

MATTHEW C. SULLIVAN

<http://faculty.ithaca.edu/mcsullivan>

Ithaca College
Department of Physics and Astronomy
Ithaca, NY 14850

Phone: (607) 274-3964
Fax: (607) 274-1773
mcsullivan@ithaca.edu

EDUCATION

- 2010-2022 **Ithaca College**, Ithaca, NY
B.S. in Chemistry, 2022
- 1998-2004 **University of Maryland**, College Park, MD
Ph.D. in Physics, 2004
M.S. in Physics, 2000
Dissertation: The Normal-Superconducting Phase Transition of YBCO in Zero Magnetic Field (C. J. Lobb, advisor)
- 1992-1996 **Stanford University**, Stanford, CA
A.B. in German Studies, 1996
B.S. in Physics, 1996

RESEARCH AND TEACHING EXPERIENCE

- 2021-2026 **Charles A. Dana Professor of Physics.** Ithaca College, Ithaca, NY.
2016-present **Professor.** Ithaca College, Ithaca, NY.
2011-2016 **Associate Professor.** Ithaca College, Ithaca, NY.
2005-2011 **Assistant Professor.** Ithaca College, Ithaca, NY.

Courses taught include:

Introduction to Physics I (mechanics; algebra-based), SCALE-UP instructor
Introduction to Physics II (E&M; algebra-based), SCALE-UP instructor
Principles of Physics I (mechanics; calculus-based), SCALE-UP instructor
Principles of Physics III (waves, optics, & thermo; calculus-based)
Honors Seminar: Relativity and Quantum Physics in Modern Society
Physics of Sound
Analog Electronics
Classical Mechanics
Thermodynamics
Quantum Mechanics and Advanced Quantum Mechanics
Solid State Physics
Advanced Physics Laboratory
Senior Project Proposal and Senior Project
Senior Thesis I and II
Independent Research - Introductory, Intermediate and Advanced

Research in pedagogical physics and experimental condensed matter physics. Pedagogical physics research focuses on creating new experiments for advanced laboratory courses. Condensed matter physics focuses on semiconductor research in neuromorphic computing as well as the creation and dissemination of superconducting levitation demonstrations. Skills include: device fabrication at the Cornell Nanoscale Science and Technology Facility; thin film growth via pulsed laser deposition and thermal evaporation; low noise cryogenic electrical characterization.

- 2012-2013 **Visiting Associate Professor.** Energy Materials Center at Cornell, School of Applied and Engineering Physics, Cornell University, Ithaca NY.
Research in experimental x-ray physics, with an emphasis on the physical processes that occur during growth of materials via pulsed laser deposition. Much of this work was carried out at the Cornell High Energy Synchrotron Source (CHESS).
- 2004-2005 **Process Engineer.** Intel Corporation, Hillsboro, OR.
Growth of thin-film Si/Ge/B layers via chemical vapor deposition, analysis via secondary ion mass spectrometry.
- 2002-2004 **Research Mentor.**, Center for Superconductivity Research, University of Maryland, College Park, MD. Trained three graduate students and mentored two undergraduate students, working with Monica Lilly on her senior thesis:
Richard Ott ('03): Jerry B. Marion Award recipient, received his Ph.D. in Physics from MIT
Monica Lilly ('05): Departmental High Honors, Recipient of Best Honors Thesis & Defense and the IPST Monroe Martin Award. M.S. in Physics ('07) from the University of California at Riverside.
- 2001-2004, 1998-2000 **Graduate Research Assistant.** Center for Superconductivity Research, University of Maryland, College Park, MD.
Research in experimental condensed-matter physics including growth, characterization, and optimization of the cuprate superconductors and other materials.
- 2000-2001 **Physics Instructor.** Phillips Academy, Andover, MA.
Taught two sections of college physics with an emphasis on laboratory skills.
- 1998-1999 **Teaching Assistant.** Physics Department, University of Maryland, College Park, MD. Led discussions and labs, graded and wrote tests, quizzes. Courses taught:
Principles of Physics II (E&M, algebra-based)
General Physics I (mechanics, calculus-based)
- 1996-1998 **Peace Corps Volunteer (English teacher).** Baraboi village, Republic of Moldova.
Taught English as a second language to grades 7-11, as well as to adults. Developed and led summer English camp.
- 1995-1996 **Undergraduate Research Assistant.** Gravity Probe B Magnetometry Labs, Stanford University, Stanford CA.
Studied the properties of thin-film superconductors using a dc SQUID.

