Steven F. Wolf

Curriculum Vitae

East Carolina University Physics Department
STEM Collaborative for Research in Education (STEM CoRE)
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Education

Michigan State University	Physics	PhD	2012
Dartmouth College	Physics	MS	2005
Valparaiso University	Physics and Mathematics	BS	2003

Professional Appointments

2015–present Assistant Professor, Department of Physics East Carolina University.
ECU Learning Assistant Program Director
2014–2015 Lecturer, Department of Physics Texas State University.
2013–2014 *Journal of Research in Science Teaching* Editorial Office & Preliminary reviews
2012–2014 Postdoctoral Research Associate, CREATE for STEM Institute, Michigan State University

Research Experience

2015–present East Carolina University, Department of Physics
— Studying STEM students engagement in the scientific practice of modeling
— Studying STEM students estimation practices
— Studying scientific practice of collaboration in STEM students
— Engaged in interdisciplinary collaborative research across STEM educational contexts

2014–2015 Texas State University, Department of Physics
— Studied STEM students engagement in the scientific practice of modeling
— Studied STEM students estimation practices
— Studied scientific practice of collaboration in STEM students

2012–2014 Michigan State University, CREATE for STEM institute
— Studied Mathematics Attitudes and Beliefs in remedial mathematics students
— Studied students use of mathematical tools in physics courses
— Studied STEM students engagement in the scientific practice of modeling

2006–2012 Michigan State University, Department of Physics and Astronomy
— Studied matter-wave amplification and femtosecond laser spectroscopy
— Studied expert and novice physics-related cognitive structures

2003–2005 Dartmouth College, Department of Physics
— Studied Solar Wind phenomena and non-exponential decay

Summer 2002 NIST–Gaithersburg, MD–Summer Undergraduate Research Fellow
— Simulated the thermal decomposition of polymers and determined reaction rates

Teaching Experience

2015–present Assistant Professor, East Carolina University
—*Electricity and Magnetism* upper-division undergraduate course. Textbook by Griffiths.
—*Calculus based physics* class (Mechanics)
—*Calculus based physics* class (E&M)
—*Introductory physics laboratory* class (Mechanics)
—*Introductory physics laboratory* class (E&M)
—*Independant study in PER*
—*Teaching and Learning Science* (ECU's version of LA pedagogy course)

Teaching Experience – cont'd

2014–2015	Lecturer, Texas State University —*Calculus based physics* class (Mechanics) —*Calculus based physics* class (Electricity and Magnetism)
2011–2012	Instructor of Record, Michigan State University *Calculus based physics* (both semesters) *Physics for Teachers* - summer course for in-service teachers
2006–2011	Graduate Teaching Assistant, Michigan State University —*Algebra based physics* class and laboratory (both semesters) —*Calculus based physics* class (first semester) —*Electricity and Electronics* class and laboratory (400-level)
Spring 2006	Hartford HS, White River Junction, VT, Long-term substitute teacher — Taught 1 section of *Physical Science* and 2 sections of *Space and Earth Science*
2005–2006	River Valley Community College, Adjunct Professor — Taught a general *Physical Science* course and a remedial *Algebra* course.
2006–2011	Dartmouth College Fellow, Dartmouth College — *Algebra based physics* laboratory (both semesters) — *Calculus based physics* lab (both semesters) — *Honors Calculus based physics* lab (first semester)

Funding

Current

- 2017 NSF–IUSE *XLabs: Cross Disciplinary Practice Focused Undergraduate Laboratory Transformation*

  Award no: 1725655

  Awarded to date: $598k (3 years)

  PI: Joi Walker, Steven Wolf, and Kristine Callis-Duehl

  SFW Role: Physics lead

- 2017 NSF–IUSE *Collaborative Research: Asynchronous Discussions to Engage Students in Scientific Argumentation (ADESSA)*

  Award no: 1712261

  Awarded: $250k (3 years)

  PI: Kristine Callis-Duehl, Patrick Harris, Joi Walker, Steven Wolf

  SFW Role: Physics lead

- 2016, Burroughs Wellcome Foundation *IMAGINE-NC: Integrating Mathematics and Geology In Eastern North Carolina*

  Award Link: http://bit.ly/2iReIYj

  PIs: Cynthia Crane, Terri Woods, Alex Manda, Anthony Thompson, Elizabeth Doster, Linda Mitchell

  SFW Role: External Evaluator

Funding – cont'd

Past

- 2017, ECU Faculty Senate Teaching Grant, *Practicing Physics in the Laboratory*

