

## Vitae for Peter Sheldon

### Office Address

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### Education

University of Massachusetts, Amherst, MA

**Ph.D., Physics**, 1996

*Thesis*: "NMR and Third Sound Studies of  $^3\text{He}$ - $^4\text{He}$  Mixtures on a Nuclepore Substrate"

University of Massachusetts, Amherst, MA

**M.S., Physics**, 1991

Amherst College, Amherst, MA

**B.A. with Cum Laude honors, Physics**, 1989

*Honors Thesis*: "Properties of Optical Rotations"

**B.A., Mathematics**, 1989

### Professional Experience

2013-present **Chief Reader, AP Physics Exam**, Educational Testing Service

Working with the Development Committees to create, improve, and promote the AP exams in physics. In charge of making sure 250,000+ exams are graded fairly and consistently. Reader (2006-2008), Table Leader (2009-2010), Chief Reader Associate (2010-2012), Chief Reader Designate (2012-2013).

2012-present **Director, Center for Student Research**, Randolph College

Helped to propose and start the Center. The Center runs the College's Summer Research Program, RISE (research) scholarship program, and the College's Symposium of Artists and Scholars, as well as working with all College entities to enhance ways to involve students and faculty in research. Designed and Implemented new Lunch & Learn program.

1998-present **Professor and Chair**, Randolph College\* Department of Physics.

(\*Founded as Randolph-Macon Woman's College, Randolph College changed its name and began accepting men in 2007.)

Received tenure and promoted to Associate in 2002, promoted to Full Professor in 2009. Won the College's Gillie Larew Excellence in Teaching Award in 2009.

Full teaching responsibilities for all levels of undergraduate physics courses. Developed innovative curricular materials for introductory physics using technology and active learning. Developed all labs and courses from scratch. Research program includes science education, low temperature surface science, and laser spectroscopy. Developed a science curriculum for a summer program for children, ages 8-12, at the Jubilee Family Development Center. Additional responsibilities include committee assignments, departmental administration, and student advising. Advising responsibilities

include major advising, first year advising, sophomore advising, honors project advising, scholarship advising, and faculty advisor for student groups.

Designed a new "Engineering Physics" major and implemented 3/2 Physics/Engineering program (2003). Director of the Engineering Program. Re-designed the department's BA and BS degrees. Carried out a significant ("Ten Year") review of the Department and its resources and implemented necessary changes (2002-2003). Member of the College's Strategic Planning Steering Committee (2004-2006), to help the College plan for the future and find new directions. Key member of the committee that proposed, designed, and received a grant to start the college's Summer Research Program; Director of that program from 2007-2013. Key member of a committee that proposed, designed, received a grant for, and hired faculty for the college's Environmental Studies program. Key member of a group that researched and successfully proposed that the college add a Business major. Started the College's NCAA cross-country team.

Designed and implemented a Physical Science and Engineering College Transition Program for incoming first-year students. The College has supported this summer program since 2010. As Director of this program, received an NSF S-STEM grant to support that and four other initiatives to recruit and retain science students.

- 2006-2012 **Assistant Coach**, Randolph College Men's and Women's Cross-Country  
Started the team in 2005 as unofficial head coach. Participate in all administrative aspects of the team including recruiting and NCAA compliance. Teach activity class: Running.
- 2000-2005 **Assistant Editor**, Multimedia Educational Resource for Learning and Online Teaching.  
Reviewer of online teaching materials for the Physics Discipline Group.
- 1997-1999 **Visiting Research Associate**, Wake Forest University Department of Physics.  
Study defects in insulating crystals utilizing ultrafast laser spectroscopy. Familiar with the Ar<sup>+</sup>, YAG and Ti:Sapphire lasers, and the Positive Light Regenerative Amplifier. Part-time during the semester and full-time during the summer.
- 1996-1998 **Visiting Assistant Professor**, Davidson College Department of Physics.  
Full teaching responsibilities for General Physics, the algebra based physics course for majors and pre-medical students, General Physics lab, and for How Things Work, the survey course for non-science majors. Regularly used the World Wide Web to post curricular materials. Set up a low temperature research lab in which projects could be done with undergraduates. Was awarded a Davidson College Faculty Study and Research grant to work with a student on an independent research project in Fall '97: "Helium Adsorption Isotherm on Nuclepore Filters". Organized the departmental seminar series for two years. Rewrote the lab manual and wrote a demo manual, both for the World Wide Web. Frequently gave invited talks on my research and other subjects of interest at area Universities. Created web pages for various organizations on and off campus (e.g. Reach Out, public service organization) and taught students to create personal web pages.
- 1996, 1998, 1999 Summers and  
1995-1996 **Visiting Assistant Professor**, Wake Forest University Department of Physics.

Full teaching responsibilities for two physics courses with a total of 180 students and 8 laboratory sections: two sections of General Physics, calculus based physics for majors and pre-medical students, and one section of Introductory Physics, a non-calculus survey course. Also taught General Physics in an intensive five week summer course. Used the World Wide Web as resource to interact and share information about all aspects of the class.

- 1989-1995 **Graduate Research Assistant**, University of Massachusetts Dept. of Physics.  
Designed and built experiments for exploring phenomena in helium films at low temperatures from 24 mK - 4.2 K. Maintained and operated a pulsed NMR spectrometer. Maintained and operated dilution and pumped  $^4\text{He}$  bath refrigerators. Wrote software to use PCs to control instruments and collect data via the GPIB. Familiar with vacuum technology, gas handling systems, leak detection using a mass spectrometer, low temperature techniques, machining, soldering, RF electronics, CAMAC data acquisition hardware, and vacuum evaporation of metals. Programming experience in C, Pascal, and Fortran. Used a variety of data analysis and presentation packages on PCs and a VAX, as well as AutoCAD to generate machine drawings. Experienced in DOS, Windows, and VMS computing environments.
- 1989-1994 **Graduate Teaching Assistant**, Amherst College and University of Mass.  
Taught physics discussion sections and labs, graded lab reports, and created and graded quizzes.