HONORS AND AWARDS

- Dean of Humanities and Sciences Merit Award, 2014, 2024.
Dean of Humanities and Sciences Merit Award to Physics Department, Spring 2006.
Sigma Xi, the Scientific Research Society, Spring 2009.
Physics and Astronomy Department, Level II Merit Award, 2010, 2012, 2014, 2015, 2017, 2018, 2023, 2024.
Physics Department Merit Award for Excellence in Teaching, Spring 2006, 2009.
Student awards at the American Physical Society March Meeting:
Jamie Woodworth, Best Undergraduate Presentation and Research 2022 (one of ten awards)
Eli Adler, Best Undergraduate Presentation and Research 2015 (one of ten awards)
Connor Shea, Best Undergraduate Presentation and Research 2015 (one of ten awards)
Emily Backus, Best Undergraduate Presentation 2010 (one of five awards)

PEER-REVIEWED ARTICLES

(undergraduate researchers in bold)

1. **Ted Mburu, M. C. Sullivan, Uday Lamba, Alex Powell**, K. Beckmann, Z. R. Robinson, and Nathaniel Cady, "Enhancement in neuromorphic NbO₂ threshold switching at cryogenic temperatures", *Journal of Vacuum Science & Technology B* **42**, 063210-1 to 063210-6, (2024).
<https://doi.org/10.1116/6.0004060>
2. Z. Robinson, K. Beckmann, J. Michels, **Vincent Daviero, Elizabeth Street, Fiona Lorenzen, M. C. Sullivan**, Nathaniel Cady, A. Kozen, J. Woodward, and Marc Currie, "Measurement of the Crystallization and Phase Transition of Niobium Dioxide Thin-Films for Neuromorphic Computing Applications Using a Tube Furnace Optical Transmission System", *AIP Advances* **14**, 115113 (2024).
<https://doi.org/10.1063/5.0228400>
3. Kelley D. Sullivan, **Antara Sen, M. C. Sullivan**, "Investigating the Magnetic Field outside small Accelerator Magnet Analogs via Experiment, Simulation, and Theory", *American Journal of Physics* **91**, 432 (2023).
4. **M. C. Sullivan**, Zachary R. Robinson, Karsten Beckmann, **Alex Powell, Ted Mburu**, Katherine Pittman, Nathaniel Cady, "Threshold switching stabilization of NbO₂ films via nanoscale devices", *Journal of Vacuum Science & Technology B* **40**, 063202-1 to 063202-7, (2022). Chosen as an [Editor's Pick](#).
5. **M. C. Sullivan**, "Using a smartphone camera to explore ray optics beyond the thin lens equation", *American Journal of Physics* **90**, 610 (2022); featured by the American Institute of Physics as a [Scilight](#).
6. **M.C. Sullivan**, M.J. Ward, Araceli Gutiérrez-Llorente, **Eli R. Adler**, H. Joress, A. Woll, J. D. Brock, "Complex oxide growth using simultaneous in situ RHEED and x-ray reflectivity: When is one layer complete?", *Applied Physics Letters* **106**, 031604-1 to 031604-4, (2015).
7. Araceli Gutiérrez-Llorente, Howie Joress, Arthur Woll, Megan E. Holtz, Matthew J. Ward, **M. C. Sullivan**, David A. Muller, Joel D. Brock, "Epitaxial crystals of Bi₂Pt₂O₇ pyrochlore through the transformation of δ -Bi₂O₃ fluorite," *Applied Physics Letters Materials* **3**, 036105-1 to 036105-6, (2015); highlighted by the editors for [special interest as a press release](#).
8. Thomas J. Pfaff, **Maksim Sipos, M. C. Sullivan**, Max Tran, B. G. Thompson, "The Use of Statistics in Experimental Physics," *Mathematics Magazine* **86**, 120 to 131 (2013).
9. **M. C. Sullivan, R. A. Isaacs, M. F. Salvaggio, J. Sousa, C. G. Stathis, J. B. Olson**, "Scaling analysis of the static and dynamic critical exponents in underdoped, overdoped, and optimally doped Pr_{2-x}Ce_xCuO_{4-y} films," *Phys. Rev. B* **81**, 134502-1 to 134502-6 (2010).
10. Hua Xu, Su Li, Steven M. Anlage, C. J. Lobb, **M. C. Sullivan**, Kouji Segawa, Yoichi Ando, "Universal critical behavior in single crystals and films of YBa₂Cu₃O_{7- δ} ," *Phys. Rev. B* **80**, 104518-1 to 104518-11 (2009).
11. **C. P. Strehlow, M. C. Sullivan**, "A Classroom Demonstration of Levitation and Suspension of a Superconductor over a Magnetic Track", *American Journal of Physics* **77**, 847-851 (2009), also published in the *Virtual Journal of Applications of Superconductivity*, August 15, 2009.
12. **M. C. Sullivan**, B. G. Thompson, **A. Williamson**, "An experiment in the dynamics of thermal diffusion", *American Journal of Physics* **76**, 637-642 (2008).
13. **M. C. Sullivan**, D. R. Strachan, Su Li, Hua Xu, K. Segawa, Yoichi Ando, Steven M. Anlage, C. J. Lobb, "Why can't experimentalists agree on the superconducting critical exponents?", *Physica C* **468** 284-287 (2008).
14. D. R. Strachan, **M. C. Sullivan**, and C. J. Lobb, "Scaling of cross-over currents in current-voltage characteristics of YBa₂Cu₃O_{7- δ} films", *Phys. Rev. B* **73**, 012512 (2006).
15. **M. C. Sullivan**, D. R. Strachan, T. Frederiksen, **R. A. Ott**, and C. J. Lobb, "Effects of self-field and low magnetic fields on the normal-superconducting phase transition", *Phys. Rev. B* **72**, 092507 (2005).
16. S. C. Lee, **M. C. Sullivan, G. R. Ruchti**, S. M. Anlage, B. S. Palmer, B. Maiorov, E. Osquiguil, "Doping-dependent nonlinear Meissner effect and spontaneous currents in high-T_c superconductors", *Phys. Rev. B* **70**, 014507 (2005).

