence platform for parallel protein quantification with mass spectrometry studies". Duquesne University Undergraduate Research Program, Summer Research Symposium (Pittsburgh, PA), July 26, 2019. (Local Conference).

[4] *Jahnavee Mittal** and **Theodore A. Corcovilos**. "Generating forbidden 10-fold symmetry quasicrystals using an optical system". Duquesne University Undergraduate Research Program, Summer Research Symposium (Pittsburgh, PA), July 27, 2018. (Local Conference).

[5] *Gage Tiber**, Aria Parangi†, Partha Basu, and **Theodore A. Corcovilos**. "Detection of lead in drinking water using homemade and inexpensive LED-based fluorometer". Duquesne University Undergraduate Research & Scholarship Symposium (Pittsburgh, PA), Apr. 4, 2016. (Local conference).

[6] *Julie M. Gillis**, **Theodore A. Corcovilos**, Dean R. Edstrom, Jinhao Ruan, and James K. Santucci. "Optimization of the DPSS Nd:YLF amplifier chain for the 263-nm drive laser at the FAST facility". American Physical Society, March Meeting (Baltimore, MD), Mar. 15, 2016. URL: http://meetings.aps.org/Meeting/MAR16/Session/F7.2. (National conference).

[7] *Gage Tiber**, Robert Brooke*, Timothy Ireland*, Isaac Davies*, Julie Gillis*, Chris Zaccagnini*, and **Theodore Corcovilos**. "Part per million resolution optical wavemeter". Duquesne University Undergraduate Research Program, Summer Research Symposium (Pittsburgh, PA), July 31, 2015. (Local conference).

[8] *Aishwarya Kumar*†, Yang Wang†, Xianli Zhang, **Theodore A. Corcovilos**, and David S. Weiss. "Single qubit gates on neutral atoms in a 3d optical lattice". American Physical Society, Division of Atomic, Molecular, and Optical Physics Annual Meeting (Columbus, OH), June 11, 2015. URL: http://meetings.aps.org/Meeting/DAMOP15/Session/M5.4. (National conference).

[9] *Yang Wang*†, Xianli Zhang, **Theodore A. Corcovilos**, and David S. Weiss. "Single qubit gate fidelity for neutral atom qubits in a 3D optical lattice". American Physical Society, Division of Atomic, Molecular, and Optical Physics Annual Meeting (Madison, WI), June 5, 2014. URL: http://meetings.aps.org/Meeting/DAMOP14/Session/P4.7. (National conference).

Prior to current appointment

[10] *Xiao Li*, **Ted Corcovilos**, Yang Wang†, Jungsang Kim, and David S. Weiss. "Addressing single atoms in a 3D optical lattice". American Physical Society, Division of Atomic, Molecular, and Optical Physics Annual Meeting (Atlanta, GA), June 14, 2011. URL: http://meetings.aps.org/Meeting/DAMOP11/Session/C3.10. (National conference).

[11] *R. Hart*, P. M. Duarte†, T. L. Yang†, J. M. Hitchcock†, **T. A. Corcovilos**, and R. G. Hulet. "Demonstration of a ^{6}Li magneto-optical trap using the 2 $S_{1/2} \rightarrow 3P_{3/2}$ transition". American Physical Society, March Meeting (Dallas, TX), Mar. 24, 2011. URL: http://meetings.aps.org/link/BAPS.2011.MAR.W45.4. (National conference).

[12] *P. M. Duarte*†, **T. A. Corcovilos**, J. M. Hitchcock†, and R. G. Hulet. "Narrow linewidth cooling of ^{6}Li". American Physical Society, Division of Atomic, Molecular, and Optical Physics Annual Meeting (Houston, TX), May 29, 2010. URL: http://meetings.aps.org/link/BAPS.2010.DAMOP.W5.7. (National conference).

[13] *Scott Pollack*, D. Dries†, **T. A. Corcovilos**, and R. G. Hulet. "The role of interactions in disorder induced damping of dipole oscillations of a Bose-Einstein condensate". American Physical Society, March Meeting (Pittsburgh, PA), Mar. 17, 2009. URL: http://meetings.aps.org/link/BAPS.2009.MAR.J16.1. (National conference).

[14] *J. Hitchcock*†, M. Junker†, D. Dries†, C. Welford†, Y. P. Chen, **T. A. Corcovilos**, and R. G. Hulet. "Rate saturation of photoassociation in a Bose-Einstein condensate". American Physical Society, Division of Atomic, Molecular, and Optical Physics Annual Meeting (State College, PA), May 28, 2008. URL: http://meetings.aps.org/link/BAPS.2008.DAMOP.B4.1. (National conference).

