MATTHEW C. SULLIVAN

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EDUCATION

2010-2020 **Ithaca College**, Ithaca, NY
B.S. in Chemistry, 2020 (expected)

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

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), Lab instructor
Introduction to Physics II (E&M; algebra-based), Lecture, lab, and 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
dc/ac Circuits
Analytical Mechanics
Thermodynamics
Quantum Mechanics
Advanced Quantum Mechanics
Solid State Physics
Advanced Physics Laboratory
Senior Projects
Senior Thesis I and II
Independent Research - Introductory, Intermediate and Advanced

Research in experimental low-temperature physics and experimental x-ray physics. Superconductivity research focuses on the properties of the cuprate superconductors. X-ray research focuses on the dynamics of layer-by-layer atomic thin-film growth. Sample growth via pulsed laser deposition, thermal evaporation, and bulk crystalline growth.

Supervised Senior Thesis projects:

Eli Adler ('16): "Growth of $NdBa_2Cu_3O_7$ thin films and their use as Seed Crystals in bulk $YBa_2Cu_3O_7$ growth." Eli Adler was awarded "Outstanding Senior Thesis" (two awards given out of 11 senior theses), currently seeking a Ph.D. in Physics at Georgetown University.

Ivan Tso ('15): "Minimizing the Magnetic Drag on a Type-II Superconductor Moving Over a 3π Mobius Track."

Jeffrey Porzio ('14): "Growth of thick large-area $YBa_2Cu_3O_7$ films via Pulsed Laser Deposition," currently seeking a Ph.D. in Materials Science from Worcester Polytechnic Institute.

Jodi-Ann McLean ('13): "Bulk Growth of $YBa_2Cu_3O_7$ Superconductors with Enhanced Flux Pinning."

Andrew Hope ('12): "Bulk Crystal Growth of $YBa_2Cu_3O_{7-\delta}$ with Enhanced Flux Pinning Properties."

Sarah Burleson ('11): "Finding the Critical Exponent γ for a Binary Fluid Mixture using the Scattering of Light." M.S. Biomedical/Medical Engineering SUNY Stony Brook 2013.

Arnold Kotlyarevsky ('10): "Growth of YBCO with Enhanced Flux-Pinning Properties," M.S. in Physics from University of Illinois at Chicago 2013.

Charles Strehlow ('09): "Measuring the Magnetic Flux Quantum via YBCO Superconducting Quantum Interference Devices." M.S. in Physics, University of Iowa 2014

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).

2006-present **Visiting Assistant Professor.** Center for Nanophysics and Advanced Materials, Department of Physics, University of Maryland, College Park, MD.

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 a strong emphasis on laboratory skills.

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, Spring 2014.

Dean of Humanities and Sciences Merit Award to Physics Department, Spring 2006.

Sigma Xi, the Scientific Research Society, Spring 2009.

Physics Department, Level II Merit Award, 2010, 2012, 2014, 2015, 2017, 2018.

Physics Department Merit Award for Excellence in Teaching, Spring 2006, 2009.

Student awards at the American Physical Society March Meeting:
Erin Jolley, Best Undergraduate Presentation and Research 2016 (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. ***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).
2. 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 $Bi_2Pt_2O_7$ pyrochlore through the transformation of $\delta-Bi_2O_3$ fluorite," Applied Physics Letters Materials **3**, 036105-1 to 036105-6, (2015); highlighted by the editors for special interest as a press release: http://www.aip.org/publishing/journal-highlights/researchers-synthesize-new-thin-film-material-use-fuel-cells.
3. 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).
4. ***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).
5. 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 $YBa_2Cu_3O_{7-\delta}$," Phys. Rev. B **80**, 104518-1 to 104518-11 (2009).
6. **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.
7. ***M. C. Sullivan,*** B. G. Thompson, **A. Williamson**, "An experiment in the dynamics of thermal diffusion", American Journal of Physics **76**, 637-642 (2008).
8. ***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).
9. D. R. Strachan, ***M. C. Sullivan***, and C. J. Lobb, "Scaling of cross-over currents in current-voltage characteristics of $YBa_2Cu_3O_{7-\delta}$ films", Phys. Rev. B **73**, 012512 (2006).
10. ***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).
11. 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-Tc superconductors", Phys. Rev. B **70**, 014507 (2005).
12. R. K. Rakshit, R. C. Budhani, V. N. Kulkarni, ***M. C. Sullivan***, R. L. Greene, "Influence of buffer layers on superconductivity in $La_{1.85}Sr_{0.15}CuO_4$ epitaxial films", Physica C **415** 74 (2004).