17. R. K. Rakshit, R. C. Budhani, V. N. Kulkarni, **M. C. Sullivan**, R. L. Greene, "Influence of buffer layers on superconductivity in $\text{La}_{1.85}\text{Sr}_{0.15}\text{CuO}_4$ epitaxial films", *Physica C* **415** 74 (2004).
18. **M. C. Sullivan**, T. Frederiksen, J. M. Repaci, D. R. Strachan, **R. A. Ott**, and C. J. Lobb, "Normal-superconducting phase transition mimicked by current noise", *Phys. Rev. B* **70** (Rapid Communications), 140503(R) (2004).
19. **M. C. Sullivan**, D. R. Strachan, T. Frederiksen, **R. A. Ott**, **M. Lilly**, and C. J. Lobb, "Zero-field superconducting phase transition obscured by finite-size effects in thick $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$ films", *Phys. Rev. B* **69**, 214524 (2004).
20. D. R. Strachan, **M. C. Sullivan**, T. Frederiksen, **R. A. Ott**, and C. J. Lobb, "What a superconducting transition should look like: extrapolating data from scaling plots", *Physica C* **408-10**, 562 (2004).
21. D. R. Strachan, **M. C. Sullivan**, and C. J. Lobb, "Probing the Limits of Superconductivity", *Proc. SPIE Vol. 4811, Superconductivity and Related Oxides: Physics and Nanoengineering V*, Ivan Bozovic and Davor Pavuna, Eds. pp. 65-77, (2002).
22. R. C. Budhani, **M. C. Sullivan**, C. J. Lobb, and R. L. Greene, "Anomalous magnetothermopower in the mixed state of the electron-doped high- T_c superconductors", *Phys. Rev. B* **66**, 052506 (2002).
23. R. C. Budhani, **M. C. Sullivan**, C. J. Lobb, and R. L. Greene, "Thermopower and Hall conductivity in the magnetic-field-driven normal state of $\text{Pr}_{2-x}\text{Ce}_x\text{CuO}_{4-y}$ superconductors", *Phys. Rev. B* **65** (Rapid Communications), 100517(R) (2002).
24. D. R. Strachan, **M. C. Sullivan**, P. Fournier, S. P. Pai, T. Venkatesan, and C. J. Lobb, "Do superconductors have zero resistance in a magnetic field?", *Phys. Rev. Lett.* **87**, 067007 (2001).
25. **M. C. Sullivan**, J. Mester, J. Lockhart, "Superconducting thin-film absolute field magnetometer", *Czech. Jour. Phys.* **46 Suppl. 5** 2801 (1996).

EXTERNAL FUNDING AND GRANTS

"RUI: Collaborative Research: Structural and compositional modification of memristive niobium oxide films for neuromorphic computing applications" Collaborative proposal (one of two PIs) submitted 11/2020 to the National Science Foundation. Awarded **\$196,130**. Grant active 06/2021 - 05/2025.

"RUI: Fluctuations and Phase Transitions in Iron Pnictide Superconductors." Single PI proposal submitted 11/2012 to the National Science Foundation. Awarded **\$185,000** in 08/2013. Grant active 05/2013 - 05/2017.

"RUI: Critical Dynamics of the Electron-Doped Cuprate Superconductors." Single PI proposal submitted 11/2006 to the National Science Foundation. Awarded **\$188,820** external with \$13,400 internal matching in 06/2007. Grant active 06/2007 - 06/2011.

MEDIA APPEARANCES

Locally Sourced Science on WRFI 88.1 FM, posted Nov. 5, 2018.

It Came Outta Nowhere on the Travel Channel, aired July 22, 2016 and August 5, 2018.

How Hoverboards Could Revolutionize Transit produced by mic.com, posted Sept. 24, 2015.

Morning Newswatch on WHCU radio 870 AM 95.9 FM, aired June 11, 2013.

Future Scream Machines: Bigger, Wetter, Faster on the Travel Channel, aired May 19, 2013.

The Colbert Report on Comedy Central, aired Nov. 9, 2011. Featured in the segment titled "Americone Dream of the Future."

NATIONAL AND INTERNATIONAL OUTREACH

Created a YouTube channel for [Ithaca College Physics](#) with over **10 million views** and **20,000 subscribers**.