III.C.4 Contributed posters

In current appointment

[1] *Allison N. Fry*†, Evan Perez†, Franziska Dalhmann, Ahmed Mohamed†, Jonathan Martens, Giel Berden, **Theodore Corcovilos**, Mark A. Johnson, and Michael J. Van Stipdonk. "Use of ion spectroscopy to identify the product ions created by loss of H_2O from protonated polyglycine peptides". 71th American Society of Mass Spectrometry Conference (Houston, TX), June 2023. (National Conference), submitted.

[2] ***Theodore A. Corcovilos***. "The usefulness of homogeneous coordinates in paraxial optics". American Physical Society, Division of Atomic, Molecular, and Optical Physics Annual Meeting (Orlando, FL), May 31, 2022. (National conference).

[3] *Samiya Henry** and **Theodore Corcovilos**. "One Small Step: The Space Bill of Rights". Duquense University Undergraduate Research and Scholarship Symposium (Pittsburgh, PA), Apr. 20, 2022. (Local Conference).

[4] *Thomas Aumer**, Michael Cascio, and **Theodore Corcovilos**. "Optimization of a Laser Induced Fluorescence Platform". Optica & American Physical Society, Division of Laser Science joint meeting on Frontiers in Optics/Laser Science (online), Nov. 1, 2021. (National Conference).

[5] ***Theodore A. Corcovilos***, Luke Metzler†, and Michael J. Van Stipdonk. "Reaction rates of gas phase hydrolysis in Group II-metal methides". 69th American Society of Mass Spectrometry Conference (Philadelphia, PA), Nov. 1, 2021. (National Conference).

[6] *Luke Metzler*†, Allison Fry*, Christopher T. Farmen*, **Theodore A. Corcovilos**, and Michael J. Van Stipdonk. "The Gas-Phase Reactivity of Group II-Metal Carbanion Complexes with Ketones". 69th American Society of Mass Spectrometry Conference (Philadelphia, PA), Nov. 1, 2021. (National Conference).

[7] *Michael J. Van Stipdonk*, Luke Metzler†, Christopher T. Farmen*, and **Theodore Corcovilos**. "Intrinsic reactivity of $[OUCH]^+$: Synthesis of $[OUX]^{++}$ (X=F, Cl, Br and I) and related ions using tandem MS". 69th American Society of Mass Spectrometry Conference (Philadelphia, PA), Nov. 1, 2021. (National Conference).

[8] *Thomas Aumer**, Michael Cascio, and **Theodore Corcovilos**. "Optimization of a Laser Induced Fluorescence Platform". Duquesne University Undergraduate Research Program, Summer Research Symposium (Pittsburgh, PA), July 30, 2021. (Local Conference).

[9] *Rebecca Nelson** and **Theodore Corcovilos**. "Color Based Detection of Fluoride in Drinking Water with Part Per Million Precision". Duquesne University Undergraduate Research Program, Summer Research Symposium (Pittsburgh, PA), July 30, 2021. (Local Conference).

[10] *Katelyn Spadavecchia*[*] and **Theodore Corcovilos**. "Video Series on applying Geometric Algebra to Introductory Physics". Duquesne University Undergraduate Research Program, Summer Research Symposium (Pittsburgh, PA), July 30, 2021. (Local Conference).

[11] *Thomas Stirrat*[*], Warren Lowther[†], Arian Hajhassani[*], Thomas Aumer[*], **Theodore Corcovilos**, and Michael Cascio. "Optimization of peptide derivatization for fluorescence normalization and sub-fmol quantitation". Duquesne University Undergraduate Research Program, Summer Research Symposium (Pittsburgh, PA), July 30, 2021. (Local Conference).

[12] *Thomas Aumer*[*], *Devin O'Neill*[*], and **Theodore Corcovilos**. "Calibration of a homemade color-based detector for water contamination". Duquesne University Undergraduate Research and Scholarship Symposium (Pittsburgh, PA), Apr. 12, 2021. (Local conference).

[13] *Thomas Aumer*[*] and **Theodore Corcovilos**. "Calibration of a homemade color-based detector for water contamination". Duquesne University Undergraduate Research Program, Summer Research Symposium (Pittsburgh, PA), July 31, 2020. (Local Conference).

[14] *Katelyn R. Spadavecchia*[*] and **Theodore Corcovilos**. "Projective Geometric Algebra for Paraxial Geometric Optics". Duquesne University Undergraduate Research Program, Summer Research Symposium (Pittsburgh, PA), July 31, 2020. (Local Conference).

[15] *Connor Apa*[*], **Theodore A. Corcovilos**, and Michael Cascio. "Development of a laser-induced fluorescence platform for parallel protein quantification with mass spectrometry studies". Duquesne University Undergraduate Research Program, Summer Research Symposium (Pittsburgh, PA), July 26, 2019. (Local Conference).