13. ***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).
14. ***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 $YBa_2Cu_3O_{7-\delta}$ films", Phys. Rev. B **69**, 214524 (2004).
15. 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).
16. 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).
17. R. C. Budhani, ***M. C. Sullivan***, C. J. Lobb, and R. L. Greene, "Anomalous magnetothermopower in the mixed state of the electron-doped high-Tc superconductors", Phys. Rev. B **66**, 052506 (2002).
18. 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 $Pr_{2-x}Ce_xCuO_{4-y}$ superconductors", Phys. Rev. B **65** (Rapid Communications), 100517(R) (2002).
19. 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).
20. ***M. C. Sullivan***, J. Mester, J. Lockhart, "Superconducting thin-film absolute field magnetometer", Czech. Jour. Phys. **46 Suppl. 5** 2801 (1996).

FUNDING AND GRANTS

"**RUI: Collaborative Research: Low Temperature Deposition of GaN, AlN, and AlGaN with Plasma Assisted Atomic Layer Epitaxy**" Submitted 10/2018 to the National Science Foundation. Requested **$154,819**. Decision pending.

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

"Thin-film growth dynamics on polar substrates as measured by synchrotron radiation." Submitted 10/2013 to the Ithaca College Center for Faculty Research and Development. Awarded $3600 in 12/2013 (release time for Fall 2014).

"Pulsed Laser Deposition Installation." Submitted 9/2011 to the Ithaca College Academic Project Grant fund. Awarded $583.60 in 10/2011.

"Investigation of the phase transition in iron arsenic superconductors." Submitted 02/2010 to Ithaca College Summer Grants for Faculty Research. Awarded $3350 in 04/2010.

"Addition of Experimental Condensed Matter Physics to the Advanced Laboratory Curriculum." Submitted 09/2008 to the School of Humanities and Sciences Educational Grant Initiative. Awarded $1000 in 10/2008.

"Critical dynamics of the electron-doped cuprate superconductor $Pr_{2-x}Ce_xCuO_4$: Completion of research, manuscript submission, and grant renewal proposal." Submitted 10/2008 to the Ithaca College Center for Faculty Research and Development. Awarded $3600 in 12/2008 (release time for Fall 2009).

American Physical Society, Travel Grants for Women Speakers Program. Awarded $390 in 05/2007, $454 in 05/2008, and $500 in 05/2009.

"**RUI: Critical Dynamics of the Electron-Doped Cuprate Superconductors.**" 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.

"Measurement of the critical dynamics of the electron-doped cuprate superconductor $Pr_{2-x}Ce_xCuO_4$ as a function of doping." Submitted 10/2007 to the Ithaca College Center for Faculty Research and Development. Awarded $3600 in 12/2007 (release time for Spring 2009).

"Creation of a two-source evaporation system." Submitted 09/2007 to the School of Humanities and Sciences Educational Grant Initiative. Awarded $550 in 10/2007.

"Expanding the Capabilities of the Ithaca College Metal Evaporator." Submitted 09/2006 to the School of Humanities and Sciences Ithaca Fund. Awarded $500 in 10/2006.