### **Professional Development Workshops/Seminars**

- 2016 Faculty Development Teaching Workshop, Randolph College
- 2014 Faculty Development Teaching Workshop, Randolph College
- 2013 NSF Day Grants Workshop, William & Mary
- 2013 Faculty Development Teaching Workshop, Randolph College
- 2012 Faculty Development Teaching Workshop, Randolph College
- 2011 Lynchburg Citizen's Academy
- 2011 FINESSE Space Science Faculty Institute
- 2010 LivePhoto Physics Workshop
- 2007 AAPT New Faculty Reunion Workshop
- 2006 AAPT Demonstration Resources Workshop
- 2004 R-MWC Technology Workshops
- 2004 Grants Workshop, Washington and Lee University
- 2004 PKAL Educational Technologies Workshop
- 2004 AAPT Calculus-Based Physics Course Workshop
- 2004 Adobe Creative Suite Seminar
- 2004 Faculty Development Teaching Workshop, R-MWC
- 2003 GIS Certification Course, Lynchburg College
- 2003 Faculty Development Teaching Workshop, R-MWC
- 2003 Faculty Development Seminar, R-MWC
- 2002 Faculty Development Teaching Workshop, R-MWC
- 2000 Hands on LabView Workshop, National Instruments
- 2000 Advanced Web Development and Administration, Learning Tree International
- 2000 Grants Workshop, Washington and Lee University
- 2000 Amusement Park Physics Workshop, AAPT National Meeting
- 1999 VFIC Web Workshop, Bridgewater College
- 1999 VFIC MathCad Workshop, at Lynchburg College
- 1999 Culpeper Web Workshop, Sweet Briar College
- 1999 Culpeper Technology Workshop, R-MWC

1998	Workshop for New Physics Faculty, AAPT Headquarters
1998	Webizing Courseware, Davidson College
1998	WebPhysics Project, AAPT Winter Meeting
1997	Increasing Your Teaching Effectiveness, Davidson College

## Grants Awarded

*External (\$2,570,000 as PI/co-PI, \$332,000 institutional)*

2016-2021	NSF S-STEM grant
2016	Greater Lynchburg Community Trust Grant for Science Festival
2015	Virginia SCHEV Teacher Improvement Grant
2015	Greater Lynchburg Community Trust Grant for Science Festival
2013	VFIC Summer Research (“Inertial Navigation with a Smartphone”)
2012-2016	NSF S-STEM (scholarships for STEM majors) grant
2012	Greater Lynchburg Community Trust Grant for Science Festival
2009-2014	Virginia SCHEV Teacher Improvement Grant (received 5 times)
2011	Greater Lynchburg Community Trust Grant for Science Poetry Contest
2010	VFIC/Verizon Grant (“Teaching with Today’s Technology”)
2010	Greater Lynchburg Community Trust Grant for Science Festival
2009	LaserFest Grant (“Hands-On Lasers”)
2009	VFIC/Verizon Grant (“Teaching for Technology Literacy”)
2007	Bauder Fund Grants (“Physics Day for 3rd-6th Graders” and “Jubilee Science Camp”)
2007	Mednick Fellowship (“Optical Spectroscopy of Defects in Yttrium Orthovanadate (YVO4) Crystals”)
2006	VFIC Summer Research Grant (“Optical Spectroscopy of Defects in Yttrium Orthovanadate (YVO4) Crystals”)
2005	VA Department of Education Grant for research and workshops related to inquiry-based science teaching in grades K-8
2005	Jessie Ball duPont Grant for a new faculty member in Env. Sci. and Phys.
2000	National Science Foundation Course, Curriculum, and Laboratory Improvement Grant (“Computerizing Introductory Laboratories to Improve Student Learning”)
2000	Virginia Foundation for Independent Colleges and AT&T Foundation Grant (“A PC-Based Physics Laboratory for Learning Technology”)
2000	Jessie Ball DuPont Grant for implementing Summer Research Program
1999	Mednick Fellowship (“Characterization of a Surface via an Isotherm Measurement: the Porous Polycarbonate, Nuclepore”)
1998	AAPT New Physics Faculty Workshop
1989-1993	James Z. Naurison Scholarship (Graduate Study)

*Internal: More than 40 separate grants have been awarded by Randolph College for Professional Development, Summer Research, Faculty Development, and Curricular Initiatives.*

## Professional Society Membership

American Physical Society  
 American Association of Physics Teachers  
 Advanced Laboratory Physics Association  
 Physics Education Research Topical Group  
 Council on Undergraduate Research  
 Multimedia Educational Resource for Learning and Online Teaching, Editorial Board  
 Project Kaleidoscope Faculty of the 21<sup>st</sup> Century  
 Sigma Xi (President, Lynchburg Chapter 2001-2003)  
 Society of Physics Students

## Honors

Society of Physics Students Outstanding Advisor Award Finalist (2014)  
Randolph College Kathryn Graves Davidson Service Award (2014)  
Virginia Math and Science Coalition's Programs that Work Award for ScienceFest (2014)  
Virginia Math and Science Coalition's Programs that Work Award for Teacher Inst. (2012)  
Randolph College Gilley Larew Excellence in Teaching Award (2009)  
Society of Physics Students Outstanding Advisor Honorable Mention (2008)  
Society of Physics Students Outstanding Chapter Awards 2005, '06, '08, '09, '10, '11, '12, '13, '14, '15 (faculty advisor)  
Society of Physics Students Blake Lilly Prize 2008 (faculty advisor)  
Nominated for State Council for Higher Ed. in Virginia Outstanding Faculty Award 2008  
R-MWC Advisor of the Year, 2005-2006  
Chosen as a Project Kaleidoscope Faculty of the 21<sup>st</sup> Century, Class of 2001