[16] *A. Louise Ferris*[*], Thomas Aumer[*], and **Theodore Corcovilos**. "Design and test of a low-cost turbidity meter using an LED and a photodiode". (2 times). Duquesne University Undergraduate Research Program, Summer Research Symposium (Pittsburgh, PA), July 26, 2019. (Local Conference); Duquesne University Undergraduate Research and Scholarship Symposium (Pittsburgh, PA), Apr. 21, 2020.

[17] ***Theodore A. Corcovilos***. "Progress towards experimental realization of 5-fold two-dimensional quasicrystals of cold atoms". Gordan Research Conference on Atomic Physics (Newport, RI), June 9, 2019. (National Conference).

[18] *Connor Graça*[†], Luke Metzler[†], **Theodore Corcovilos**, Giel Berden, Jonathan Martens, Jos Oomens, and Michael Van Stipdonk. "Use of IRMPD Spectroscopy to Characterize Derivatives of Aldehydes Considered Emerging Explosive Threat Compounds". 67th American Society of Mass Spectroscopy Conference (Atlanta, GA), June 2, 2019. (National Conference).

[19] *Anna Iacovino*[*], Irena Tatosian[†], Luke Metzler[†], **Theodore Corcovilos**, Giel Berden, Jonathan Martens, Jos Oomens, and Michael Van Stipdonk. "Structure and reactivity of anionic uranyl complexes with acetate and halide ligands". 67th American Society of Mass Spectroscopy Conference (Atlanta, GA), June 2, 2019. (National Conference).

[20] *Susan Kline*[*], Amanda Bubas[*], Luke Metzler[†], Connor Graça[*], **Theodore Corcovilos**, Jonathan Martens, Giel Berden, Jos Oomens, and Michael Van Stipdonk. "Characterization of Precursor and Product Ions from Copper (II) Cationized, N-terminally Modified Glycine-Glycine Using Infrared Multiple-Photon Photodissociation Spectroscopy". 67th American Society of Mass Spectroscopy Conference (Atlanta, GA), June 2, 2019. (National Conference).

[21] *Irena Tatosian*[†], Luke Metzler[†], Connor Graça[†], **Theodore Corcovilos**, Jonathan Martens, Giel Berden, Jos Oomens, and Michael Van Stipdonk. "Measurement of the Asymmetric UO_2^{2+} Stretching Frequency for $[U^{VI}O_2(X)_3]^-$ (X = F, Cl, Br and I) Species Using IRMPD Spectroscopy". 67th American Society of Mass Spectroscopy Conference (Atlanta, GA), June 2, 2019. (National Conference).

[22] *Jahnavee Mittal*[*] and **Theodore A. Corcovilos**. "Progress towards experimental realization of 5-fold two-dimensional quasicrystals of cold atoms". American Physical Society, Division of Atomic, Molecular, and Optical Physics Annual Meeting (Milwaukee, WI), May 27, 2019. URL: http://meetings.aps.org/Meeting/DAMOP19/Session/E01.142. (National Conference).

[23] *Ross Aguilar*[*], Spencer Graves[*], and **Theodore A. Corcovilos**. "Development of contaminant setecting mobile application utilizing photographic color analysis". Duquesne University Undergraduate Research Program, Summer Research Symposium (Pittsburgh, PA), July 27, 2018. (Local Conference).

[24] *Spencer Graves*[*], Ross Aguilar[*], and **Theodore A. Corcovilos**. "Development of a homemade device to measure color concentration in water samples". Duquesne University Undergraduate Research Program, Summer Research Symposium (Pittsburgh, PA), July 27, 2018. (Local Conference).

[25] *Jahnavee Mittal*[*] and Theodore A. Corcovilos. "Generating forbidden 10-fold symmetry quasicrystals using an optical system". Duquesne University Undergraduate Research Program, Summer Research Symposium (Pittsburgh, PA), July 27, 2018. (Local Conference).

[26] ***Theodore A. Corcovilos***. "Two-dimensional optical quasicrystal potentials for ultracold atom experiments". American Physical Society, Division of Atomic, Molecular, and Optical Physics Annual Meeting (Ft. Lauderdale, FL), May 31, 2018. URL: http://meetings.aps.org/Meeting/DAMOP18/Session/T01.134. (National Conference).

[27] *Isaac Davies*[*], Kelsey Morrison[†], **Theodore A. Corcovilos**, and Brian Clowers. "Rates of vibrational energy transfer of gas-phase ions following photon absorption". Washington State University Research Experience for Undergraduates symposium (Pullman, WA), Aug. 4, 2017. (Local Conference).