"Cryogenic Support for Testing of Low-Temperature Experimental Physics Measurement Systems." Submitted 08/2006 to the Ithaca College Academic Project Grant fund. Awarded $250 in 09/2006.

"Investigation of the Phase Transition in Bulk Crystal YBCO through Zero-Field Electronic Transport." Submitted 02/2006 to Ithaca College Summer Grants for Faculty Research. Awarded $3350 in 04/2006.

"Design and Construction of Low-Temperature Experimental Physics Measurement Systems: Electronic Transport and Specific Heat." Submitted 10/2005 to the Ithaca College Center for Faculty Research and Development. Awarded $3500 in 12/2005 (release time for Fall 2006).

Student Grants:
"Growth of Bulk Single Crystal Superconductors", Submitted 02/2010 to the Ithaca College Dana Internship Program. Research student Jodi-Ann McLean awarded $5000 in 04/2011 in stipend and scholarship.

"Physics Senior Thesis: Critical Opalescence in Binary Fluids", submitted to the Humanities and Sciences Education Grant Initiative. Research student Sarah Burleson awarded $560 in 10/2010.

"Growth of Bulk Single Crystal YBCO Superconductors for Ithaca College", Submitted 02/2010 to the Ithaca College Dana Internship Program. Research student Taylor Boyd awarded $5000 in 04/2010 in stipend and scholarship.

"Scaling analysis of the static and dynamic critical exponents in $Pr_{2-x}Ce_xCuO_{4-y}$ films as a function of doping", presentation for the American Physical Society annual March Meeting 2010, submitted to the Sigma Xi Research Society Travel grants. Research student Romaine Isaacs awarded $320 in 10/2009.

"Measuring the static and dynamic critical exponent in the thin-film superconductor $Pr_{2-x}Ce_xCuO_{4-y}$", Submitted 02/2009 to the Ithaca College Dana Internship Program. Research student Romaine Isaacs awarded $5000 in 04/2009 in stipend and scholarship.

"Physics Senior Thesis Project: Jospehson Effect in Cuprate Superconductors", submitted to the Humanities and Sciences Education Grant Initiative Contingency Grant Application. Research student Charles Strehlow awarded $1000 in 06/2008.

"Measuring the static critical exponent in the thin-film superconductor $Pr_{2-x}Ce_xCuO_{4-y}$", Submitted 02/2008 to the Ithaca College Dana Internship Program. Research student Romaine Isaacs awarded $5000 in 04/2008 in stipend and scholarship.

"Measuring Critical Current Density in Thin-film Cuprate Superconductor $YBa_2Cu_3O_7$" Submitted 02/2008 to the Ithaca College Dana Internship Program. Research student Emily Backus awarded $5000 in 04/2008 in stipend and scholarship.

"Demonstrating Levitation and Suspension of a Superconductor on a Magnetic Track", presentation for the American Physical Society annual March Meeting, submitted to the Sigma Xi Research Society Travel grants. Research student Charles Strehlow awarded $500 in 02/2008.

"Demonstrating Levitation and Suspension of a Superconductor on a Magnetic Track", presentation for the American Physical Society annual March Meeting, submitted to the Humanities and Sciences Education Grant Initiative for Conference Travel. Research student Charles Strehlow awarded $400 in 02/2008.

"Measuring Critical Current Density in Thin-film Cuprate Superconductor $YBa_2Cu_3O_7$" Submitted 02/2007 to the Ithaca College Dana Internship Program. Research student Justin Sousa awarded $5000 in 04/2007 in stipend and scholarship.

"Design, Fabrication, and Characterization of Thin Metallic Films via Evaporation and the Hall Effect." Submitted 02/2006 to the Ithaca College Dana Internship Program. Research student Penyo Michev awarded $5000 in 04/2006 in stipend and scholarship.