## National Committees

2015-present	Board, Vector Space
2014-present	Society of Physics Students Zone Councilor
2013-present	Board, United States Association for Young Physicist Tournaments
2012-2013	Head Juror for International Young Physicists Tournament
2002-2013	Have been on six NSF Grant Panels (CCLI, ADVANCE, SSTEM)
2009-2011	APS's Gender Equity Conversations Committee
2005-2008	APS's Committee for the Status of Women in Physics Vice Chair in 2006 Blewett Scholarship Selection Committee Chair 2007-2008 Session Chair at APS March Meeting 2008
2000-2005	Multimedia Educational Resource for Learning and Online Teaching Editorial Board

## Committees

2016-2019	Admissions Committee
2015-2018	Board of Review Committee
2014-2017	Faculty Representative Committee
2012-2018	Chair, Student Scholarship Committee
2015	Faculty Re-Appointment Committee
2014	Faculty Re-Appointment Committee (Chair)
2014	Faculty Tenure Committee (Chair)
2013	General Education Assessment and Review Committee
2013	Faculty Re-Appointment Committee (Chair)
2012-2013	Faculty Hiring Committee (Chair)
2012-2013	Faculty Representative to Trustees B&G Committee
2010-2012	Campus Events Committee (Chair in 2011)
2011	Two Faculty Tenure Committees (Chair of one)
2009	Randolph College Marketing Committee
2009-2010	Faculty Hiring Committee (Chair)
2009	Faculty Re-Appointment Committee
2007-2013	Director, Summer Research Program
2008	Presidential Inauguration Research Showcase Committee
2008-2011	Health Professions Advisory
2007-2008	Institutional Effectiveness
2007-2008	Faculty Re-appointment Committee (Chair)
2007	Presidential Scholars Selection
2006-2007	Athletics Search Committees

2005-2007	Sexual Harassment Review Board (Chair 2006-2007)
2005-2006	Environmental Studies/Physics Faculty Search (Chair)
2004-2006	Strategic Planning Steering Committee
2004	Portal Committee
2003-2004	4/4 Task Force
2002-2005	Faculty Representative Committee
2002-2004	Judicial Appeals
2001-2005	Institutional Technology Advisory Committee
2000-2013	Sigma Xi Scientific Research Society (President 2001-2003)
2000-2011	Lynchburg Roadrunners' Club
1999-present and 2006-2007, President 2004-2005)	College Club (Co-President 2000-2002, Produced The Show 2002-2003
2002-2004	Electronic Portfolio Committee
2002-2003	Campus Environmental Issues
2002-2004	Environmental Studies Advisory Council
2001-2002	Campus Tolerance and Diversity
2001-2002	Alumnae Technology Advisory Council
2000-2002	Faculty Representative to Judiciary
1999-2002	Academic Computing (Chair 2000-2002)
1999-2002	Undergraduate Summer Research
2002	Environmental Studies Faculty Search
2002	Quillian Professor Hire
2000-2001	IT Coordinator Search
2000	Co-Curricular Leadership Awards Committee
2000	Director of Special Programs Search
1999	IT Director Search
1999	Symposium

## Publications

1. *Quantitative Skills and Analysis in AP Physics 1 and 2 Investigations*, Peter Sheldon, College Board (New York 2015).  
<https://secure-media.collegeboard.org/digitalServices/pdf/ap/ap-physics-quant-skills-teachers-guide.pdf>
2. "Changing Students' Perceptions of Scientists: Ideas for Classroom Teachers," Peter Sheldon, Tatiana Gilstrap, Peggy Schimmoeller, *Journal of Virginia Science Education* 5, 1 (Spring/Summer 2013).
3. "Shake It Up," Tatiana Toteva, Peggy Schimmoeller, Peter Sheldon, *Science & Children* 47, 6 (Feb. 2010).
4. "Scientific Inquiry: Improved Learning," Peggy Schimmoeller, Peter Sheldon, Tatiana Toteva, *Academic Exchange Quarterly* 13, 1 (Spring, 2009).
5. Contributor to *Physics for Scientists and Engineers*, 6ed., Paul A. Tipler and Gene P. Mosca, W.H. Freeman and Company (New York 2008).
6. Contributor to *Physics for Scientists and Engineers*, 4ed., Douglas Giancoli, Prentice Hall (New York 2008).
7. "Who is Killing the Single-Sex College?" Peter Sheldon, *CSWP Gazette* 26, 1 (Spring 2007).
8. "Influence of Inquiry Science," Jennifer Lundy, Carly Torisky, Margaret Schimmoeller, Peter Sheldon, *Proceedings of the National Conference on Undergraduate Research*, 2005.

