Curriculum Vitae
David J. Starling

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ACADEMIC POSITION

2012 - present	Pennsylvania State University - Hazleton Campus Assistant Professor of Physics

EDUCATION

2008 - 2012	University of Rochester Ph.D., Physics Thesis: *Precision Measurement in Quantum Optics* Advisor: John C. Howell
2006 - 2008	University of Rochester M.A., Physics
2002 - 2006	State University of New York (SUNY) at Fredonia B.S., Physics and Mathematics (2006), *summa cum laude* Thesis: *Connecting the 3-d O(4) Heisenberg Spin Model to the 4-d SU(2) Lattice Gauge Theory* Advisor: Michael Grady

GRANTS — Total: $19,403

2016	$1,000	Butler Teaching Grant
2015	$992	Undergraduate Research Support
2015	$1,995	Research Development Grant
2014	$1,440	Undergraduate Research Support
2014	$1,762	Teaching Development Grant
2014	$2,067	Research Development Grant
2014	$885	Butler Teaching Grant
2013	$2,000	(NSF) Engaging students: everyday examples in engineering
2013	$476	Undergraduate Research Support
2013	$2,180	Research Development Grant
2013	$950	Butler Teaching Grant
2012	$450	Undergraduate Research Support
2013	$1,190	Research Development Grant
2012	$2,046	Research Development Grant

HONORS

2015	SGA Outstanding Faculty Member of the Year
2007	Graduate Student Teaching Award
2006	Hack Arrow Physics Award
2005 - present	Sigma Pi Sigma
2005 - present	Pi Mu Epsilon
2005	Arthur Danese Award
2005	John J. Connelly Physics Peer Recognition Award
2004	Department of Physics Scholarship
2004	Department of Mathematical Sciences Award
2003	Society for Industrial and Applied Mathematics Award

2002 Scholar Incentive Award

RESEARCH

Interests

Applied Physics	Detection Electronics
Low-light imaging	Entanglement and entanglement measures
Physics Education Research	Solar Power and Shading
Strange weak values	Quantum Information
Metrology and interferometery	Guided light in atomic gas
Fast and slow light	Optical four-wave mixing
Partial coherence (quantum and classical)	Two-photon absorption
Gravimetry	

Experience

2012 - present	Pennsylvania State University - Hazleton Campus *Principle Investigator* *Theoretical and computational quantum information*
2007 - 2012	John Howell's research lab, University of Rochester, Rochester, NY *Graduate student, research assistant* *Experimental, theoretical and computational quantum optics research*
2005	Lorenza Viola's research group, Dartmouth College, Hanover, NH *Research experience for undergraduate students* *Theoretical and computational quantum research on disordered Heisenberg models*
2004 - 2006	Independent study with Michael Grady, Fredonia State, Fredonia, NY *Undergraduate, research assistant* *Computational lattice gauge theory research*

TEACHING

Interests

Introductory physics	Quantum Mechanics
Optics	Electricity and Magnetism
Mathematical Methods	Astronomy

Experience

2012-present	Pennsylvania State University - Hazleton Campus Assistant Professor of Physics *General Physics: Mechanics (PHYS 211), Electricity & Magnetism (PHYS 212), Fluids & Thermal Physics (PHYS 213) and Wave Motion & Quantum Physics (PHYS 214); Dynamics (E MCH 212); Independent Studies (ENGR 296 and PHYS 296).*
2012	Physics Department, University of Rochester Lecturer, PHY 121, "Mechanics" *Six week summer course on introductory physics for scientists and engineers.*
2011-2012	Kearns Center, University of Rochester Science and math tutoring *Expanding the educational pipeline through the doctoral degree for low-income, first-generation college, and underrepresented minority students.*
2008 - 2010	Physics Department, University of Rochester

Guest Lectures, PHY 407 - 408, "Quantum Mechanics I - II"
Graduate quantum mechanics lectures from "Quantum Mechanics" by Claude Cohen-Tannoudji, focusing on fine and hyperfine structure of hydrogen, the Zeeman effect and perturbation theory.

2008 Physics Department, University of Rochester
Teaching Assistant, PHY 143, "Waves and Modern Physics (Honors)"
Weekly workshops and grading.