[28] *Bryonna Beeson*[§], Jenna Mittal[*], Madelyn Hoying[*], Isaac Davies[*], and **Theodore Corcovilos**. "Stabilization of He-Ne laser wavelength through circuit mediated power control". Duquesne University Undergraduate Research Program, Summer Research Symposium (Pittsburgh, PA), July 28, 2017. (Local Conference).

[29] *Spencer Graves*[*], Gage Tiber[*], and **Theodore A. Corcovilos**. "Stabilization of the readouts for a homemade fluorometer to detect lead in drinking water". (2 times). Duquesne University Undergraduate Research Program, Summer Research Symposium (Pittsburgh, PA), July 28, 2017. (Local Conference); Optical Society of America/American Physical Society joint meeting on Frontiers in Optics/Laser Science (Washington, DC), Sept. 17, 2017. (National Conference).

[30] *Madelyn Hoying*[*], Jahnavee Mittal[*], Bryonna Beeson[§], and **Theodore A. Corcovilos**. "Stabilizing a reference laser for a modified Michelson interferometer". (2 times). Duquesne University Undergraduate Research Program, Summer Research Symposium (Pittsburgh, PA), July 28, 2017. (Local Conference); Optical Society of America/American Physical Society joint meeting on Frontiers in Optics/Laser Science (Washington, DC), Sept. 17, 2017. (National Conference).

[31] *Jake Kline*[*], Timothy Ireland[*], Gage Tiber[*], and **Theodore A. Corcovilos**. "Electronic and optical refinement of a wavelength meter". Duquesne University Undergraduate Research Program, Summer Research Symposium (Pittsburgh, PA), July 28, 2017. (Local Conference).

[32] *Jahnavee Mittal*[*], Madelyn Hoying[*], Bryonna Beeson[§], Isaac Davies[*], and **Theodore A. Corcovilos**. "Temperature and wavelength laser stabilization circuit using Arduino microcontroller". Duquesne University Undergraduate Research Program, Summer Research Symposium (Pittsburgh, PA), July 28, 2017. (Local Conference).

[33] *Tim Ireland*[*], Isaac Davies[*], Jake Kline[*], Jahnavee Mittal[*], Gage Tiber[*], and **Theodore A. Corcovilos**. "Optical and Electronic Design for a Part-Per-Million Laser Wavelength Meter". Duquesne University Undergraduate Research and Scholarship Symposium (Pittsburgh, PA), Apr. 5, 2017. (Local Conference).

[34] *Jake Kline*[*], Jahnavee Mittal[*], Isaac Davies[*], Tim Ireland[*], Gage Tiber[*], and **Theodore A. Corcovilos**. "Mechanical and Thermal Design for a Part-Per-Million Laser Wavelength Meter". Duquesne University Undergraduate Research and Scholarship Symposium (Pittsburgh, PA), Apr. 5, 2017. (Local Conference).

[35] *Gage Tiber*[*], Aria Parangi[†], Partha Basu, Spencer Graves[*], and **Theodore A. Corcovilos**. "Detection of Lead in Drinking Water Using a Homemade and Inexpensive LED-based Fluorometer". Duquesne University Undergraduate Research and Scholarship Symposium (Pittsburgh, PA), Apr. 5, 2017. (Local Conference).

[36] *Robert W. A. Brooke*[*], Maxwell R. Praniewicz[*], Garrett S. Ott[*], Guilherme Tamassia[*], David E. Schmidt, and **Theodore A. Corcovilos**. "Laser polarization controller for a laser cooling experiment". Optical Society of America & American Physical Society, Division of Laser Science joint meeting on Frontiers in Optics/Laser Science (Rochester, NY), Oct. 18, 2016. URL: https://laser.physics.sunysb.edu/research-symposium/2016/program.pdf. (National conference).

[37] *Timothy Ireland*[*], Jacob Kline[*], Gage Tiber[*], and **Theodore A. Corcovilos**. "Towards the implementation of a picometer-resolution digital wavelength meter". (2 times). Optical Society of America & American Physical Society, Division of Laser Science joint meeting on Frontiers in Optics/Laser Science (Rochester, NY), Oct. 18, 2016. URL: https://laser.physics.sunysb.edu/research-symposium/2016/program.pdf. (National conference); American Association of Physics Teachers, Western Pennsylvania Sectional Meeting (Erie, PA), Oct. 8, 2016, (Regional Conference).

[38] *Gage Tiber*[*], Samuel Lehr[*], Aria Parangi[†], Louis Sollon[*], Partha Basu, Michael van Stipdonk, and **Theoodore Corcovilos**. "Design of a homemade, portable, and inexpensive environmental sensors". (2 times). Optical Society of America & American Physical Society, Division of Laser Science joint meeting on Frontiers in Optics/Laser Science (Rochester, NY), Oct. 18, 2016. URL: https://laser.physics.sunysb.edu/research-symposium/2016/program.pdf. (National conference); University of Pittsburgh, Science 2016 conference (Pittsburgh, PA), Oct. 20, 2016, (Local conference).