9. "Does Playing With Dolls Make Me a Bad Scientist?" Peter Sheldon, *Lynchburg, VA News & Advance*, February 6, 2005.
10. "Be Complete with Enthusiasm: the Process of Writing the CCLI A&I Grant," P. A. Sheldon, *Council on Undergraduate Research Quarterly* 22, 3 (March 2002).
11. "Free Online Education Resource Library Now Available," contributor, *Council of Independent Colleges Independent* (Fall 2001).
12. "<sup>3</sup>He spin diffusion measurements in <sup>3</sup>He-<sup>4</sup>He mixture films," P. A. Sheldon and R. B. Hallock, *Physical Review Letters* 85, 1468 (2000).
13. "Short pulse excitation and spectroscopy of KNbO<sub>3</sub>, LiNbO<sub>3</sub>, and KTiOPO<sub>4</sub>," H. M. Yochum, *et al* (incl. P. A. Sheldon), *Radiation Effects and Defects in Solids* 150, 271 (1999).
14. "Ultrafast spectroscopy of hole and exciton self-trapping in halide crystals," E. D. Thoma, H. M. Yochum, P. A. Sheldon and R. T. Williams, Dynamical Processes in Excited States of Solids Conference Proceedings, *Journal of Luminescence* 76&77, 43 (1998).
15. "Subpicosecond Absorption Spectroscopy of Band-Gap Excitation and Defect Formation in Alkali Halide Crystals," E.D. Thoma, P.A. Sheldon, H.M. Yochum, and R.T. Williams, Radiation Effects in Insulators-9 Conference Proceedings, *Nuclear Instruments and Methods in Physics Research B* 141, 552 (1998).
16. "The Properties of 2D <sup>3</sup>He on very thin <sup>4</sup>He Films," P.A. Sheldon and R.B. Hallock, *Physical Review Letters* 77, 2973 (1996).
17. "Localization of 2D <sup>3</sup>He on a <sup>4</sup>He film," P.A. Sheldon and R.B. Hallock, 1996 LT-21 Low Temperature Conference Proceedings, *Czech Journal Of Physics* 46, 425 (1996).
18. "Experiments to Search for a Substrate State for <sup>3</sup>He Adjacent to Surfaces in <sup>3</sup>He-<sup>4</sup>He Mixtures," P.A. Sheldon, J.P. Vithayathil, and R.B. Hallock, 1995 Symposium on Quantum Fluids and Solids Conference Proceedings, *Journal of Low Temperature Physics* 101, 231 (1995).
19. "Third Sound and NMR Studies of Helium Mixtures in Nuclepore," P.A. Sheldon and R.B. Hallock, 1995 Symposium on Quantum Fluids and Solids Conference Proceedings, *Journal of Low Temperature Physics* 101, 403 (1995).
20. "Absence of a 'Substrate State' for <sup>3</sup>He in a <sup>3</sup>He-<sup>4</sup>He Bulk Mixture in Proximity to a Strong Binding Surface," P.A. Sheldon and R.B. Hallock, *Physical Review B* 52, 12530 (1995).
21. "Third Sound and Energetics in <sup>3</sup>He-<sup>4</sup>He Mixture Films," P.A. Sheldon and R.B. Hallock, *Physical Review B*, 50, 16082 (1994).
22. "Binding Energy of <sup>3</sup>He in Thin <sup>4</sup>He Films," D.T. Sprague, N. Alikacem, P.A. Sheldon, and R.B. Hallock, 1993 LT-20 Low Temperature Conference Proceedings, *Physica B* 194-196, 629 (1994). Edited by R.J. Donnelly.
23. "<sup>3</sup>He Spin Diffusion in Thin <sup>4</sup>He Films," D.T. Sprague, N. Alikacem, P.A. Sheldon, and R.B. Hallock, 1993 LT-20 Low Temperature Conference Proceedings, *Physica B* 194-196, 631 (1994). Edited by R.J. Donnelly.
24. "Third Sound in <sup>3</sup>He-<sup>4</sup>He Mixture Films," P.A. Sheldon, D.T. Sprague, N. Alikacem, J. Vithayathil, and R.B. Hallock, 1993 LT-20 Low Temperature Conference Proceedings, *Physica B* 194-196, 877 (1994). Edited by R.J. Donnelly.
25. "<sup>3</sup>He Binding Energy in Thin Helium-Mixture Films," D.T. Sprague, N. Alikacem, P.A. Sheldon, and R.B. Hallock, *Physical Review Letters* 72, 384 (1994).

26. "Spin Diffusion and Magnetization Studies of  $^3\text{He}$  in  $^3\text{He}$ - $^4\text{He}$  Mixture Films," D.T. Sprague, N. Alikacem, P.A. Sheldon, and R.B. Hallock, *Journal of Low Temperature Physics* 89, 605 (1992).

## APS Conference Abstracts

1. "Scientific Inquiry: A Problem-Based Approach for Improving Teaching and Learning," Peter Sheldon, Peggy Schimmoeller, Tatiana Toteva, *Bulletin of the American Physical Society*, 54 (March 2009).
2. "Recreation of Natural Optical Phenomena," Tiffany Paonessa and Peter Sheldon, *Bulletin of the American Physical Society*, 54 (March 2009).
3. "Impact of Inquiry-Based Learning on Attitudes and Science Content Knowledge of Elementary School Teachers and Students," P. Sheldon, P. Schimmoeller, *Bulletin of the American Physical Society*, 53 (March 2008).
4. "Why Not Solar Power?" R. Pokharel, P. Sheldon, *Bulletin of the American Physical Society*, 53 (March 2008).
5. "Optical Spectroscopy of Defects in Yttrium Orthovanadate (YVO<sub>4</sub>) Crystals," W. Cheung, K. Wiechmann, P. A. Sheldon, H. Yochum, M. Yochum, *Bulletin of the American Physical Society*, 52 (April 2007).
6. "The Use of Interactive Technologies to Improve Student Learning from Middle School to College," P. A. Sheldon and T. Wellington, *Bulletin of the American Physical Society*, 48 (March 2003).
7. "Things I Wish They Had Told Me: Advice From a Newly Tenured Faculty Member From a Small, Liberal Arts College," P. A. Sheldon, *Bulletin of the American Physical Society* 47 (April 2002). Invited Talk.
8. "Revitalizing the Physics Department: The Use of Interactive Technologies to Improve Student Learning," P. A. Sheldon and H. Groover, *Bulletin of the American Physical Society*, 47 (April 2002).
9. "Picosecond Transient Absorption Spectroscopy of CdWO<sub>4</sub> and PbWO<sub>4</sub>," H.M. Yochum, K.B. Ucer, R.T. William, P.A. Sheldon and V. Nagirny, *Bulletin of the American Physical Society*, 44 (1999).
10. "Third Sound in  $^3\text{He}$ - $^4\text{He}$  Mixture Films," P.T. Finley, P.A. Sheldon and R.B. Hallock, *Bulletin of the American Physical Society*, 41, 83 (1996).
11. " $^3\text{He}$  Mobility in a Thin  $^4\text{He}$  Film," P.A. Sheldon and R.B. Hallock, *Bulletin of the American Physical Society*, 41, 83 (1996).
12. "Temperature and Drive Power Dependence of the Phase of Third Sound Modes in  $^3\text{He}$ - $^4\text{He}$  Mixture Films," P.A. Sheldon and R.B. Hallock, *Bulletin of the American Physical Society*, 40, 1048 (1995).
13. "Density Dependence of the Energetics of  $^3\text{He}$  in a Thin  $^4\text{He}$  Film," P.A. Sheldon and R.B. Hallock, *Bulletin of the American Physical Society*, 40, 206 (1995).
14. " $^3\text{He}$  Binding Energies to Thin  $^4\text{He}$  Mixture Films," P.A. Sheldon, D.T. Sprague, J. Vithayathil, and R.B. Hallock, *Bulletin of the American Physical Society*, 39, 1125 (1994).
15. "Third Sound and Energetics of Thin Helium Mixture Films," P.A. Sheldon, D.T. Sprague, J. Vithayathil, and R.B. Hallock, *Bulletin of the American Physical Society*, 39, 1125 (1994).
16. "Third Sound in  $^3\text{He}$ - $^4\text{He}$  Mixture Films," P.A. Sheldon, D.T. Sprague, J. Vithayathil, and R.B. Hallock, *Bulletin of the American Physical Society*, 38, 846 (1993).



