David Roundy
Curriculum Vitae

A. Education and Employment Information

Education

Ph.D. (2001)	in Physics, University of California at Berkeley. Thesis "Mechanical and Superconducting Properties of Materials from First Principles" **Ph.D. Advisor: Marvin L. Cohen**
B.A. (1995)	in Physics and Chemistry, University of California at Berkeley.

Professional Appointments

2014-Present	Associate Professor — Dept. of Physics, Oregon State University
2006-2014	Assistant Professor — Dept. of Physics, Oregon State University
2004-2006	Postdoctoral researcher — Dept. of Physics, Cornell University
2002-2003	Postdoctoral researcher — Dept. of Physics, Massachusetts Institute of Technology
1998-2001	Graduate Research Assistant — Dept. of Physics, University of California at Berkeley
1992-1996	Research Assistant — Dept. of Physics, California State University at Fullerton

B. Teaching, advising and other assignments

Course	**Term**	**Year**	**# students**
PH 631 Electromagnetic Theory	Fall	2006	5
PH 632 Electromagnetic Theory	Winter	2007	5
(teaching release time)	Spring	2007	
(unpaid personal leave)			
PH 265 Scientific Computing	Winter	2009	28
PH 423 Paradigms in Physics: Energy and Entropy	Spring	2009	15
PH 320 Paradigms in Physics: Symmetries and Idealizations	Fall	2009	24
PH 265 Scientific Computing	Winter	2010	26
PH 423 Paradigms in Physics: Energy and Entropy	Spring	2010	18
(2/3 FTE for the year)			
PH 265 Scientific Computing	Winter	2011	22
PH 423 Paradigms in Physics: Energy and Entropy	Spring	2011	25
(returning to 1.0 FTE)			
PH 365X Applications in Computational Physics I	Fall	2011	8
PH 265 Scientific Computing	Winter	2012	22
PH 366X Applications in Computational Physics II	Winter	2012	2
PH 423 Paradigms in Physics: Energy and Entropy	Spring	2012	38
PH 523 Paradigms in Physics: Energy and Entropy	Spring	2012	1

Course	Term	Year	# students
PH 367X Applications in Computational Physics III	Spring	2012	2
PH 320 Paradigms in Physics: Symmetries and Idealizations	Fall	2012	37
PH 365X Applications in Computational Physics I	Fall	2012	9
PH 366X Applications in Computational Physics II	Winter	2013	11
PH 265 Scientific Computing	Spring	2013	11
PH 423 Paradigms in Physics: Energy and Entropy	Spring	2013	28
PH 523 Paradigms in Physics: Energy and Entropy	Spring	2013	1
PH 367X Applications in Computational Physics III	Spring	2013	9
PH 320 Paradigms in Physics: Symmetries and Idealizations	Fall	2013	36
PH 365 Applications in Computational Physics I	Fall	2013	8
PH 223H Recitation for PH 213	Winter	2014	8
PH 366 Applications in Computational Physics II	Winter	2014	10
PH 423 Paradigms in Physics: Energy and Entropy	Spring	2014	35
PH 367 Applications in Computational Physics III	Spring	2014	7
PH 422 Paradigms in Physics: Static Vector Fields	Fall	2014	29
PH 365 Applications in Computational Physics I	Fall	2014	17
PH 366 Applications in Computational Physics II	Winter	2015	17
PH 367 Applications in Computational Physics III	Spring	2015	19
PH 464 Scientific Computing II	Spring	2015	6
(sabbatical leave)			
PH 265 Scientific Computing	Winter	2016	27
PH 366 Applications in Computational Physics II	Winter	2016	19
PH 367 Applications in Computational Physics III	Spring	2016	16
PH 365 Applications in Computational Physics I	Fall	2016	33
PH 642 Statistical Thermophysics	Fall	2016	9

Curriculum Development

I have engaged in the three major course development projects, and one major curricular reform.