2007 Physics Department, University of Rochester
Laboratory Assistant, PHY 250, "Advanced Lab"
Assisted students with labs on NMR, Barry's phase, Faraday rotation, sonoluminescence, photoelectric effect, quantum hall effect, Stern-Gerlach and radiation.

2007 Physics Department, University of Rochester
Teaching Assistant, PHY 122, "Electricity and Magnetism"
Weekly workshops and grading.

2006 Physics Department, University of Rochester
Teaching Assistant, PHY 121, "Mechanics"
Weekly workshops and grading.

2003 - 2005 The Learning Center, SUNY Fredonia
Physics and Mathematics Tutor
Tutor for all math and physics course offerings and supplemental instructor for the introductory physics courses.

PROFESSIONAL DEVELOPMENT

2015 Teaching and Learning Activities Showcase
Presentation of hybrid and online classroom projects and activities in a science-fair like exhibition, followed by a keynote address surveying different technologies.

2014 Summer Seminar in Proposal Writing
The month-long summer seminar in proposal writing is an annual opportunity to help Penn State faculty to improve their proposal writing skills by taking advantage of already existing resources. Acceptance into the program is competitive and the culmination of the seminar is to submit a completed proposal to an organization.

2014 Finding Funders Workshop
A short workshop on how to find funding agencies for your research presented via Polycom.

2013 Does the Classroom Flip Increase Student Motivation to Succeed
In this COIL Conversation, we explored the question: Does the flipped model increase student motivation to succeed?

2013 Thrill Ride Simulations in Physics classes
Dr. Michael Gallis, Associate Professor of Physics at PSU Schuylkill, discusses his use of interactive Java simulations of amusement park rides.

2013 Course on College Teaching
A course on college teaching designed for Penn State faculty.

2013 Using Doceri: Best Practices for Use in Penn State Classrooms
This workshop focused on using Doceri in Penn State classrooms and strategies for improving a class through student participation.

2013 Prepardness Prevention and Contingency Training
Regularly attend the annual Prepardness Prevention and Contingency (PPC) and lab safety training.

2012 Engaging Students in STEM Courses

Douglas Duncan, director of the Fiske Planetarium and faculty member in the Department of Astrophysical and Planetary Sciences at the University of Colorado, described his departments strategies and initiatives in teaching STEM curriculum to undergraduates

2012 Teaching with Clickers
Topics included: why the success of clicker use varies so much from class to class, dos and don'ts when implementing clickers, writing good clicker questions, using "peer instruction" and other types of questions, giving points for answering questions.

2012 Field Guide to Teaching Sustainability at Penn State
This is an online field guide that is a resource for faculty who want to incorporate sustainability into their coursework. The teaching strategies run the gamut from what one might consider traditional courses for sustainability, like science and engineering, to courses like psychology and business.

2012 Peer Review Training
A peer review training session open to all faculty.

2012 Clickers in the Classroom
Learning how to use clickers for instruction and feedback here at PSU Hazleton.

2012 Sustainability Initiatives
Learning the importance of sustainability at the Penn State campuses.

2012 What is a Mentor and What Good is Having One?
A future faculty seminar on mentoring in the university environment, how one can learn to be a mentor or to be mentored, and the art of matching mentors and mentees.

2012 Opportunities in Diversity: Tapping the Multiplicity of Experience
A future faculty seminar showing what can be gained from consciously tapping multiple perspectives, and how to make the differences a rich and equally shared learning experience.

2012 Assessing Learning in the Classroom
A future faculty seminar covering formative assessment practices for low risk, high yield results in the classroom.

2003 Introduction to Contemporary Education (for Scientists) at SUNY Fredonia
A course that gives students experience in the science classroom, with an emphasis on teaching styles and instructional materials.

PUBLICATIONS

Total citations: 878 (h-index: 8)

Refereed journals

18. "Sensitivity of Shading Calculations to Horizon Uncertainty," Joseph Ranalli, Robert Vitagliano, Mauro Notaro, **David J. Starling**, Solar Energy **144**, 399 (2017).

17. "Tie goes to the runner: the physics and psychology of a close play," **David J. Starling** and Sarah J. Starling, The Physics Teacher **55**, 200 (2017).

16. "Compressive sensing spectroscopy with a single pixel camera," **David J. Starling**, Ian Storer and Gregory A. Howland, Appl. Opt. **55**, 5198 (2016).