17. "Third Sound in Thin  $^3\text{He}$ - $^4\text{He}$  Mixture Films," P.A. Sheldon, D.T. Sprague, N. Alikacem, J. Vithayathil, and R.B. Hallock, *Bulletin of the American Physical Society*, 38, 846 (1993).
18. " $^4\text{He}$  Coverage Dependence of the Spin Susceptibility and Relaxation Times of  $^3\text{He}$  Adsorbed to  $^4\text{He}$  Films," N. Alikacem, D.T. Sprague, P.A. Sheldon, and R.B. Hallock, *Bulletin of the American Physical Society*, 37, 952 (1992).
19. "Spin Diffusion Measurements of Quasi Two Dimensional  $^3\text{He}$  in  $^4\text{He}$  Films," D.T. Sprague, N. Alikacem, P.A. Sheldon, and R.B. Hallock, *Bulletin of the American Physical Society*, 37, 875 (1992).
20. "Spin Diffusion Measurements in Thin  $^3\text{He}$ - $^4\text{He}$  Films," D.T. Sprague, N. Alikacem, P.A. Sheldon, and R.B. Hallock, *Bulletin of the American Physical Society*, 37, 353 (1992).
21. "Spin Susceptibility and Relaxation Time Measurements in Two-Dimensional  $^3\text{He}$  Adsorbed to  $^4\text{He}$  Films," N. Alikacem, D.T. Sprague, P.A. Sheldon, and R.B. Hallock, *Bulletin of the American Physical Society*, 37, 353 (1992).

### **Other Conference Presentations**

1. "Results from the 2016 AP Physics Reading," Shannon Willoughby, Peter Sheldon, AP Annual Conference (July 2016).
2. "Who Gets to Ride Shotgun? Is the Rear Seat Safe?" William Vernon, Peter Sheldon, Russell Burt, Sarah Sojka, American Association of Physics Teachers' National Meeting (January 2016).
3. "Driving Physics Education Home: Teaching Mechanics Through Motor Vehicle Collisions," Sarah Sojka and Peter Sheldon, American Association of Physics Teachers' National Meeting (January 2016).
4. "Successful Research and Retention Programs in a Small Department," Peter Sheldon, Sarah Sojka, Katrin Schenk, American Association of Physics Teachers' National Meeting (January 2016).
5. "The Potential Impact of Seat Position," Russell Burt, William Vernon, Peter Sheldon, Sarah Sojka, American Association of Physics Teachers' National Meeting (January 2016).
6. "Randolph College Science Festival and Science Saturdays: Outreach for All," Peter Sheldon, American Association of Physics Teachers' National Meeting (January 2016).
7. "Who Gets to Rise Shotgun?" William Vernon, Russell Burt, Sarah Sojka, Peter Sheldon, Mid-Atlantic Regional Conference for Undergraduate Scholarship (October 2015).
8. "Results from the 2015 AP Physics Reading," Peter Sheldon, AP Annual Conference (July 2015).
9. "Inquiry-Science Institute for the K-8 Classroom," Thao Nguyen, Hart Gillespie, Shaun Chopp, Peter Sheldon, Peggy Schimmoeller, American Association of Physics Teachers' National Meeting (January 2015).
10. "Tripled Our Number of Majors through Research and Retention Programs," Peter Sheldon, Sarah Sojka, Katrin Schenk, American Association of Physics Teachers' National Meeting (January 2015).
11. "Science and Math Links: Research-Based Teaching Institute," Thao Nguyen, Hart Gillespie, Shaun Chopp, Peter Sheldon, Peggy Schimmoeller, Amanda Rumore, Mid-Atlantic Regional Conference for Undergraduate Scholarship (October 2014).