PH 423: *Energy and Entropy* While I was on unpaid leave prior to the winter of 2009, I joined a collaborative effort, funded by the NSF, to develop and test teacher materials for the dissemination of concepts in the *Energy and Entropy* Paradigm. As part of this work, I redesigned the course, developing a series of integrated experiments, and active engagement materials.

PH 265: *Introductory Scientific Computing* Also while I was on unpaid leave prior to the winter of 2009, I developed a new curriculum for PH 265, "Introductory Scientific Computing." I redesigned this course using Visual Python to help students begin using programming to solve physics problems. This resulted in an 88-page text with homework assignments that is available online for students or as a print-on-demand book (C.1.52). This text has since been used by other faculty in our department to teach this course, and has also been adopted at Linn-Benton Community College.

PH 365, 366 and 367: *Applications in Scientific Computing* In 2010, I proposed and introduced a new upper-division computational laboratory course, inspired by my experiences developing the lower-division PH 265. The new course uses "pair programming," a known teaching method in Computer Science, with a goal of helping students who are not yet comfortable programming to become comfortable doing so with minimal help from the instructor. This course parallels the *Paradigms in Physics* content, in order to reinforce student learning in these critical middle-division courses, while at the same time reducing the cognitive load as students adapt to using computational methods to solve problems. I have received an NSF grant as sole PI to continue development of this lab.

Paradigms 2.0 In 2016, I was a member of the Paradigms 2.0 committee, which led a department-wide reform of our curriculum for physics majors. This process involved discussing the content of each upper-division class in the physics major, discussing what material should be prioritized and where we could develop synergies between classes, and finally developing a proposal for a revised set of courses that could address some longstanding challenges in our existing courses. After discussing and revising these plans with the department and reaching unanimity, I submitted the courses through the university curriculum proposal system, and the new courses are being taught in the 2016/2017 school year.

Graduate and Undergraduate Student Trainees and Postdoctoral Trainees

Ph.D. thesis advisor for:		Graduation	Thesis
1. Dennis Jackson	Physics Ph.D.	2011	"An Ising-like model to predict dielectric properties of the relaxor ferroelectric solid solution $BaTiO_3$-$Bi(Zn_{1/2}Ti_{1/2})O_3$"
2. Jeff Schulte	Physics Ph.D.	2015	"Hard spheres within classical density functional theory and Min proteins within *Escherichia Coli*
3. Eric Krebs	Physics Ph.D.	2015	"Theory of inhomogeneous fluids"

Masters thesis advisor for:		Graduation	Thesis
4. Jason Dagit	Computer Science M.S.	2009	"Type Correct Changes—A Safe Approach to Version Control Implementation"
5. Jessica Hughes	Physics M.S.	2011	"A Classical Density-Functional Theory for Describing Water Interfaces"
6. Zhiyuan Zhang	Physics M.S.	2012	"A Code Generator for Density-Functional Theory in Haskell"
7. Daniel Roth	Physics M.S.	2014	"Applying Renormalization Group Theory to the Square Well Liquid"
8. Ryan Scheirer	Physics M.S.	2016	"Exploring Phase Equilibrium with Statistical non-Associating Fluid Theory: A Generalized Renormalization Group Theory Approach
9. Billy Geerhart III	Physics M.S.	2016	"Finding the arbitrary parameter L in Renormalization Group Theory via fitting Monte Carlo simulations to Statistical Associating Fluid Theory"