Assisted in the creation of levitation/suspension demonstrations via email with scientists, engineers, and enthusiasts from the United States, Canada, England, Ireland, Romania, Spain, New Zealand, Mexico, Morocco, China, Turkey, Barbados, Portugal, and Singapore, including:

- 3 Physics / Materials Science professors (one in Sweden)
- 5 Science writers / TV producers
- 4 Science museum curators (including the Palais de la Découverte in Paris)
- 12 Undergraduate students and 10 secondary school students.

INVITED TALKS

Scholarly talks: "Physical measurements of mathematical 'trick': Seeing magnetic multipoles using a smartphone," Math Department colloquium, Ithaca College, November 27 2023.

"Optimization of Niobium Oxide Films for Neuromorphic Computing Applications: A New York Collaboration," NY CREATES and SUNY Albany, Albany, NY, November 17 2023.

"Measuring the power law dependence of magnetic multipole configurations using a smartphone," Workshop at the Conference on Laboratory Instruction Beyond the First Year (vBFY), remote, July 29 2021.

"Superconductivity to the Future: Hoverboards, MRIs, and other reasons to like superconductors," Colloquium, Department of Physics, Towson University, Towson, MD, October 15, 2020.

"Thermal Diffusion in Cylindrical Rods: Measuring Specific Heat and Thermal Conductivity," Workshop at the Conference on Laboratory Instruction Beyond the First Year (BFY III), Baltimore MD, June 2018.

"Using RHEED to characterize layer-by-layer thin film growth," Colloquium at the Center for Nanophysics and Advanced Materials, Department of Physics, University of Maryland, College Park MD, January 2017.

"Superconductivity: What, when, and why," Science Colloquium, Wells College, Aurora NY, September 2015.

"Ambiguity when using RHEED to characterize layer-by-layer thin film growth," Cornell Center for Materials Research, Cornell University, Ithaca NY, March 2015.

"What I did during my vacation: X-ray physics and thin-film growth," Department of Physics and Astronomy, Ithaca College, Ithaca NY, September 2014.

"Simultaneous x-ray and RHEED in the G3 Hutch at CHESS," Brock Group presentation, Cornell University, Ithaca NY, June 2014.

"Quantum Levitation and Other Reasons to Love Superconductivity," Department of Physics, Millersville University, Millersville PA, November 2012.

"The Future of Superconductivity, Pulsed Laser Deposition, and Materials Science (at Ithaca College)," Energy Materials Center at Cornell, Cornell University, Ithaca NY, November 2011.

"Superconductivity: 100 years young," Joint Meeting of the NYS Section of the American Physical Society and the American Association of Physics Teachers, SUNY Oneonta, Oneonta NY, October 2011

"A Century of Superconductivity: History, achievements, and where we go from here," Trinity University, San Antonio TX, November 2010.

"A Century of Superconductivity," Hartwick College, Oneonta NY, April 2010.

"The superconducting revolution: How (and if!) the high-temperature superconductors superconduct," Allegheny College, Meadville PA, February 2010.

"Are superconductors really superconducting?," Binghamton University Physics Colloquium, Binghamton NY, April 2008.

Public talks: "Superconductivity: Past, present, and future promise," Science & Suds, Ithaca NY, September 21, 2023.

"What's so super about superconductors?" Allegheny College, Meadville PA, February 2010.

"The SUPER in superconductors," Ithaca College Physics Café, Ithaca NY, February 2010.

CONTRIBUTED TALKS

(undergraduate co-authors in bold)