12. "Roller Coaster Engineering in the Elementary Classroom," VAST Nov 14 - Peggy Schimmoeller, Sydney Hensen, Katherine Lesnak, Peggy Schimmoeller, Peter Sheldon, Virginia Association of Science Teachers' Annual PDI (November 2014).
13. "Step Up to Physical Science and Engineering at Randolph (SUPER)," Sheldon, P., American Association of Physics Teachers' National Meeting (January 2014).
14. "Investigating Traditional Methods of Inertial Navigation versus Using a Smartphone," Tim Slesinger, Alex Tran, Kacey Meaker, Peter Sheldon, American Association of Physics Teachers' National Meeting (January 2014).
15. "Science and Math Links: Research-Based Teaching Institute," Sydney Henson, Katherine Lesnak, Peter Sheldon, Peggy Schimmoeller, Amanda Rumore, American Association of Physics Teachers' National Meeting (January 2014).
16. "Roller Coaster Engineering in the Elementary Classroom," Schimmoeller, P., Hensen, S., Lesnak, K., Sheldon, P., Virginia Association of Science Teachers Professional Development Institute (November 2013).
17. "Science and Math Links: Research-Based Teaching Institute," Peggy Schimmoeller, Peter Sheldon, Amanda Rumore, Sydney Henson, Katherine Lesnak, American Association for Teaching and Curriculum Annual Conference (October 2013).
18. "Investigating Traditional Methods of Inertial Navigation Versus Using a Smartphone," Tim Slesinger, Alex Tran, Peter Sheldon, Mid-Atlantic Regional Undergraduate Research Conference (October 2013).
19. "Science and Math Links: Research-Based Teaching Institute," Sydney Henson, Katherine Lesnak, Peter Sheldon, Peggy Schimmoeller, Amanda Rumore, Mid-Atlantic Regional Undergraduate Research Conference (October 2013).
20. "Science and Math Links: Research-Based Teaching Institute," Schimmoeller, P., Sheldon, P., Rumore, A., Henson, S., Lesnak, K., Virginia Education Research Association Annual Meeting, Charlottesville, VA (September, 2013).
21. "Inquiry Learning in the Introductory Course and the AP-B Redesign," Sheldon, P., American Association of Physics Teachers' National Meeting (January 2013).
22. "How to Start a Science Festival," Sheldon, P., American Association of Physics Teachers' National Meeting (January 2013).
23. "Science and Math Links: Inquiry-based Learning," Doan, H., Shrestha, P., Sheldon, P., Schimmoeller, P., Gilstrap, T., Mid-Atlantic Regional Undergraduate Research Conference (October 2012).
24. "Investigating Methods of Inertial Navigation as a Tool for Mapping Complicated Human Motion during Roller Coaster Rides," Slesinger, T., Sheldon, P., Mid-Atlantic Regional Undergraduate Research Conference (October 2012).
25. "Science and Math Links: Research-Based Teaching Institute," Sheldon, P., Gilstrap, T., Schimmoeller, P., Humphreys, M., American Association of Physics Teachers' National Meeting (February 2012).
26. "Science and Math Links: Research-Based Teaching Institute," M. Humphreys, P. Sheldon, P. Schimmoeller, T. Gilstrap, Mid-Atlantic Regional Undergraduate Research Conference (October 2011).
27. Schimmoeller, P., Humphreys, M., Sheldon, P., & Gilstrap, T. (2010, October). Stereotypes in Science. Presentation at the American Association of Teaching and Curriculum Annual Meeting, St. Louis, MO.
28. "Amusement Park Physics: Data-Collection Equipment," P. Sheldon, K. Meaker, American Association of Physics Teachers' National Meeting (February 2010).

29. "Hands-on Inquiry Science for Improving Teacher Quality and Student Achievement," M. Copeland, P. Sheldon, P. Schimmoeller, T. Gilstrap, American Association of Physics Teachers' National Meeting (February 2010).
30. "Investigating a Hands-On, Inquiry Based Curriculum," M. Copeland, P. Sheldon, P. Schimmoeller, T. Gilstrap, Mid-Atlantic Regional Undergraduate Research Conference (October 2009).
31. "The Impact of Active Learning on Attitudes and Science Content Knowledge," P. Sheldon, M. Schimmoeller, J. Maidment, S. Joshi, American Association of Physics Teachers' National Meeting (July 2007).
32. "An Inquiry-Based Online Curriculum for Middle School Science Teachers," J. Lundy, C. Torisky, M. Schimmoeller, P. Sheldon, 19th National Conference on Undergraduate Research (April 2005).
33. "Interactive Electronic Resources Used to Improve Student Learning," P. Sheldon, American Association of Physics Teachers' National Meeting (January 2004).
34. "A Web-Based Inquiry Science Environment for K-8 Science Education," W. Bao, P. Schimmoeller, P. Sheldon, A. Gifford, and G. Griffin, American Association of Physics Teachers' National Meeting (January 2004).
35. "An Inquiry-Based Online Curriculum for K-8 Science Teachers," A. Gifford, P. Sheldon, P. Schimmoeller, G. Griffin, and W. Bao, American Association of Physics Teachers' National Meeting (January 2004).
36. "Science as Inquiry: Meeting the standards while counteracting the stereotypes," G. Griffin, P. Sheldon, P. Schimmoeller, W. Bao, and A. Gifford, American Association of Physics Teachers' National Meeting (January 2004).
37. "Measurement of the surface properties of materials, and in particular, the properties of Nuclepore filters," P. Sheldon, Council on Undergraduate Research 10th National Conference (June 2004).
38. "An Inquiry-Based Online Curriculum for K-8 Science Teachers," A. Gifford and Peter Sheldon, 2003 MARCUS Conference (October 2003).
39. "The Use of Interactive Technologies to Improve Student Learning," P. Sheldon and A. Gifford, 127<sup>th</sup> Meeting of the American Association of Physics Teachers (August, 2003).
40. "Science Teaching: How can computer modules facilitate the development of science and pedagogical knowledge among prospective elementary teachers?" P. Schimmoeller and P. Sheldon, American Association for Teaching and Curriculum (October, 2001).
41. "Active Learning with Technology: Peer Instruction with the PRS," P. Sheldon, 12<sup>th</sup> International Conference on Teaching and Learning (April, 2001).
42. "Adsorption Isotherm of Nitrogen on a Nuclepore Surface at 77 K," S. Sydorko and P. Sheldon, American Physical Society Annual Meeting (April, 2001).
43. "Monte Carlo Modeling of JLab Spectrometers," M. Boswell and P. Sheldon, American Physical Society Annual Meeting (April, 2001).
44. "Multimedia Educational Resource for Learning and Online Teaching," P. Sheldon, American Association of Physics Teachers' Winter Meeting (January, 2001).
45. "Revitalizing the Physics Department at a Small Liberal Arts College," P. Sheldon and S. Sydorko, American Association of Physics Teachers' Winter Meeting (January, 2001).
46. "Advice to New Faculty," F. Farnsworth, P.A. Sheldon and E. K. Miller, Council on Undergraduate Research National Meeting (June, 2000).