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. https://www.youtube.com/watch?v=QNozQN83q_4

Morning Newswatch on WHCU radio 870 AM 95.9 FM, aired June 11, 2013. http://whcuradio.com/morning-newswatch/floating-roller-coasters-beyond

Future Scream Machines: Bigger, Wetter, Faster on the Travel Channel, aired May 19, 2013. http://www.travelchannel.com/video/levitating-coasters

The Colbert Report on Comedy Central, aired Nov. 9, 2011. Featured in the segment titled "Americone Dream of the Future." http://www.cc.com/episodes/xtcc3t/the-colbert-report-november-9--2011---james-martin-season-8-ep-08019

NATIONAL AND INTERNATIONAL OUTREACH

Created a YouTube channel for Ithaca College Physics with over **3 million views**.

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:

"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:

"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)

"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 $Pr_{2-x}Ce_xCuO_4$," ***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 $Pr_{2-x}Ce_xCuO_4$," ***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:

"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 $YBa_2Cu_3O_{7-\delta}$ 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 $YBa_2Cu_3O_{7-\delta}$," **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 $Pr_{2-x}Ce_xCuO_4$ 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. Joress, 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 $Pr_{1.85}Ce_{0.15}CuO_4$ 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 $YBa_2Cu_3O_7$," **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

Robert Melikyan Class of 2021	Thermal Diffusion circuit repair 1 semester, Summer 2018
Danny Xu Class of 2021	Growth of bulk single crystal superconductors. 1 semester
Ioan Dascalu Class of 2020	Critical current in YBCO. Summer 2018
Thy Doan Mai Le Class of 2020	Repair and rehabilitation of thermal evaporator. 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. 4 semesters
'Dimitri" Hector Class of 2019	Creation and filming up superconducting demonstrations 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. 1 semester
Eli Adler Class of 2016	Thin-film measurement and analysis using X-ray diffraction 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. 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. 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. 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. 2 semesters. Senior Thesis 2011.
Adam Iaizzi Class of 2011	Wiring and thermal testing of a closed-cycle cryocooler. Repair of Hall effect experiment. 4 semesters.
Judith Olson Class of 2011	Critical current in YBCO as a function of temperature. 2 semesters and summer 2008.
Chris Stathis Class of 2011	Insulation of YBCO pucks. Repair of temperature controller. Repair of specific heat experimental apparatus. 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 $Pr_{2-x}Ce_xCuO_4$ in a magnetic field and critical current in YBCO as a function of temperature. Currently attending the University of Maryland seeking a Ph.D. in Materials Science. 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. 5 semesters and summers 2008, 2009. Senior Thesis 2010.
Justin Sousa Class of 2009	Growth, patterning, and measurement of $Pr_{2-x}Ce_xCuO_4$. Now attending UMass Lowell seeking a Ph.D. in Physics. One semester and 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). Currently attending Iowa State seeking a Ph.D. in Physics. 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. Currently attending Oregon State University seeking a Ph.D. in Physics. 4 semesters.
Brendan Pratt Class of 2008	Machining, roller-coaster track design and filming. Masters of Environmental Engineering from Boston University. One semester.
Brandon Sforzo Class of 2008	Design and fabrication of low-temperature apparatus. Currently attending Georgia Tech seeking a Ph.D. in Mechanical Engineering. 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. Currently attending Yale University seeking a Ph.D. in Physics. 2 semesters.
Marco Salvaggio Class of 2007	Growth, patterning, and measurement of thin-film $Pr_{2-x}Ce_xCuO_4$. 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

Interim Chair, Spring 2019.

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

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

Department of Physics seminar coordinator, 2005-2009.

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

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

Service to the School of Humanities and Sciences

Humanities and Sciences Assessment Coordinator, 2017 - present.

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-present. Curriculum Subcommittee Chair, 2018-present.

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

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

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.

Person to Person participant, 2005-present.

Ithaca College Club Tennis Advisor, 2008-2011.

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.

National Science Foundation proposal referee

Referee: Physical Review B, American Journal of Physics, Journal of Physics: Condensed Matter, Physica 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