- “Comparing micro- and nanoscale NbO₂ devices for memristive applications”, **M. C. Sullivan**, Z. R. Robinson, K. Beckmann, **Alex Powell**, **Ted K. Mburu**, **K. Pittman**, Nathaniel Cady, American Physical Society March Meeting, Minneapolis MN, 2024.
- “Ray Optics Using a Smartphone Camera,” American Association of Physics Teachers Winter Meeting 2023, Portland Oregon, January 17 2023.
- “When is one layer complete? Using simultaneous in-situ RHEED and x-ray reflectivity to map layer-by-layer thin-film oxide growth,” **M. C. Sullivan**, M.J. Ward, H. Joress, A. Gutierrez-Llorente, A.E. White, A. Woll, J.D. Brock, American Physical Society March Meeting, Denver CO, 2014
- “Doping dependence of the dynamic and static critical exponents in Pr_{2-x}Ce_xCuO₄,” **M. C. Sullivan**, **R. Isaacs**, **J. B. Olson**, **J. Sousa**, **M. Salvaggio**, and R. L. Greene, American Physical Society March Meeting, Pittsburgh, PA 2009.
- “Doping dependence of the dynamic critical exponent in Pr_{2-x}Ce_xCuO₄,” **M. C. Sullivan**, **J. Sousa**, **M. Salvaggio**, and R. L. Greene, American Physical Society March Meeting, New Orleans, LA 2008.
- “Why can’t experimentalists agree on the superconducting critical exponents?,” **M. C. Sullivan**, D. R. Strachan, Su Li, Hua Xu, Steven M. Anlage, and C. J. Lobb, Fluctuations & Phase Transitions in Superconductors, Nazareth Ilit, Israel, June 2007.
- “Normal-superconducting Phase Transition Obscured by Current Noise,” **M. C. Sullivan**, S. Li , H. Xu , **M. Lilly** , C. J. Lobb, American Physical Society March Meeting, Los Angeles, CA 2005.
- “Examination of the Critical Regime in High-Temperature Superconductors,” **M. C. Sullivan**, D. R. Strachan, Steven M. Anlage, C. J. Lobb, American Physical Society March Meeting, Indianapolis, IN, 2002.
- “Superconducting Thin-Film Absolute Field Magnetometer,” **M. C. Sullivan**, J. Mester, J. Lockhart, American Physical Society March Meeting, St. Louis, MO, 1996.
- Student talks:** “Switching Behavior in NbO₂-Based Memristive Devices”, **Uday Lamba**, **Ted K. Mburu** **M. C. Sullivan**, American Physical Society March Meeting, Minneapolis MN, 2024.
- “Thermal diffusion in the advanced lab: Evaluating numerical simulation against the analytical model”, **Yash Mohod**, **M. C. Sullivan**, American Physical Society March Meeting, Minneapolis MN, 2024.
- “Using a Numerical Model to Investigate the Analytical Limits of Thermal Diffusion,” **Jamie Woodworth**, M.C. Sullivan, American Physical Society March Meeting, Chicago, IL 2022. Jamie Woodworth received an award (one of ten) for the best undergraduate research and presentation.
- “Optimizing Production of Superconducting Bulk YBCO Crystals: Effects of Initial Temperature and Growth Time,” **Erin Jolley**, C.H. Shea, Janet Hunting, M.C. Sullivan, American Physical Society March Meeting, Baltimore, MD 2016. Erin Jolley received an award (one of ten) for the best undergraduate research and presentation.
- “The Characteristic Phase Transitions of Co-doped BaFe₂As₂ Synthesized via Flux Growth ”, **C.H. Shea**, C. Roncaioli, C. Eckberg, and T. Drye, M.C. Sullivan, J. Paglione, American Physical Society March Meeting, San Antonio, TX 2015. Connor Shea received an award (one of ten) for the best undergraduate research and presentation.
- “Optimization of Thick, Wide Area YBCO Film Growth Through Response Surface Methods,” **J. Porzio**, C.H. Mahoney, M. C. Sullivan, American Physical Society March Meeting, Denver, CO 2014.
- “Bulk Growth of YBa₂Cu₃O_{7-δ} Superconductors with Enhanced Flux Pinning,” **Jodi-Ann McLean**, M. C. Sullivan, J. Hunting, American Physical Society March Meeting, Baltimore, MD 2013.
- “Transition temperature and flux pinning in bulk superconductors”, **A. Hope**, National Conference of Undergraduate Research, Ithaca College, Ithaca NY, March 2011.
- “A study of the critical current density in superconducting thin films”, **E. S. Backus**, James J. Whalen Academic Symposium, Ithaca College, Ithaca NY, April 2010.
- “A study of the critical current density in optimally doped and under-doped thin-films of the cuprate superconductor YBa₂Cu₃O_{7-δ},” **E. S. Backus**, M. C. Sullivan, American Physical Society March Meeting, Portland, OR 2010. Emily Backus received an award (one of five) for the best undergraduate presentation.
- “Growth of Superconducting Bulk Single Crystals and their use in Levitation Demonstrations,” **A. Kotlyarevsky**, M. C. Sullivan, J. Hunting, American Physical Society March Meeting, Portland, OR 2010.

- “Scaling analysis of the static and dynamic critical exponents in $\text{Pr}_{2-x}\text{Ce}_x\text{CuO}_4$ films as a function of doping,” **R. Isaacs**, M. C. Sullivan, **M. F. Salvaggio**, **J. Sousa**, **C. G. Stathis**, **J. B. Olson**, American Physical Society March Meeting, Portland OR 2010.
- “Measurement of the magnetic flux quantum using a SQUID”, **Charlie Strehlow**, James J. Whalen Academic Symposium, Ithaca College, Ithaca NY, April 2009.
- “Growth and Patterning of Superconducting Thin Films”, Justin Sousa, James J. Whalen Academic Symposium, Ithaca College, Ithaca NY, April 2008.
- “Demonstrating Levitation and Suspension of a Superconductor on a Magnetic Track,” **Charles P. Strehlow** M. C. Sullivan, American Physical Society March Meeting, New Orleans, LA 2008.
- “Repair and Calibration of the Thin-film Metal Evaporator”, **George S. DeBeck V**, James J. Whalen Academic Symposium, Ithaca College, Ithaca NY, April 2007.