Senior project mentor for	Graduation	Thesis
10. Steve Brinkley	2010	"Measuring the Acoustic Response Function with White Noise"
11. Michael Nielson	2010	"Modeling the linear response function for broad frequency sound generation"
12. Murray Wade	2012	"Creating a Thermodynamics Simulation Using the Ising Model: A Microcanonical Monte Carlo Approach"
13. Rene Zeto	2014	"Testing the model for Min D protein oscillations in Escherichia coli"
14. Paho Lurie-Gregg	2014	"The contact value approximation to the pair distribution function for an inhomogeneous hard sphere fluid"
15. Michael Perlin	2015	"Optimizing Monte Carlo simulation of the square-well fluid"
16. Patrick Kreitzberg	2015	"Monte Carlo simulations for a soft sphere fluid"
17. Samuel Loomis	*Left program* 2014	*Studying interaction between spherically symmetric, softly repulsive particles.*
18. Josh Montegna	2015	"Determining the effective entropy of a visual hash system"
19. Austin Valeske	2015	"Determining free energies of hard sphere fluids via Monte Carlo simulation"
20. Brenden Vischer	2016	"The free energy of a liquid"
21. Elliott Capek	Expected 2017	*Modeling the motion of the dynein motor protein.*
22. Tymothy Mangan	Expected 2017	*Is looking at comparing histogram Monte Carlo simulation methods for the square well fluid.*

Cooperative efforts in teaching

- I have team-taught several times at varying levels in the course of teaching the *Energy and Entropy* Paradigm (PH 423). The first instance was in the Spring of 2009, when I first taught *Energy and Entropy*. As part of my NSF grant, I cotaught this course with Prof. Rogers of Ithaca College. In addition, I co-developed with Prof. Manogue of our department a one-week mathematical introduction to the course and co-taught it with her in 2009, 2010, 2012, and 2013 as we sought to improve our students' understanding of the partial derivatives in thermodynamics.

- I participate in the Upper Division Curriculum Group. We meet once every three weeks to ensure consistency across the undergraduate curriculum for Physics majors, and develop new course material.
- I have participated in the Computational Physics Curriculum Group, which met each quarter to discuss matters relating to material in the Computational Physics courses. This group is now integrated with the Upper Division Course group.
- I participate in the Lower Division Physics Curriculum Group. We meet each quarter to discuss matters relating to material in our lower-division courses. Most recently, I have been involved in discussions regarding the possibility of changing textbook in our PH 211 sequence.

C. Scholarship and Creative Activity

1. Publications

Citation counts in the listing below are based on Google Scholar as of November 2016, which gives an h-index of 23. Web of Science, which misses the non-peer-reviewed Darcs conference proceeding, finds h-index is 22.

key: my undergraduate student[UG]
my graduate student

Peer-reviewed articles, published

1. **David Roundy**, Tevian Dray, Corinne A. Manogue, Joseph F. Wagner, and Eric Weber, An Extended Theoretical Framework for the Concept of the Derivative, *Proceedings of the 2015 Research in Undergraduate Math Education Conference* (2015). **2 citations**
2. **David Roundy**, Eric J. Krebs, Jeff Schulte, and Greg Mulder. Look ma, no templates! Problem-based learning of computational physics for novice programmers, *Frontiers in Education proceedings* (2015).
3. **David Roundy**, Eric Weber, Tevian Dray, Rabindra R. Bajracharya, Allison Dorko, Emily M. Smith, and Corinne A. Manogue, Experts' understanding of partial derivatives using the Partial Derivative Machine, *Physical Review Special Topics: Physics Education Research* **11(2)**, 020126 (2015). **5 citations**
4. Jeff Schulte, Rene Zeto[UG], and **David Roundy**. Theoretical Prediction of Disrupted Min Oscillation in Flattened *Escherichia coli*. *PLOS ONE*, **10(10)**, e0139813 (2015). **1 citations**
5. **David Roundy**, Eric Weber, Grant Sherer and Corinne A. Manogue. Experts' Understanding of Partial Derivatives Using the Partial Derivative Machine. *2014 Physics Education Research Conference Proceedings*, 227-230 (2014).
6. Paho Lurie-Gregg[UG], Jeff Schulte and **D. Roundy**. Approach to approximating the pair distribution function of the inhomogeneous hard-sphere fluid. *Physical Review E*, **90**, 042130 (2014). **1 citations**
7. Eric Krebs, Jeff Schulte, **David Roundy**. Improved association in a classical density functional theory for water. *Journal of Chemical Physics*, **140**, 124507 (2014). **3 citations**
8. Mary Bridget Kustusch, **David Roundy**, Tevian Dray, and Corinne Manogue. Partial Derivative Games in Thermodynamics: A Cognitive Task Analysis. *Physical Review Special Topics – Physics Education Research*, 10(1):010101, (2014). **9 citations**