15. "An actively quenched single photon detector with a light emitting diode," **David J. Starling**, Blake Burger, Edward Miller, Joseph Zolnowski and Joseph Ranalli, Modern Applied Science **10**, 114 (2016).

14. "Amplifications in Chiroptical Spectroscopy, Optical Enantioselectivity, and Weak Value Measurement," Hanju Rhee, Joseph S. Choi, **David J. Starling**, John C. Howell and Minhaeng Cho, Chem. Sci. Lett. **4**, 4107 (2013).

13. "Efficacy of weak measurement reversal for stochastic disturbances," **David J. Starling** and Nathan S. Williams, Phys. Rev. A **88**, 024304 (2013).
12. "Null Values and Quantum State Discrimination," Oded Zilberberg, Alessandro Romito, **David J. Starling**, Gregory A. Howland, Curtis J. Broadbent, John C. Howell, and Yuval Gefen, Phys. Rev. Lett. **110**, 170405 (2013).
11. "Rapidly reconfigurable optically induced photonic crystals in hot rubidium vapor," Bethany Little, **David J. Starling**, John C. Howell, Raphael Cohen, David Shwa and Nadav Katz, Phys. Rev. A **87**, 043815 (2013).
10. "A double Lorentzian atomic prism," **David J. Starling**, Steven M. Bloch, Praveen K. Vudyasetu, Joseph S. Choi, Bethany Little and John C. Howell, Phys. Rev. A **86**, 023826 (2012).
9. "Extracting an entanglement signature from only classical mutual information," **David J. Starling**, Curtis J. Broadbent and John C. Howell, Phys. Rev. A **84**, 032305 (2011).
8. "Precision frequency measurements with interferometric weak values," **David J. Starling**, P. Ben Dixon, Andrew N. Jordan and John C. Howell, Phys. Rev. A **82**, 063822 (2010).
7. "Heralded single-photon partial coherence," P. Ben Dixon, Gregory Howland, Mehul Malik, **David J. Starling**, R. W. Boyd, and John C. Howell, Phys. Rev. A **82**, 023801(R) (2010).
6. "Continuous phase amplification with a Sagnac interferometer," **David J. Starling**, P. Ben Dixon, Nathan S. Williams, Andrew N. Jordan, and John C. Howell, Phys. Rev. A **82**, 011802(R) (2010).
5. "Interferometric weak value deflections: Quantum and classical treatments," John C. Howell, **David J. Starling**, P. Ben Dixon, Praveen K. Vudyasetu, and Andrew N. Jordan, Phys. Rev. A **81**, 033813 (2010).
4. "Optimizing the signal-to-noise ratio of a beam-deflection measurement with interferometric weak values," **David J. Starling**, P. Ben Dixon, Andrew N. Jordan, and John C. Howell, Phys. Rev. A **80**, 041803(R) (2009).
3. "Ultrasensitive beam deflection measurement via interferometric weak value amplification," P. Ben Dixon, **David J. Starling**, Andrew N. Jordan, and John C. Howell, Phys. Rev. Lett. **102**, 173601 (2009).
2. "All Optical Waveguiding in a Coherent Atomic Rubidium Vapor," Praveen K. Vudyasetu, **David J. Starling**, and John C. Howell, Phys. Rev. Lett. **102**, 123602 (2009).
1. "Quantum chaos, delocalization, and entanglement in disordered Heisenberg models," Winton G. Brown, Lea F. Santos, **David J. Starling**, and Lorenza Viola, Phys. Rev. E **77**, 021106 (2008).

Published Conference Proceedings

3. "Testing a Method for De-energizing Solar Panels for Firefighting," **David J. Starling**, Joseph Ranalli, Kenneth Dudeck and Ron Steber, July 2014, ASES SOLAR Conference, San Francisco, CA.
2. "Extracting an entanglement signature from only classical mutual information," **David J. Starling**, Curtis J. Broadbent and John C. Howell, May 2011, Conference on Lasers and Electro-Optics (CLEO), Baltimore, MD.
1. "Near Quantum Limited Optical Phase Measurements on a Dark Fringe," **David J. Starling**, P. Ben Dixon, Nathan S. Williams, Andrew N. Jordan and John C. Howell, October 2010, Frontiers in Optics, Rochester, NY.