[39] *Robert W. A. Brooke*[*], Maxwell R. Praniewicz[*], Garrett S. Ott[*], Guilherme Tamassia[*], David E. Schmidt, and **Theodore A. Corcovilos**. "Laser polarization controller for a laser cooling experiment". Duquesne University Undergraduate Research Program, Summer Research Symposium (Pittsburgh, PA), July 29, 2016. (Local conference).

[40] *Timothy Ireland*[*], Jacob Kline[*], Gage Tiber[*], and **Theodore A. Corcovilos**. "Design and implementation of optoelectronic sensors in a high-resolution wavelength meter". Duquesne University Undergraduate Research Program, Summer Research Symposium (Pittsburgh, PA), July 29, 2016. (Local conference).

[41] *Jake Kline*[*], Timothy Ireland[*], Gage Tiber[*], and **Theodore A. Corcovilos**. "Stabilizing and interferometer with proper equipment and a secure cart design". Duquesne University Undergraduate Research Program, Summer Research Symposium (Pittsburgh, PA), July 29, 2016. (Local conference).

[42] *Nevo Polonsky*[*], **Theodore Corcovilos**, J. K. Gibson, Jonathan Martens, Giel Berden, Jos Oomens, and Michael J. Van Stipdonk. "Combining mass spectrometry and vibrational spectroscopy to characterize gas-phase nickel and manganese oxo-anions". Duquesne University Undergraduate Research Program, Summer Research Symposium (Pittsburgh, PA), July 29, 2016. (Local Conference).

[43] *Gage Tiber*[*], Samuel Lehr[†], Louis Sollon[*], Michael Van Stipdonk, and **Theodore Corcovilos**. "Detection and identification of radioactive elements using a homemade gamma ray spectrometer". (2 times). Duquesne University Undergraduate Research Program, Summer Research Symposium (Pittsburgh, PA), July 29, 2016. (Local conference); American Association of Physics Teachers, Western Pennsylvania Section Fall meeting (Erie, PA), Oct. 7, 2016, (Regional conference).

[44] ***Theodore Corcovilos***, Cassandra Hanley[†], Evan Perez[*], Benjamin J. Bythell, and Michael J. Van Stipdonk. "Dissociation of gas-phase, doubly-charged uranyl-acetone and uranyl-dimethyl sulfoxide complexes by collisional activation and infrared photodissociation". 64th American Society of Mass Spectrometry Conference (San Antonio, TX), June 5, 2016. (National conference).

[45] Evan Perez[*], Cassandra Hanley[†], **Theodore A. Corcovilos**, John K. Gibson, Jonathan Martens, Jos Oomens, and *Michael J. Van Stipdonk*. "How does zinc do it? Transformations of alcohols by gas-phase zinc cation complexes". 64th American Society of Mass Spectrometry Conference (San Antonio, TX), June 4, 2016. (National conference).

[46] ***Theodore Corcovilos***. "Progress towards ultracold gases in arbitrary 2D potentials". American Physical Society, Division of Atomic, Molecular, and Optical Physics Annual Meeting (Providence, RI), May 25, 2016. URL: http://meetings.aps.org/Meeting/DAMOP16/Session/K1.164. (National conference).

[47] *Aria Parangi*[†], Partha Basu, Gage Tiber[*], and **Theodore A. Corcovilos**. "Detection of Pb(II) in aqueous samples using a turn-on ratiometric chemosensor coupled with a hand-held portable fluorometer". Pennsylvania State University, 19th Annual Environmental Chemistry and Microbiology Student Symposium (University Park, PA), Apr. 9, 2016. (Regional conference).

[48] *Gage Tiber*[*], Aria Parangi[†], Partha Basu, and **Theodore A. Corcovilos**. "Detection of lead in drinking water using homemade and inexpensive LED-based fluorometer". (4 times). American Association of Physics Teachers, Western Pennsylvania Section Spring meeting (Indiana, PA), Apr. 4, 2016. (Regional conference); Duquesne University Undergraduate Research & Scholarship Symposium (Pittsburgh, PA), Apr. 6, 2014, (Local conference); Duquesne University Division of Mission and Identity "Libations and Leads: A Researcher Fair" (Pittsburgh, PA), Apr. 19, 2016, (Local conference); Duquesne University Metals in Biology Symposium (Pittsburgh, PA), Sept. 16, 2016, (Local conference).