9. **David Roundy**, Mary Bridget Kustusch, and Corinne Manogue. Name the Experiment! interpreting thermodynamic derivatives as thought experiments *American Journal of Physics*, 82(1):39-46, (2014). **5 citations**

10. Grant Scherer, Mary Bridget Kustusch, Corinne A. Manogue, and **David Roundy**. The Partial Derivative Machine. *2013 Physics Education Research Conference Proceedings—American Institute of Physics*, pages 341-344, (2013). **3 citations**

11. Mary Bridget Kustusch, **David Roundy**, Tevian Dray, and Corinne Manogue. An expert path through a thermo maze. In *2012 Physics Education Research Conference Proceedings—American Institute of Physics*, volume 1513, page 234, (2013). **4 citations**

12. Jessica Hughes, Eric Krebs, **David Roundy**. A classical density-functional theory for describing water interfaces. *The Journal of Chemical Physics* **138**(2), 024509–024509 (2013). **23 citations**

13. **D. Roundy** and M. Rogers. Exploring the thermodynamics of a rubber band. *The American Journal of Physics* **81**, 20 (2013). **13 citations**

14. Jeff Schulte, Patrick Kreitzburg[UG], Chris Haglund[UG] and **D. Roundy**. Using Fundamental Measure Theory to Treat the Correlation Function of the Inhomogeneous Hard-Sphere Fluid. *Physical Review E* **86**, 061201 (2012). **9 citations**

15. L. Prisbrey, **D. Roundy**, K. Blank, L.S. Fifield, and E.D. Minot. Electrical Characteristics of Carbon Nanotube Devices Prepared with Single Oxidative Point Defects. *The Journal of Physical Chemistry C* **116**(2), 1961 – 1965 (2012). **6 citations**

16. A.F. Oskooi, **D. Roundy**, M. Ibanescu, P. Bermel, J.D. Joannopoulos, and S.G. Johnson. Meep: A flexible free-software package for electromagnetic simulations by the FDTD method. *Computer Physics Communications* **181**(3), 687 – 702 (2010). **1395 citations**

17. Daniel A. Freedman, **D. Roundy**, and T. A. Arias. Elastic effects of vacancies in strontium titanate: Short- and long-range strain fields, elastic dipole tensors, and chemical strain. *Phys. Rev. B* **80**(6), 064108 (2009). **63 citations**

18. Sahak A. Petrosyan, Jean Francois Briere, **David Roundy**, and Tomás A. Arias. Joint density-functional theory for electronic structure of solvated systems. *Phys. Rev. B* **75**(20), 205105 (2007). **21 citations**

19. A. Farjadpour, **D. Roundy**, Alejandro Rodriguez, M. Ibanescu, Peter Bermel, J. D. Joannopoulos, Steven G. Johnson, and G. W. Burr. Improving accuracy by subpixel smoothing in the finite-difference time domain. *Optics Letters* **31**(20), 2972–2974 (2006). **456 citations**

20. H. Üstünel, **D. Roundy**, and T. A. Arias. Modeling a suspended nanotube oscillator. *Nano Letters* **5**(3), 523–526 (2005). **75 citations**

21. M. Ibanescu, S. G. Johnson, **D. Roundy**, Y. Fink, and J. D. Joannopoulos. Microcavity confinement based on an anomalous zero group-velocity waveguide mode. *Optics Letters* **30**(5), 552–554 (2005). **38 citations**

22. H. Üstünel, **D. Roundy**, and T. A. Arias. *Ab initio* mechanical response: internal friction and structure of divacancies in silicon. *Phys. Rev. Lett.* **94**, 025503 (2005). **5 citations**