Conference Presentations

11. "Simulating errors in annual energy production from a shaded photovoltaic system," **David J. Starling**, Robert Vitagliano, Mauro Notaro and Joseph Ranalli, October 2016, APS Mid Atlantic Meeting, Newark, DE.

10. "3D Printing Opto-Mechanics," **David J. Starling**, Mari Magabo, Kenneth Dudeck, Joseph Ranalli, January 2016, American Association of Physics Teachers Winter Meeting, New Orleans, LA.
9. "Solar Charging Station for Electric Vehicles," Angelo DeLuca, Joseph Ranalli and **David J. Starling**, July 2015, Solar 2015, University Park, PA.
8. "Fast spectrophotometry with compressive sensing," **David J. Starling**, Ian Storer, March 2015, APS March Meeting, San Antonio, TX.
7. "Single photon detection with an actively quenched light emitting diode," **David J. Starling**, Blake Burger, Edward Miller, Joseph Zolnowski, Joseph Ranalli, October 2014, APS Mid Atlantic Meeting, University Park, PA.
6. "Compressive sensing for spatial and spectral flame diagnostics," **David J. Starling,** Joseph Ranalli, Scott Gauer, March 2014, APS March Meeting, Denver, CO.
5. "Efficacy of weak measurement reversal for stochastic amplitude damping," **David J. Starling** and Nathan S. Williams, March 2013, American Physical Society March Meeting, Baltimore, MD.
4. "Extracting an entanglement signature from only classical mutual information," **David J. Starling**, Curtis J. Broadbent and John C. Howell, June 2011, Cross Border Workshop, Rochester, NY (poster).
3. "Weak Value Deflection Measurement," **David J. Starling**, P. Ben Dixon, Andrew N. Jordan and John C. Howell, October 2009, Symposium on Optical Interations and Quantum Systems (poster).
2. "Test of Ladder-Track Design for Inductrack Magnetic Levitation," **David J. Starling**, Becky Lindstrom, Michael Grady and Peter Mattocks, April 2004, Rochester Symposium for Undergraduate Physics Students.
1. "Connecting the 3-d O(4) Heisenberg Spin Model to the 4-d SU(2) Lattice Gauge Theory," **David J. Starling** and Michael Grady, April 2006, Rochester Symposium for Undergraduate Physics Students.

Invited Talks

- "When two plus two isnt four (and other quantum weirdness)" Physics Colloquium, Willamette University (March 2013).
- "Weak Values in Quantum Optics (updated)," Math Seminar, Institute for Quantum Computing at the University of Waterloo (February 2012).
- "Weak Values in Quantum Optics," Physics Colloquium, State University of New York at Fredonia (March 2009).

In progress

- "Compressive sensing for spatial and spectral flame diagnostics," **David J. Starling** and Joseph Ranalli, work in progress.
- "Measurement reversal protocol for Ising spin chains," **David J. Starling** and Nathan S. Williams, work in progress.

PROFESSIONAL AFFILIATIONS

2015 - present	American Association of Physics Teachers (AAPT)
2013 - present	Advanced Laboratory Physics Association (ALPhA)
2008 - present	Optical Society of America (OSA)
2005 - present	American Physical Society (APS)
2005 - present	Society for Physics Students (SPS)

PROFESSIONAL SERVICE AND LEADERSHIP

2017 - present	Reviewer for Physical Review X
2016 - 2017	Search committee member for tenure track physics job search
2016 - present	Reviewer for Applied Optics
2016 - present	Reviewer for Applied Physics Letters
2015 - 2016	Search committee member for tenure track engineering job search
2014 - present	Honors Committee member
2014 - present	Observatory Liaison
2014 - 2016	Faculty Affairs Committee member
2013 - 2014	Educational Technology Committee member
2013 - 2014	Search committee member for tenure track engineering job search
2012 - present	Research Committee member (chair 2015-2017)
2012 - present	Science and Engineering Club Adviser
2010 - present	Reviewer for Physical Review Letters, Physical Review A
2011	Conference Organizer, Cross Border Workshop 2011
2008 - 2012	Lab mentor, John Howell lab, University of Rochester
2003 - 2006	President and Vice President, Engineering and Physics Society at SUNY Fredonia
2003 - 2004	President and Member, National Science Teacher Association at SUNY Fredonia