CONTRIBUTED POSTERS

- “Analysis of layer-by-layer thin-film oxide growth using RHEED and Atomic Force Microscopy,” **Eli R. Adler**, M.C. Sullivan, Araceli Gutiérrez-Llorente, H. Jores, A. Woll, and J. D. Brock, American Physical Society March Meeting, San Antonio, TX 2015. Eli Adler received an award (one of ten) for the best undergraduate research and presentation.
- “Characterizing superconducting thin films using AC Magnetic Susceptibility,” **C.H. Mahoney**, **J. Porzio**, M. C. Sullivan, American Physical Society March Meeting, Denver, CO 2014.
- “Intermediate and Advanced Physics Laboratories: Breadth and Depth in Experimental Physics,” **M. C. Sullivan**, American Association of Physics Teachers Topical Conference on Advanced Laboratories, Ann Arbor, MI 2009.
- “Finding thermal conductivity and specific heat via thermal diffusion in rods,” **M. C. Sullivan**, B. G. Thompson, American Association of Physics Teachers Topical Conference on Advanced Laboratories, Ann Arbor, MI 2009.
- “The dynamic critical exponent in optimally doped $\text{Pr}_{1.85}\text{Ce}_{0.15}\text{CuO}_4$ as a function of transition width,” **R. Isaacs**, **J. B. Olson**, **J. Sousa**, **M. Salvaggio**, M. C. Sullivan, and R. L. Greene, American Physical Society March Meeting, Pittsburgh, PA 2009.
- “A study of the critical current density in optimally-doped, thin-film cuprate superconductor $\text{YBa}_2\text{Cu}_3\text{O}_7$,” **E. S. Backus**, **M. Lilly**, and M. C. Sullivan, American Physical Society March Meeting, Pittsburgh, PA 2009.
- “Integration of Lab and Lecture in Large Introductory Courses”, **M. C. Sullivan**, New Faculty in Physics and Astronomy Workshop Reunion, College Park MD, June 2007.

RESEARCH STUDENTS

Fiona Lorenzen Class of 2027	Fabrication of a SQUID for advanced lab. 1 semester
Francois Mickiewicz Class of 2027	Design of superconducting track. 2 semesters
Uday Lamba Class of 2026	Measurement of NbO ₂ thin films. 2 semesters and Summer 2023
Suryash Malviya Class of 2026	Design and construction of LED lights for superconducting demonstrations. 1 semester
Sam Smith Class of 2026	Redesign of Tolman-Stewart apparatus. 1 semester
Michy Mialma-Romero Class of 2025	Design of superconducting track. 3 semesters
Yash Mohod Class of 2025	Tolman-Stewart apparatus; Thermal Diffusion. 3 semesters, Summers 2022, 2023, 2024
Iris Pellani Class of 2025	Design of superconducting track. 1 semester
Kathie Wang Class of 2025 (high school)	Design and construction of LED lights for superconducting demonstrations; Measurements of NbO ₂ devices. Summers 2023, 2024
Mikolaj Konieczny Class of 2024	Fabrication of SQUIDs. Ph.D. student in physics at Duke University. 1 semester
Alex Powell Class of 2024	Measurements of thin-film Ti-doped NbO ₂ . 2 semesters, Summer 2022
Ted Mburu Class of 2023	Analysis of doped NbO ₂ . Ph.D. student in Engineering Education at UC Boulder. 1 semester, Summer 2022
Jake Brown Class of 2022	Growth of thin-film YBCO to make a SQUID. Ph.D. student in Math at U of Connecticut. Summer 2019
George Sikoryak Class of 2022	Circuit investigation using "Arlektra". 1 semester
Antara Sen Class of 2022	Magnetic multipole expansion. Ph.D. student in physics at Northwestern University. 1 semester, Summer 2021
Eli Robinson Class of 2022	Growth of thin-film semiconductors. Summer 2019
Joshua Schmidt Class of 2022	Tolman-Stewart apparatus. 5 semesters, Summer 2019
Jamie Woodworth Class of 2022	Thermal diffusion: experiment, simulation, and theory. Ph.D. student in physics at U Kentucky. 4 semesters, Summers 2020, 2021
Danny Xu Class of 2022	Growth of bulk single crystal superconductors. 1 semester
Ioan Dascalu Class of 2020	Critical current in YBCO. 2 semesters, Summers 2018,2019
Thy Doan Mai Le Class of 2020	Repair and rehabilitation of thermal evaporator. Ph.D. students in physics at Georgetown University. 2 semesters
Robert Melikyan Class of 2020	Thermal Diffusion circuit repair Ph.D. student in physics a U Arizona. 1 semesters, Summer 2018
Raymond Rogers Class of 2020	Superconducting demonstrations. 2 semesters
Jelani Williams Class of 2020	Growth of bulk single crystal superconductors. 1 semester
Elizabeth Zenteno Class of 2020	Design of a cryogenic dip probe. 1 semester
Ann Cooney Class of 2019	Growth of bulk single crystal superconductors. MS. in Medical Physics, Hofstra University. 4 semesters