23. **D. Roundy**, E. Lidoriki, and J. D. Joannopoulos. Polarization-selective waveguide bends in a photonic crystal with layered square symmetry. *J. Appl. Phys.* **96**(12), 7750–7752 (2004). **8 citations**

24. V. Sazonova, Y. Yaish, H. Üstünel, **D. Roundy**, P. L. McEuen, and T. A. Arias. A tunable carbon nanotube electromechanical oscillator. *Nature* **431**, 284–287 (2004). **1164 citations**

25. M. Ibanescu, S. G. Johnson, **D. Roundy**, C. Luo, Y. Fink, and J. D. Joannopoulos. Anomalous dispersion relations by symmetry breaking in axially uniform waveguides. *Phys. Rev. Lett.* **92**(6), 063903 (2004). **59 citations**

26. **D. Roundy** and John Joannopoulos. Photonic crystal structure with square symmetry within each layer and a three-dimensional band gap. *App. Phys. Lett.* **82**(22), 3835 (2003). **33 citations**

27. Seung-Hoon Jhi, **D. Roundy**, S. G. Louie, and M. L. Cohen. Formation and electronic properties of double-walled boron nitride nanotubes. *Solid State Commun.* **134**, 397–402 (2005). **44 citations**

28. R. E. Kraig, **D. Roundy**, and M. L. Cohen. A study of the mechanical and structural properties of polonium. *Solid State Commun.* **129**(6), 411–413 (2004). **17 citations**

29. Hong Sun, F. J. Ribeiro, Je-Luen Li, **D. Roundy**, M. L. Cohen, and S. G. Louie. *Ab initio* pseudopotential studies of equilibrium lattice structures and phonon modes of bulk BC_3. *Phys. Rev. B* **69**, 024110 (2004). **35 citations**

30. H. J. Choi, **D. Roundy**, H. Sun, M. L. Cohen, and S. G. Louie. Reply to "Comment on 'First-principles calculation of the superconducting transition in MgB_2 within the anisotropic Eliashberg formalism.' " *Phys. Rev. B* **69**(5), 056502 (2004). **17 citations**

31. W. Luo, **D. Roundy**, M. L. Cohen, and J. W. Morris, Jr. Ideal strength of bcc molybdenum and niobium. *Phys. Rev. B* **66**, 094110 (2002). **161 citations**

32. F. J Ribeiro, **D. Roundy**, and M. L. Cohen. Electronic Properties of MoSe nanowires. *Phys. Rev. B* **65**, 153401 (2002). **33 citations**

33. C. R. Krenn, **D. Roundy**, M. L. Cohen, D. C. Chrzan, and J. W. Morris, Jr. Connecting Atomistic and Experimental Estimates of Ideal Strength. *Phys. Rev. B* **65**, 134111 (2002). **111 citations**

34. H. J. Choi, **D. Roundy**, H. Sun, M. L. Cohen, and S. G. Louie. The origin of the anomalous superconducting properties of MgB_2. *Nature* **418**, 758–760 August (2002). **832 citations**

35. H. J. Choi, **D. Roundy**, H. Sun, M. L. Cohen, and S. G. Louie. First-principles calculation of the superconducting transition in MgB_2 within the anisotropic Eliashberg formalism. *Phys. Rev. B* **66**, 020513 (2002). **337 citations**

36. **D. Roundy** and M. L. Cohen. Ideal strength of diamond, Si and Ge. *Phys. Rev. B* **64**, 212103 (2001). **186 citations**

37. C. R. Krenn, **D. Roundy**, J. W. Morris, Jr., and M. L. Cohen. The Ideal Strengths of BCC Metals. *Mat. Sci. Eng. A* **319**, 111–114 (2001). **71 citations**

38. H. Sun, S. H. Jhi, **D. Roundy**, M. L. Cohen, and S. G. Louie. Structural forms of cubic BC_2N. *Phys. Rev. B* **64**(9), 094108 (2001). **185 citations**