[49] *Robert W. A. Brooke*[*], Isaac Davies[*], Julie M. Gillis[*], and **Theodore A. Corcovilos**. "Versatile control instruments for an undergraduate laser cooling experiment". Optical Society of America & American Physical Society, Division of Laser Science joint meeting on Frontiers in Optics/Laser Science (San Jose, CA), Oct. 19, 2015. (National conference).

[50] *Julie M. Gillis*[*], **Theodore A. Corcovilos**, James K. Santucci, and Jinhao Ruan. "Optimization of the DPSS Nd:YLF amplifier chain for the 263-nm drive laser at the FAST facility". (2 times). Optical Society of America & American Physical Society, Division of Laser Science joint meeting on Frontiers in Optics/Laser Science (San Jose, CA), Oct. 19, 2015. (National conference); American Physical Society Conference for Undergraduate Women in Physics (Rutgers, NJ), Jan., 2016. (Regional conference).

[51] *Robert W. A. Brooke*[*], Isaac Davies[*], Timothy Ireland[*], Gage Tiber[*], Julie M. Gillis[*], and **Theodore Corcovilos**. "Arduino-based laboratory instruments for an undergraduate laser cooling experiment". (2 times). Duquesne University Undergraduate Research Program, Summer Research Symposium (Pittsburgh, PA), July 31, 2015. (Local conference); University of Pittsburgh *Science 2015* Conference (Pittsburgh, PA), October 8, 2015.

[52] *Gage Tiber*[*], Robert Brooke[*], Timothy Ireland[*], Isaac Davies[*], Julie Gillis[*], Chris Zaccagnini[*], and **Theodore Corcovilos**. "Part per million resolution optical wavemeter". (2 times). Duquesne University Undergraduate Research Program, Summer Research Symposium (Pittsburgh, PA), July 31, 2015. (Local conference); University of Pittsburgh *Science 2015* Conference (Pittsburgh, PA), October 8, 2015.

[53] *Gage Tiber*[*], Partha Basu, and **Theodore A. Corcovilos**. "Inexpensive, pocket-sized LED-based fluorometer for undergraduate teaching laboratories and in-the-field chemical detection". American Physical Society, Division of Atomic, Molecular, and Optical Physics Annual Meeting (Columbus, OH), June 11, 2015. URL: http://meetings.aps.org/link/BAPS.2015.DAMOP.Q1.142. (National conference).

[54] *Julie M. Gillis*[*], Sandra M. Osburn, Michael J. Van Stipdonk, and **Theodore A. Corcovilos**. "Modification of a tandem mass-spectrometer for infrared multi-photon dissociation (IRMPD) of gas-phase ions". (2 times). American Physical Society, Division of Atomic, Molecular, and Optical Physics Annual Meeting (Columbus, OH), June 10, 2015. URL: http://meetings.aps.org/link/BAPS.2015.DAMOP.K1.152. (National conference); University of Pittsburgh *Science 2015* Conference (Pittsburgh, PA), October 8, 2015.

[55] *Timothy Ireland*[*], Gage Tiber[*], Robert W. A. Brooke[*], Julie M. Gillis[*], Christopher A. Zaccagnini[*], and **Theodore A. Corcovilos**. "Arduino-based laboratory instruments for an undergraduate laser cooling experiment". American Physical Society, Division of Atomic, Molecular, and Optical Physics Annual Meeting (Columbus, OH), June 10, 2015. URL: http://meetings.aps.org/link/BAPS.2015.DAMOP.K1.15. (National conference).

[56] *Yang Wang*[†], Aishwarya Kumar[†], Xianli Zhang, **Theodore A. Corcovilos**, and David S. Weiss. "Performance of single qubit gates in an array of neutral atoms". American Physical Society, Division of Atomic, Molecular, and Optical Physics Annual Meeting (Columbus, OH), June 10, 2015. URL: http://meetings.aps.org/link/BAPS.2015.DAMOP.K1.76. (National conference).

[57] *Julie Gillis*[*], R. W. A. Brooke[*], C. A. Zaccagnini[*], and **T. A. Corcovilos**. "Saturated absorption laser spectroscopy of potassium-39 vapor". (2 times). Conference for Undergraduate Women in Physics (University Park, PA), Jan. 2015. (Regional conference); Duquesne University Undergraduate Research Program, Summer Research Symposium (Pittsburgh, PA), July 25, 2014. (Local conference).

[58] *R. W. A. Brooke*[*], J. M. Gillis[*], C. A. Zaccagnini[*], and **T. A. Corcovilos**. "Electronic systems in an atomic physics lab". Duquesne University Undergraduate Research Program, Summer Research Symposium (Pittsburgh, PA), July 25, 2014. (Local conference).