'Dimitri' Hector Class of 2019	Creation and filming up superconducting demonstrations. M.S. in Computer Science, Howard University. 1 semester, Summer 2016
Marcell Fischler Class of 2017	Vacuum repair of thermal evaporator 2 semesters, Summer 2015
Amy Parker Class of 2017	Thin-film measurement and analysis using X-ray diffraction 1 semester, Summer 2015
Jimmy Tang Class of 2017	Growth of bulk single crystal superconductors. Ph.D. student in physics, UC Davis. 1 semester
Eli Adler Class of 2016	Thin-film measurement and analysis using X-ray diffraction Ph.D. student in physics, Georgetown University. 5 semesters and Summers 2014,2015
Erin Jolley Class of 2016	Design and construction of Möbius strip track; Bulk superconductor growth. 4 semesters, Summer 2015
Connor Shea Class of 2016	Growth of bulk single crystal superconductors. Ph.D. student in Biological Oceanography at U Hawai'i. 4 semesters and Summers 2014, 2015, 2016.
Evan Conley Class of 2015	Construction of low-temperature apparatus 3 semesters and Summer 2014.
Colleen Mahoney Class of 2015	ac magnetic susceptibility of superconducting films 2 semesters.
Trevor LaMountain Class of 2015	Characterization of AFM. 1 semester.
Ivan Tso Class of 2015	Design and construction of Möbius strip track 4 semesters. Senior Thesis 2015.
Jeff Porzio Class of 2014	Thin-film growth of YBCO via PLD. M.S. in Materials Science from Worcester Polytechnic Institute. 4 semesters, Summer 2013. Senior Thesis 2014.
Cory Wydysh Class of 2014	Thin-film growth of manganites via PLD. 1 semester.
Martin Garay Class of 2013	Critical current in YBCO as a function of temperature. 1 semester.
Jodi-Ann McLean Class of 2013	Growth of bulk single crystal superconductors. 6 semesters, summers 2011 (Dana Intern), 2012. Senior Thesis 2013.
James Munro Class of 2013	Design and construction of flux-pinning measurement system, characterization of an AFM. 2 semesters and summer 2011.
Emily Backus Class of 2012	Critical current in YBCO as a function of temperature. M.S. in Accounting from UT Austin. 4 semesters and summers 2008 (Dana intern), 2009, 2010.
Brian Egerer Class of 2012	Characterization of AFM. 1 semester.
Andrew Hope Class of 2012	Growth of bulk single crystal superconductors. 3 semesters, summer 2010. Senior Thesis 2012.
Ryan Jefferis Class of 2012	Repair of the thermal evaporator. 1 semesters.
Steven Kiekel Class of 2012	Repair of the thermal evaporator. 1 semester.
Sarah Burleson Class of 2011	Measurement of the critical exponents in a binary fluid mixture. M.S. in Biomedical Engineering from SUNY Stony Brook. 2 semesters. Senior Thesis 2011.
Adam laizzi Class of 2011	Wiring and thermal testing of a closed-cycle cryocooler. Repair of Hall effect experiment Ph.D. in Physics from Boston University. 4 semesters.
Judith Olson Class of 2011	Critical current in YBCO as a function of temperature Ph.D. in Physics from University of Colorado at Boulder. 2 semesters and summer 2008.
Chris Stathis Class of 2011	Insulation of YBCO pucks. Repair of temperature controller. Repair of specific heat experimental apparatus. M.S. in Electrical Engineering from Columbia University. 3 semesters and summer 2009.
Vince Whitney Class of 2011	Wiring and contact evaporation for thin films. 2 semesters.