39. J. W. Morris, Jr., C. R. Krenn, **D. Roundy**, and M L Cohen. Deformation at the limit of elastic stability. *Mat. Sci. Eng. A* **309**, 121–124 (2001). **20 citations**

40. C. R. Krenn, **D. Roundy**, J. W. Morris, Jr., and M. L. Cohen. The nonlinear elastic behavior and ideal shear strength of Al and Cu. *Mat. Sci. Eng. A* **317**, 44–48 (2001). **36 citations**

41. **D. Roundy**, C. R. Krenn, M. L. Cohen, and J. W. Morris, Jr. The ideal strength of tungsten. *Phil. Mag. A* **81**(7), 1725 (2001). **198 citations**

42. **D. Roundy**, C. R. Krenn, M. L. Cohen, and J. W. Morris, Jr. Ideal shear strengths of Aluminum and Copper. *Phys. Rev. Lett.* **82**(13), 2713 (1999). **298 citations**

43. M. A. Khakoo, **D. Roundy**, C. Hicks, N. Margolis, E. Yeung, A. W. Ross, and T. J. Gay. Monte Carlo studies of Mott scattering asymmetries from gold foils. *Phys. Rev. A* **64**(5), 052713 (2001). **10 citations**

44. F. Rugamas, **D. Roundy**, G. Mikaelian, G. Vitug, M. Rudner, J. Shih, D. Smith, J. Segura, and M. A. Khakoo. Angular profiles of molecular beams from effusive tube sources: I. Experiment. *Measurement Science and Technology* **11**(12), 1750–1765 (2000). **38 citations**

45. M. A. Khakoo, **D. Roundy**, and F. Rugamas. Electron-impact excitation of the ^{1}1S$\to^3$1P and ^{1}1S$\to$431P transition in Helium. *Phys. Rev. A* **54**(5), 4004–4014 (1996). **7 citations**

46. M. A. Khakoo, **D. Roundy**, and F. Rugamas. Electron-impact excitation of the ^{1}1S$\to^3$1P transition in Helium. *Phys. Rev. Lett.* **75**(1), 41–44 (1995). **5 citations**

Conference Proceedings (not peer-reviewed) and Invited Review Articles

47. **David Roundy**, Ayush Gupta, Joseph F. Wagner, Tevian Dray, Mary Bridget Kustusch, Emily van Zee, and Corinne A. Manogue. From Fear to Fun in Thermodynamics. In *2013 Physics Education Research Conference Proceedings—American Institute of Physics*, 42–45 (2013).

48. Corinne A. Manogue, Elizabeth Gire, and **David Roundy**. Tangible Metaphors. In *2013 Physics Education Research Conference Proceedings—American Institute of Physics*, 27–30 (2013).

49. J.R. Thompson, C.A. Manogue, **D.J. Roundy**, D.B. Mountcastle. Representations of partial derivatives in thermodynamics. In *2011 Physics Education Research Conference Proceedings—American Institute of Physics*, volume 1413, page 85, (2012). **7 citations**

50. D. Roundy. Darcs: distributed version management in Haskell. In *Proceedings of the 2005 ACM SIGPLAN workshop on Haskell*, pages 1–4. ACM, (2005). **44 citations**

Published curricular materials

51. **D. Roundy**, Paradigms website, `http://www.physics.oregonstate.edu/portfolioswiki/topic:thermodynamics`, Energy and Entropy curricular materials, including instructor guides to 17 class activities and 3 integrated laboratory experiments.

52. **D. Roundy**, *Introduction to Computational Physics.* `http://www.lulu.com/shop/david-roundy/introduction-to-computational-physics/paperback/product-15149034.html`

2. Meeting participation

In the list below, in the interest of brevity I have omitted the 12 non-invited talks given before I came to Oregon State University.