[59] *C. A. Zaccagnini*[*], R. W. A. Brooke[*], J. M. Gillis[*], and **T. A. Corcovilos**. "Opto-mechnanical systems for use in an atomic physics lab". Duquesne University Undergraduate Research Program, Summer Research Symposium (Pittsburgh, PA), July 25, 2014. (Local conference).

[60] ***Theodore A. Corcovilos***, Robert W. A. Brooke[*], Julie Gillis[*], Anthony C. Ruggiero[*], Gage D. Tiber[*], and Christopher A. Zaccagnini[*]. "Experimental modelling of material interfaces with ultracold atoms". American Physical Society, Division of Atomic, Molecular, and Optical Physics Annual Meeting (Madison, WI), June 3, 2014. URL: http://meetings.aps.org/Meeting/DAMOP14/Session/D1.18. (National conference).

Prior to current appointment

[61] ***Theodore A. Corcovilos***, Yang Wang[†], and David S. Weiss. "Single and pair-wise manipulation of atoms in a 3D optical lattice". Joint Meeting of the American Physical Society Division of Atomic, Molecular et al., June 4, 2013. URL: http://meeting.aps.org/Meeting/DAMOP13/Event/194050. (International conference).

[62] ***Theodore A. Corcovilos***, Xiao Li, Yang Wang[†], David S. Weiss, Hoon Ryu, Felix Lu, and Jungsang Kim. "Neutral atom quantum computer of Cs atoms in a 5-μm spaced 3D optical lattice". American Physical Society, Division of Atomic, Molecular, and Optical Physics Annual Meeting (Atlanta, GA), June 16, 2011. URL: http://meetings.aps.org/Meeting/DAMOP11/Session/Q1.151. (National conference).

[63] *P. M. Duarte*[†], R. Hart, T. L. Yang[†], J. M. Hitchcock[†], **T. A. Corcovilos**, and R. G. Hulet. "Progress towards realization of antiferromagnetic ordering of cold atoms in an optical lattice". American Physical Society, March Meeting (Dallas, TX), Mar. 22, 2011. URL: http://meetings.aps.org/link/BAPS.2011.MAR.K1.111. (National conference).

[64] *James M. Hitchcock*[†], P. M. Duarte[†], **T. A. Corcovilos**, and R. G. Hulet. "Experimental probe of antiferromagnetic ordering in a 3D optical lattice of ^{6}Li". American Physical Society, Division of Atomic, Molecular, and Optical Physics Annual Meeting (Houston, TX), May 26, 2010. URL: http://meetings.aps.org/Meeting/DAMOP10/Session/E1.98. (National conference).

[65] *P. M. Duarte*[†], J. M. Hitchcock[†], **T. A. Corcovilos**, and R. G. Hulet. "All-optical methods for cooling ^{6}Li to quantum degeneracy". American Physical Society, Division of Atomic, Molecular, and Optical Physics Annual Meeting (Charlottesville, VA), May 20, 2009. URL: http://meetings.aps.org/Meeting/DAMOP09/Session/E1.69. (National conference).

[66] *D. Dries*[†], Yong P. Chen, J. Hitchcock[†], M. Junker[†], **T. A. Corcovilos**, C. Welford[†], and R. G. Hulet. "Effect of disorder on a Bose-Einstein condensate with tunable interactions". American Physical Society, March Meeting (New Orleans, LA), Mar. 12, 2008. URL: http://meetings.aps.org/link/BAPS.2008.MAR.R1.173. (National conference).

[67] ***T. A. Corcovilos***[†], M. E. Turk[*], D. M. Strayer, N. N. Asplund, and N.-C. Yeh. "Saturated nucleate pool boiling of oxygen under magnetically-enhanced effective gravity". American Physical Society, March Meeting (New Orleans, LA), Mar. 11, 2008. URL: http://meetings.aps.org/link/BAPS.2008.MAR.K1.131. (National conference).

III.D Honors and awards for scholarship

Duquesne University Grefenstette Center for Ethics in Science, Technology, and Law Faculty Scholarship, 2022–2023.

Prior to Duquesne:

Graduate Student Researcher Fellowship, NASA, 2000–2003.

Chancellor's Citation for Extraordinary Academic Achievement, University of Tennessee - Knoxville, May 1999.

Barry M. Goldwater Scholarship, 1997–1999.

ΦBK honor society, University of Tennessee - Knoxville, 1998.

ΣΠΣ physics honor society, University of Tennessee - Knoxville, 1997.

ΦΚΦ honor society, University of Tennessee - Knoxville, 1997.

College Scholar, University of Tennessee - Knoxville, 1996–1999.

Chancellor's Scholar, University of Tennessee - Knoxville, 1995–1999.