47. "Effect of Active Learning Techniques as a Function of Gender," P. A. Sheldon and H. M. Yochum, American Association of Physics Teachers' National Meeting (January, 2000).

## **Invited Presentations**

1. "Results from the 2015 AP Physics P1&P2 Exam Administration," Peter Sheldon, College Board Webinar (August 2015).
2. "Recruitment and Retention of Students into Science Majors," P. Sheldon, TechEDGE 2014 Conference (October 2014).
3. "Big Idea: Science is for Everyone," P. Sheldon, Big Ideas Conference, Rockwall Heath HS, Rockwall, TX (November 2011).
4. "Which Way is Up?" James Madison University Speaker Series (September, 2009).
5. "Are They Engaged? Technology Can Enhance Methods of Interactive Learning," P. Sheldon, 130th National Meeting of the American Association of Physics Teachers, (January 2005).
6. "Physlet Physics," P. Sheldon, National Meeting of the American Physical Society (March 2005).
7. "The Ten Best Ways to Blow a Grant Proposal," N. Amos and P. Sheldon, Council on Undergraduate Research Dialogues (April, 2005).
8. "Does an On-line Science Resource Reduce Negative Science Stereotypes and Lead to Improved Science Teaching?" M. Schimmoeller, P. Sheldon, G. Griffin, C. Torisky, J. Lundy, American Educational Research Association's National Meeting (April 2005).
9. "The Ten Best Ways to Blow a Grant Proposal," N. Amos and P. Sheldon, Council on Undergraduate Research 10th National Conference (June 2004).
10. APS Bulletin, April 2002 (see above).
11. "Who Wants to be a Technologist? Good Pedagogical Approaches to Technology in the Classroom," VFIC Technology Symposium, Lynchburg College (November, 2000).
12. "The Science of Misinformation: Pseudoscience in the Media," Sweet Briar College Speaker Series (Fall, 2000).
13. "The Use of the World Wide Web in the Classroom," VFIC Web Workshop, Lynchburg College (August, 2000).
14. "The Use of the World Wide Web in the Classroom," Web Workshop, Marymount University (June, 2000).
15. "Helium: The Beauty of Low Temperature Physics," Hampden Sydney College Speaker Series (February, 2000).
16. "Helium Superfluidity and Other Oddities," James Madison University Speaker Series (September, 1999).
17. "Helium Superfluidity and Other Oddities," Western Carolina University Speaker Series (Fall, 1998).
18. "Optics, Optical Phenomena and the Eye," Pines Retirement Community Speaker Series (Summer, 1997).
19. "Why I Did Not Win the Nobel Prize: Helium Physics," Francis Marion University Speaker Series (Spring 1997).
20. "Newton's Laws Demo Show," Mooresville Middle School (Spring, 1997).
21. "Why I Did Not Win the Nobel Prize: Helium Physics," Wake Forest University Speaker Series (Spring, 1997).
22. "Why I Did Not Win the Nobel Prize: Helium Physics," University of North Carolina, Charlotte Speaker Series (fall 1996).

23. "Why I Did Not Win the Nobel Prize: Helium Physics," Davidson College Speaker Series (Spring, 1996).

## Student Research Projects

- 2016 "Teaching Math and Science in a Changing World," with Amanda Rumore, Peggy Schimmoeller, Danish Roshan '18, Gavin Cook '18, Drucilla Williams '18.
- 2016 "Step up to Physical Science and Engineering at Randolph phase B (SUPERB),: with Zhe Chen '17.
- 2015 "Who Gets to Ride Shotgun," with Russell Burt '16 and William Vernon '18.
- 2015 "Inertial Navigation," with Pujan Shrestha '15.
- 2014 "An Analysis of the Feasibility of Superconducting Maglev Launch System Based on Meissner Effect," with Sam Lee (Central Virginia Governor's School junior). Sam won a Third Grand Prize for this project at the Intel International Science and Engineering Fair.
- 2014 "Science and Math Links: Research-Based Teaching Institute," with Hart Gillespie '15, Shaun Chopp '16, Thao Nguyen '17.
- 2013 "Science and Math Links: Research-Based Teaching Institute," with Sydney Henson '14, Katherine Lesnack '15.
- 2012-2014 "Investigating Methods of Inertial Navigation," with Tim Slesinger '14, Alex Tran '15, Kacey Meaker '08 (currently PhD candidate at Berkeley), Richard Lin and Mike Cheng (high school students from Virginia Episcopal School).
- 2012 "Science and Math Links: Research-Based Teaching Institute," with Hin Doan '14, Pujan Shrestha '15.
- 2011 "Science and Math Links: Research-Based Teaching Institute," with Meredith Humphries '12, Woyini Teklay, '13, Qi Zhang '13.
- 2011 "Impact of a Science Festival," with Michael Zeutenhorst '11.
- 2010 "Science and Math Links: Research-Based Teaching Institute," with Courtney Collier '12 and Meredith Humphreys '12.
- 2009 "The Efficacy and Replication of Hands-on Inquiry Science Methods for Improving Teacher Quality and Student Science Achievement," with Marja Copeland '11.
- 2008 "Natural Optical Phenomena" with Tiffany Paonessa '09.
- 2008 "Building a Wall-Following Robot" with Wai Sze Cheung '09.
- 2008 "Physics of Joint Injuries in Baseball Players," with Emily Schuetz '08.
- 2007-present "Roller-Coaster Physics," with Kacey Meaker '08.
- 2007 "Development of Advanced Physics Lab Experiments," with Wai Sze Cheung '09.
- 2007 "Solar Power," with Reeju Pokharel '08.
- 2006-2007 "Optical Spectroscopy of Defects in Yttrium Orthovanadate (YVO4) Crystals," with Wai Sze Cheung '09 and Katrina Wiechmann '09.
- 2006 "Collaborative Institute in the Sciences: A Classroom-focused Professional Development Opportunity," with Jessica Maidment '06 and Sunnie Joshi '07.
- 2005-2006 "Collaborative Institute in the Sciences: A Classroom-focused Professional Development Opportunity," with Kidest Tita '06.
- 2004-2005 "Effects of Outreach Programs on Attitudes towards Science," with Tracey Wellington '05.
- 2004-2005 "Wavelet Theory," with Weiqin Bao '05.
- 2004-2005 "The New Science Teacher: Educational Resources for the Science Educator", with Professor P. Schimmoeller, Carly Torisky '06, and Jennifer Lundy '05.
- 2004 "Diffusion of Liquids in Confined Geometries," with Stephanie Canyon '04.
- 2003-2004 "Influence of Inquiry Science on Student Achievement and Instruction in the K-5 Science Classroom," with Gemma Griffin '04.

