Theodore A. Corcovilos, Ph.D.

corcoviloslab.com | corcoted@gmail.com | 814.470.2005

EDUCATION

CALIFORNIA INSTITUTE OF TECHNOLOGY

PhD in Physics
June 2008 | Pasadena, CA
Dissertation: *Fluid Phase Thermodynamics*
Advisor: Nai-Chang Yeh

UNIVERSITY OF TENNESSEE, KNOXVILLE

BA in College Scholars (Physics, Math)
May 1999 | Knoxville, TN
Summa Cum Laude

LINKS

Github: **corcoted**
LinkedIn: **ted-corcovilos**
Twitter: **@TedCorcovilos**
ORCiD: **0000-0001-5716-1188**

SKILLS

HARDWARE

Imaging Optics
Lasers (MIR, NIR, Vis, UV; diodes, FEL, fiber lasers, Ti:Sapphire, Nd:YAG)
Fiber Optics
Acousto-Optics
Electro-Optics
Analog and digital electronics
Microwave electronics
MEMS
Microscopy
Ultra-high Vacuum
Cryogenics (2K)
Arduino
NI DAQ racks

SOFTWARE

Python
C/C++
Fortran
Matlab
Mathematica
LabView
Zemax
Solidworks
Javascript
LaTeX
MS-Office
Windows
Linux
Slack

EXPERIENCE

DUQUESNE UNIVERSITY | Associate Professor of Physics

July 2020 – Present | Pittsburgh, PA

| Assistant Professor of Physics

Aug 2013 – June 2020 | Pittsburgh, PA

- Teaching of undergraduate lecture and lab courses in Optics, Quantum Mechanics, Electrodynamics, and Electronics
- Proposed and managed multi-year research projects with $500k-level budgets
- Mentored teams of undergraduate students in a research setting
- Experimental research in atomic physics, optics, spectroscopy, environmental sensing

PENNSYLVANIA STATE UNVERSITY | Postdoc Researcher

Apr 2010 – June 2013 | University Park, PA
Supervisor: David S. Weiss
Quantum computing experiment using ultracold neutral atoms as qubits.

RICE UNIVERSITY | Postdoc Researcher

Aug 2007 – March 2010 | Houston, TX
Supervisor: Randy Hulet
Quantum simulation experiment of fermions in a cubic lattice.

CURRENT PROJECTS

2D QUASICRYSTALS | PI

Jan 2014 –- Present
Experiment to realize analogs of 2D quasicrystals using ultracold atoms in optical interference potentials.

IRMPD OF GAS-PHASE MOLECULAR IONS | Co-PI

Jan 2015 –- Present
Infrared Multiphoton Dissociation spectroscopy using mid-IR free-electron lasers to characterize the structure of gas-phase molecular ion complexes of uranium. Collaboration with Michael Van Stipdonk (Duquesne Univ., Chemistry).

DETECTION OF WATER CONTAMINANTS | Co-PI

May 2015 –- Present
Design and use of inexpensive home-built color and fluorescence detectors of lead, fluoride, and other contaminants in drinking water. Collaboration with Partha Basu (IUPUI, Chemistry) and David Kahler (Duquesne, Environmental Science).

SELECTED PUBLICATIONS

Theodore A. Corcovilos and Jahnavee Mittal. Two-dimensional optical quasicrystal potentials for ultracold atom experiments. *Applied Optics*, 58(9):2256–2263, 2019. doi:10.1364/AO.58.002256.

Theodore A. Corcovilos. A simple game simulating quantum measurements of qubits. *American Journal of Physics*, 86(7):510–517, 2018. doi:10.1119/1.5036620.

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*, 115:043003, 2015. doi:10.1103/PhysRevLett.115.043003.

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):013415, 2010. doi:10.1103/PhysRevA.81.013415.

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):090402, 2009. doi:10.1103/PhysRevLett.102.090402.