Douglas Roseberry Award for outstanding undergraduate physics student, University of Tennessee - Knoxville (1997, 1998, 1999) — First 3-time recipient.

Mathematics Department scholarship, University of Tennessee - Knoxville, 1996–1998.

Salutatorian, Maryville High School (Maryville, TN), 1995.

Eagle Scout, Boy Scouts of America, 1993.

III.E Other activities related to scholarship

III.E.1 Media mentions

[1] Kailey Love. "Device detects lead in water". *The Duquesne Duke* (Feb. 11, 2016). URL: http://www.duqsm.com/device-detects-lead-in-water/.

[2] Aaron Auperlee. "Lead crisis in Flint, Mich., raises question: What's in our water?" *Pittsburgh Tribune Review* (Jan. 21, 2016).

[3] Kaye Burnet. "New research lab coming to Fisher Hall". *The Duquesne Duke* (Jan. 23, 2014). URL: http://www.duqsm.com/new-research-lab-coming-in-fisher-hall/.

IV Service

IV.A University, school, or department Service

IV.A.1 University service

At Duquesne University:

Faculty Senate, Vice President (2022–2024), Shared Governance Committee co-chair (2020–present), Executive Committee member (2020–2022), Assembly representative (2016–2020).

Grefenstette Center for Ethics annual Tech Ethics Symposium, planning committee (2023).

Office of Research, Faculty Development Fund award committee member (2015, 2019).

Center for Teaching Excellence, Creative Teaching Awards committee member (2016, 2017).

Center for Teaching Excellence, Teacher-Scholar Nexus workshop panelist (2017).

Center for Teaching Excellence and Division of Academic Affairs, Promotion and Tenure Workshop, volunteer for case study (2016).

Division of Academic Affairs, STEM education working group member (2015).

Office of Research, Research computing working group member (2015).

Libermann Hall Foucault Pendulum installation, faculty mentor (2014–2015) .

IV.A.2 School service

At Duquesne University, School of Science and Engineering, current appointment:

School Academic Integrity Committee (2021–present).

At Duquesne University, School of Science and Engineering, prior to current appointment:

Undergraduate Research Program selection committee (2020, 2021).

Dean review committee member (2017, 2020).

School Faculty Excellence Awards committee (2016).

Academic Integrity violation panel (2015).

Assistant dean search committee member (2015).

Summer Undergraduate Research Symposium, plenary session moderator (2016, 2015, 2014).

Mitch Johnson Student Service Award, award committee member (2015).

Undergraduate Research Program Ethics Forum, moderator (2014).

Undergraduate Research Program Ethics Forum, group mentor (2014).

At The Pennsylvania State University (University Park Campus), Eberly College of Science:

Climate and diversity committee, member (2012–2013).

Postdoctoral affairs subcommittee, member (2012–2013).

IV.A.3 Departmental service

At Duquesne University, Department of Physics:

Faculty hiring committees (two in 2023)

Master's program curriculum committee (2021)

Master's program admissions committee, chair (2021, 2022)

Master's program development committee (2018–2020)

Departmental chairperson review committee, co-chair (2016–2017)

Bayer Scholarship committee for physics (2016, 2017)

Computer committee (2015–present)

Secured donation of a $5,000 video conferencing system for the department from the Pittsburgh Quantum Institute (2015).

Hiring committee for Director of Instructional Laboratories, member (2013).

At the California Institute of Technology, Department of Physics:

Graduate student seminar chairperson (2002).

At the University of Tennessee - Knoxville, Department of Physics and Astronomy:

Curriculum committee, member (1998–1999).

IV.B Community service

Pittsburgh Water & Sewer Authority, Academics Green Stormwater Infrastructure Convergence, member (2015)

IV.C Professional

IV.C.1 Committees

Pittsburgh Quantum Institute, postdoctoral advisory committee member (2017–present).

Pittsburgh Quantum Institute, executive committee member (2014–present).

Pittsburgh Quantum Institute, annual symposium event, program committee (2014–2022), session chair (2014, 2018)

Pennsylvania Junior Academy of Science, Regional Science Fair committee, alternate member (2016)

IV.C.2 Other professional services

Reviewer for journals: See also my Publons profile at https://publons.com/researcher/1389420/theodore-corcovilos/peer-review/.

Routledge Publishing, reviewer (2023)

Photonics, reviewer (2021–present).

Journal of Open Hardware , reviewer (2020–present).

Sensors, reviewer (2019–present).

Applied Optics, reviewer (2018–present).

American Journal of Physics, reviewer (2015–present).

Sustainability, reviewer (2021–present)

Chemosensors, reviewer (2021-present)

Other service:

Intel International Science and Engineering Fair, Grand Awards judge (2015).

Pennsylvania Junior Academy of Science, regional competition judge (2014).