Taylor Boyd Class of 2010	Growth of bulk single crystal superconductors. Summer 2010 (Dana intern).
Romaine Isaacs Class of 2010	Measurement of thin-film $\text{Pr}_{2-x}\text{Ce}_x\text{CuO}_4$ in a magnetic field and critical current in YBCO as a function of temperature. Ph.D. in Materials Science from University of Maryland. 4 semesters and summers 2008 (Dana intern), 2009 (Dana intern), 2010.
Arnold Kotlyarevsky Class of 2010	Creation of a two-source metal evaporator, design and construction of a superconducting roller-coaster track. Growth of flux-pinning YBCO pucks. M.S. in Physics from Illinois Institute of Technology. 5 semesters and summers 2008, 2009. Senior Thesis 2010.
Justin Sousa Class of 2009	Growth, patterning, and measurement of $\text{Pr}_{2-x}\text{Ce}_x\text{CuO}_4$. M.S. in Mechanical engineering from UMass Lowell. 1 semester, Summer 2007 (Dana intern).
Charles Strehlow Class of 2009	Design, construction and modeling of levitation and suspension track demonstration. Growth, design, patterning, and testing of bi-crystal SQUIDs (Senior thesis project). M.S. in in Physics from Iowa State University. 4 semesters and summers 2007, 2008. Senior Thesis 2009.
Nik Batruch Class of 2008	Re-wiring and maintenance of electrical circuitry. Currently employed by Syracuse Research Corporation in Syracuse, NY. One semester.
George DeBeck V Class of 2008	Design and construction of passive low-pass filters for use in the low-temperature probe. Growth of Au, Cr, NiCr, and Pt films via evaporation. M.S. in Physics from Oregon State University. 4 semesters.
Brendan Pratt Class of 2008	Machining, roller-coaster track design and filming. Masters of Environmental Engineering from Boston University. 1 semester.
Brandon Sforzo Class of 2008	Design and fabrication of low-temperature apparatus. Received his Ph.D. in Mechanical Engineering from Georgia Tech. 2 semesters.
Zak Brown Class of 2007	Construction and testing of low-pass filters. Wiring and testing of critical current density in YBCO. Currently employed as an engineer at the Cornell synchrotron. 2 semesters.
Nitin Rajan Class of 2007	Programming and testing of specific heat measurement apparatus. Received his Ph.D. in Applied Physics from Yale. 2 semesters.
Marco Salvaggio Class of 2007	Growth, patterning, and measurement of thin-film $\text{Pr}_{2-x}\text{Ce}_x\text{CuO}_4$. One semester and summer 2007.
Monica Lilly Class of 2005	Thickness and surface roughness characterization with an AFM. Critical current density in YBCO. Critical exponents in PCCO. M.S. in Physics from UC Riverside. Currently employed by Northrup Grumman. 3 semesters and summers 2003, 2004. Senior Thesis 2005. (University of Maryland)
Richard Ott Class of 2003	Thin-film growth and characterization. Received his Ph.D. in Physics from MIT. 4 semesters and summers 2001, 2002. (University of Maryland)

SERVICE

Service to the Department

Department Chair, 2022-present

Interim Chair, Spring and Summer 2019.

Faculty search committee member. NTEN search, 2016-2017, TE search, 2019-2020. TE search, diversity advocate, 2017-2018. TE search, diversity advocate, 2018-2019.

Formal Faculty mentor for Dr. Jerome Fung, 2018-2019.

3-2 Engineering Program Liaison, 2009-2012, 2013-2018, 2019-2023.

Department of Physics seminar coordinator, 2005-2009.

Physics Honor Society (Sigma Pi Sigma) advisor, 2006-2023.

Laboratory and Experimental Skill Development Planning and Assessment coordinator, 2007.

Service to the School of Humanities and Sciences

Humanities and Sciences Assessment Coordinator, 2017 - 2019.

Humanities and Sciences Assessment Committee, Chair 2017 - 2019.

Humanities and Sciences Faculty Senate member, 2009-2012.

Humanities and Sciences Curriculum Committee member, 2006-2012, 2014-2017; Co-Chair 2009-2011, 2015-2017.

Humanities and Sciences Curriculum Committee, General Education Subcommittee member, 2006-2012; Chair, 2009-2012.

Humanities and Sciences Committee on Academic Policies and Procedures, 2006-2008.

Service to Ithaca College

Academic Policies Committee, Curriculum Subcommittee, 2017-2020. Curriculum Subcommittee Chair, 2018-2019.

Faculty Council member, 2007-2009, 2015-present.

All-College Tenure and Promotion Committee member, 2014-2015, 2016-2017.

Search Committee Member, Assistant Registrar for Curriculum Management, Fall 2019.

Search Committee Member, Executive Director of Career Services, Spring 2017.

Search Committee Member, All-College Faculty Development Director, Spring 2012.

Center for Faculty Research and Development Released Time review panel, 2009.

Ithaca Today Physics representative, Springs 2006-2008.

Service to the Community

Coddington Road Community Center Board member, Treasurer, 2014-2017.

Community outreach to local schools through Ithaca College's Partnership in Teaching, program entitled "Temperature and Heat," 2007-present.

Service to the Profession

External Program Reviewer, SUNY Brockport, Spring 2016.

External Program Reviewer, Buffalo State College, Spring 2015.

National Science Foundation Fellowship Review Panel member, representing Physics, 2014, 2015, 2017, 2021.

National Science Foundation proposal referee

Referee: Physical Review B, American Journal of Physics, Journal of Physics: Condensed Matter, Physics C, IEEE transactions on Applied Superconductivity, Superconductor Science and Technology, Magnetism and Magnetic Materials Conference Proceedings, Theatre Design & Technology

National Defense Science and Engineering Graduate Fellowship Program selection panel member, representing Physics, 2006 - 2010.

Participant, Adopt-A-Physicist sponsored by the Society of Physics Students, 2009-2010.

Advanced Placement Course Auditor, 2007.

National Nanotechnology Infrastructure Network REU program evaluator, August 2006.

PROFESSIONAL AFFILIATIONS

American Physical Society

American Association of Physics Teachers

Society of Physics Students

Sigma Pi Sigma

Sigma Xi