- 2003-2004 "Strengthening K-8 Science Teaching Through the Science Pages: Web-based Initiatives for Science Educators," with Professor P. Schimmoeller, Weiqin Bao '05, Aliya Gifford '04, Gemma Griffin '04, Saba Sattar '04, and Megan Willis '04.
- 2003-2004 "Studies of Surface Properties of Materials, in Particular the Nuclepore Substrate," with Aliya Gifford '04.
- 2003 "Luminescence Spectroscopy," with Tracy Thorn '03.
- 2002-2003 "How Interactive Online Science Modules Influence the Development of Scientific Concepts and Pedagogical Knowledge of Prospective K-8 Educators," with Professor P. Schimmoeller, Tracey-Ann Wellington '05, and Lourdes Cuellar '03.
- 2002-2003 "Luminescence Spectroscopy of Optical Crystals Using a Home-Built Dye Laser," with Tracy Thorn '03.
- 2001-2002 "A Study of Solar Power," with Bianca Juganaru '02.
- 2001-2002 "Science Teaching: Using computer simulation modules to facilitate the development of science and pedagogical knowledge among perspective pre-service teachers," with Professor P. Schimmoeller, Katherine Flansburg and Karell Thompson.
- 2001 "Computerizing the Lab to Improve Student Learning," with Holly Groover '04.
- 2001 "Monte Carlo Modeling of a Jefferson Lab Spectrometer," with Melissa Boswell.
- 2000-2001 "Computerizing the Lab to Improve Student Learning," with Stephanie Sydorko and Jessica Maddox.
- 2000-2001 "Falling Springs, Surprising Things," with Stephanie Sydorko.
- 1999-2001 "Adsorption Isotherm Study of Nitrogen and Helium Gases on a Nuclepore Substrate," with Stephanie Sydorko, R-MWC Honors Research.
- 1999 "Scripting Interactive Physlets for use as Teaching Tools," with Huong Nguyen.
- 1999 "A study of the Spectral Indices of Active Galactic Nuclei," with Carrie Murray.
- 1997 "Helium Adsorption measurements of the Surface Area and the Van der Waals constant for 0.10 micron Nuclepore Filters," with Cabell Fisher, Davidson College.

## Major Outreach Activities

- 2013-present Organizer (with Enrollment Division) of Science Saturdays hands-on science for high school students
- 2009-present Co-PD for regional Science Teacher Summer Institute
- 2009-present Randolph College Science Festival Director
- 2005-present Direct and teach the Randolph College Annual Science Day for 3<sup>rd</sup>-6<sup>th</sup> Graders
- 2004-present Direct and teach the Jubilee Development Center Summer Science Camp

## Advising

- 2014-2015 Honors Research Committee: Tu Nguyen
- 2014-2015 Honors Research Committee: Hart Gillespie
- 2014-2015 Faculty Mentor
- 2000-present Pre-Engineering Advisor
- 1999-present Academic Advisor for majors in Physics and Engineering
- 1999-present Academic Advisor for First and Second Year Students (6-7/year)
- 1999-2015 Faculty Advisor for Bridges, homosexual awareness organization
- 1998-present Faculty Advisor for Society of Physics Students and Sigma-Pi-Sigma, National Honor Society for Physics
- 2001-2013 Faculty Mentor
- 2004-2009 Goldwater Scholarship Advisor
- 1998-2006 Faculty Advisor for R-MWC Running Club
- 2013-2014 Honors Research Committee: Jim Kwon
- 2011-2013 Honors Research Committee: Thawda Aung
- 2007-2008 Honors Research Committee: Kacey Meaker

2004-2005 Honors Research Committee: Weiqin Bao  
2003-2004 Honors Research Committee: Aliya Gifford  
2003-2004 Honors Research Committee: Gemma Griffin  
2003-2004 Honors Research Committee: "Philosophy of Quantum Mechanics," Holly Groover  
2001-2002 Honors Research Committee: "The Role of Drawing in Young Children's Memory Reports," Kim Cuevas  
2001-2002 Honors Research Committee: "Thermal Lensing," Michelle Madden  
2001-2002 Honors Research Committee: "The Dynamic Universe," Miranda Dettwyler  
1999-2002 Academic Advisor for a self-designed Environmental Studies major

## **Avocation**

- Competitive long distance runner since the age of 10.
- Theseus in Randolph production of *Midsummer Night's Dream*, Spring 2012; Trucker in R-MWC production *Rimers of Eldridge*, Fall 2004; Bob in R-MWC Senior production *Women of Manhattan*, Spring 2003; Daisy in R-MWC production *Baby with the Bathwater*, Fall 2000; Hutch in R-MWC production *The Country Club*, Spring 2001.
- Officiated Wedding Ceremonies, 2000, 2001, 2005, 2007, 2008, 2009, 2013.