1. Undergraduate Research Symposium at Oregon State University: Co-authored the talk "Using Brownian Dynamics to simulate the dynein motor protein" presented by Elliott Capek (2016).

2. Foundations and Frontiers of Physics Education Research: Puget Sound 2016 in Diablo, WA: Presented the poster "Calculus learning goals for thermodynamics and the Partial Derivative Machine" (2016).

3. Frontiers in Educatin (FIE) 2015 in El Paso: Presented the talk "Look ma, no templates! Problem-based learning of computational physics for novice programmers" (2015).

4. **(invited)** Northwest Section Meeting of the APS: Presented the talk "Making calculus tangible" (2015) (actually presented by student MacKenzie Lenz, due to family illness).

5. Research in Undergraduate Math Education Conference (RUME) in Pittsburgh: Presented the talk "An Extended Theoretical Framework for the Concept of Derivative" (2015).

6. Physics Education Research Conference (PERC) in Minneapolis: Presented the poster "Experts' understanding of partial derivatives using the Partial Derivative Machine" (2014).

7. AAPT Summer Meeting in Minneapolis: Presented the talk "Integration in Electrostatics with a Computational Perspective" (2014).

8. Workshop on the Status of the Upper-Division Physics Curriculum: Presented the talk "Connecting math with experiment in thermal physics" (2014).

9. AAPT Summer Meeting in Portland: Presented the talk "Learning through Computation in Upper-Division Physics" (2013).

10. Physics Education Research Conference (PERC) in Portland: Co-organized the workshop "From Fear to Fun in Thermodynamics: Multiple Research Perspectives for Assessing Learning during a Curricular Sequence" that showcased curricular materials that I developed (2013).

11. Physics Education Research Conference (PERC) in Portland: Co-authored the poster "The Partial Derivative Machine," presented by undergraduate student Grant Scherer (2013).

12. **(invited poster)** Physics Education Research Conference (PERC) in Portland: Co-authored the poster "Tangible Metaphors," presented by Corinne Manogue (2013).

13. APS March Meeting in Baltimore: Co-authored the talk "Testing 'Soft' Fundamental Measure Theory for not-so-hard-sphere fluids" presented by my student Eric Krebs (2013).

14. APS March Meeting in Baltimore: Co-authored the talk "Using fundamental measure theory to treat the correlation function of the inhomogeneous hard-sphere fluid" presented by my student Jeff Schulte (2013).

15. NSF TUES Principal Investigators Conference in Washington, DC: Presented the poster "An Expert Path Through a Thermo Maze" (2013).

16. APS March Meeting in Boston: presented the talk "A SAFT-based classical density functional for water" (2012).

17. Physics Education Research Conference (PERC) in Philadelphia: Co-authored the poster "An Expert Path Through a Thermo Maze," presented by postdoc Mary Bridget Kustusch (2012).

18. **(invited poster)** Physics Education Research Conference (PERC) in Omaha: Co-authored the poster "Representations of Partial Derivatives in Thermodynamics," presented by collaborator John R. Thompson (2011).

19. NSF CCLI/TUES Principal Investigators Conference in Washington, DC: Presented the poster "Energy and Entropy in the Paradigms Curriculum" (2011).

20. APS March Meeting in Portland: Co-authored the talk "Dielectric properties of the $BaTiO_3$–$Bi(Zn_{\frac{1}{2}}Ti_{\frac{1}{2}})0_3$ solid solution from density-functional theory," presented by my student Dennis Jackson (2010).

21. AAPT Summer Meeting in Portland: Presented the talk "Energy and Entropy and More" (2010).

22. APS March Meeting in Pittsburgh: Co-authored the talk "Density-functional study of the of the $Ba_xBi_{(1-x)}(M_{(1-x)/2})Ti_{(1+x)/2}O_3$ perovskite solid solution," presented by my student Dennis Jackson (2009).

23. **(invited)** Oregon AAPT: Presented the talk “A first course in Computational Physics using visual python” (Sept. 2008).

24. APS March Meeting in New Orleans: Presented the talk “A classical density functional for water,” presented by my student Dennis Jackson (2008).

25. **(invited)** APS March Meeting in Baltimore: I presented the talk “Losses due to phonon-phonon interactions in nanotube oscillators: from classical potentials through one-dimensional elasticity and many-body perturbation theory” (2006).

26. **(invited)** Free and Open source Software Developers’ European Meeting (FOSDEM) in Brussels: I presented the talk “The Darcs Patch Formalism” (2006).

27. **(invited)** Haskell Workshop at the International Conference on Functional Programming in Estonia: I presented the talk “Darcs: Distributed Version Management in Haskell” (2005).

28. **(invited)** Commercial Users of Functional Programming, at the International Conference on Functional Programming in Estonia: I presented the talk “The Myth and Reality of using Haskell in the Real World” (2005).

29. **(invited)** Electronic Structure conference at Cornell: I presented the talk “Internal Friction and the Silicon Divacancy” (2005).

30. **(invited)** MRS Fall Meeting in Boston: I presented the talk “Computation of the ideal strength” (2000).

3. Funding

Current/Past awarded grants

PI: Manogue, co-PIs: Weber, **Roundy**, Dray, van Zee — 09/01/2013 – 08/31/2016
National Science Foundation — $599,487
Paradigms in Physics: Representations of Partial Derivatives

PI: Roundy — 06/01/2012 – 05/30/2014
National Science Foundation — $124,236
Developing a computational physics lab integrated with upper-division physics content

PI: Roundy, co-PI: C.A. Manogue, collaborative PIs: M. Rogers, J.R. Thompson — 2/15/09 – 2/14/13
National Science Foundation — $149,998
Collaborative Research: Paradigms in Physics: Creating and Testing Materials to Facilitate Dissemination of the Energy and Entropy Module (OSU component $44,563)

PI: Minot, co-PIs: Schneider, **Roundy**, Fifield, Chapman — 1/1/09 – 12/31/09
Office of Naval Research — $230,000
ONAMI: Electronic detection of single molecule dynamics
(Roundy component $3,600)

4. Other

Invited colloquia and seminars

October 2015 University of Texas, El Paso, Physics Seminar:
"Making Calculus Tangible to Physics Majors"

September 2014 Presented at "Global Physics Department":
"Making Calculus tangible to Physics majors"

September 2014 Presented at "Global Physics Department":
"Using the Partial Derivative Machine"

November 2013 Reed College, Physics Seminar:
"A tale of two E's: Energy and entropy in aqueous interfaces"

November 2013 Lewis and Clark College, Physics Colloquium:
"A tale of two E's: Energy and entropy in aqueous interfaces"

October 2013 Oregon State University, Physics Colloquium:
"Equipping students to connect multivariable calculus with the physical world"

October 2013 Willamette University, Physics Seminar:
"A tale of two E's: Energy and entropy in aqueous interfaces"

September 2013 Texas A & M, Physics Colloquium:
"Active learning in upper-division physics: lessons from the Paradigms"

September 2013 Purdue, Physics Education Seminar:
"Active learning in upper-division physics: lessons from the Paradigms"

September 2013 Purdue, Condensed Matter Seminar:
"A tale of two E's: Energy and entropy in aqueous interfaces"

April 2013 University of Oregon, Physics Colloquium:
"A tale of two E's: Energy and entropy in aqueous interfaces"

October 2012 Oregon State University, Physics Colloquium:
"A tale of two E's: Energy and entropy in aqueous interfaces"

November 2006 Oregon State University, Computer Science Colloquium:
"Verifying the darcs patch code"

October 2006 Oregon State University, Physics Colloquium:
"Classical density functional theory for water"

D. Awards

1. National and International

1. 1997 NSF Graduate Fellowship Honorable Mention
2. 1995 Phi Beta Kappa Inductee

2. University and Community

1. 1995 Merck Index Award