  Awarded: $10k

  PI: Steven F. Wolf

- 2013, LPF-CMP2 Innovation Fund, *Transforming experiences for science and engineering students: Integrating scientific practices into introductory calculus-based mechanics*

  Award link http://create4stem.msu.edu/story/perl-group-awarded-lpf-cmp2-innovation-grant

  Awarded (to date): $200k

  PIs: Marcos D. Caballero, David Stroupe (both at MSU)

  SFW Role: Postdoctoral Affiliate, Proposal co-author

Pending

- 2018 NSF–IUSE *CUREing Disease with Physics: Participation in a Course-based Undergraduate Research Experience studying the mechanics of disease and supporting students' pathways through STEM*

  Requested: $300k (3 years)

  PIs: Steven F. Wolf, Nathan Hudson

  Submitted: October 2018

Publications

Refereed Journal Articles

1. Joi P. Walker and **Steven F. Wolf**, "Getting the Argument Started: A Variation on the Density Investigation" *Journal of Chemical Education* **2017** 94 (5), 632-635 DOI: 10.1021/acs.jchemed.6b00621

2. Donald W. Olson, **Steven F. Wolf**, and Joseph M. Hook, "The Tacoma-Narrows Bridge Collapse." *Physics Today* November 2015, p. 64.

3. Donald W. Olson, **Steven F. Wolf**, Joseph M. Hook, and Russell L. Doescher, "The Tacoma-Narrows Bridge Collapse on film and video." *The Physics Teacher* **53**, 461 (2015).

4. **Steven F. Wolf**, Daniel P. Dougherty, and Gerd Kortemeyer. "Rigging the Deck—Selecting Good Problems for Expert-Novice Card-Sorting Experiments" *Phys. Rev. ST-PER* **8** 020116 (2012).

5. **Steven F. Wolf**, Daniel P. Dougherty, and Gerd Kortemeyer. "An Empirical Approach to Interpreting Card-sorting Data." *Phys. Rev. ST-PER* **8** 010124 (2012).

6. Émerson Cruz, Brian O'Shea, Werner Schaffenberger, **Steven Wolf**, and Gerd Kortemeyer. "Tutorials in Introductory Physics: The Pain and the Gain." *The Physics Teacher* **48**, 453 (2010).

7. T. D. S. Stanislaus, **S. Wolf**, et.al. Measurement of the total cross section of the reaction $K^- p \longrightarrow \Sigma^0 \gamma$ between 514 and 750 MeV/c. *Phys. Rev. C* **79**, 015203 (2009).

8. R. Manweiler, **S. Wolf**, et.al. Measurement of the $K^- p \longrightarrow \Sigma^0 \pi^0$ reaction between 514 and 750 MeV/c. *Phys. Rev. C* **77**, 015205 (2008).

9. Qin, Z., R. E. Denton, N. A. Tsyganenko, and **S. Wolf** (2007), Solar wind parameters for magnetospheric magnetic field modeling, *Space Weather*, **5**, S11003, doi:10.1029/2006SW000296.

Refereed Conference Proceedings

1. T. Sault, H. Close, and S. Wolf, "Student Cognition in Physics Group Exams", presented at the Physics Education Research Conference 2018, Washington, DC, 2018, DOI: 10.1119/perc.2018.pr.Sault

2. E. Carr, T. Sault, and **S. Wolf**, "Student Attitudes on Group Exams in STEM Courses", presented at the Physics Education Research Conference 2018, Washington, DC, 2018, DOI: 10.1119/perc.2018.pr.Carr.

3. **S. Wolf**, T. Sault, and H. Close, "Information flow in group exams", presented at the Physics Education Research Conference 2017, Cincinnati, OH, 2017 DOI: 10.1119/perc.2017.pr.106

4. **S. Wolf**, C. Blakeney, and H. Close, "Group Formation on Physics Exams", presented at the Physics Education Research Conference 2016, Sacramento, CA DOI: 10.1119/perc.2016.pr.095

5. **SF Wolf**, L Doughty, PW Irving, EC Sayre, MD Caballero, "Just Math: A new epistemic frame" presented at the Physics Education Research Conference 2014, Minneapolis, MN DOI: 10.1119/perc.2014.pr.065

6. B Modir, PW Irving, **SF Wolf**, EC Sayre, "Learning about the Energy of a Hurricane System through an Estimation Epistemic Game" presented at the Physics Education Research Conference 2014, Minneapolis, MN DOI: 10.1119/perc.2014.pr.044

7. Kristen N. Bieda, **Steven Wolf**, and Raven McCrory, "One solution to two problems: Teacher education students as teachers of undergraduate developmental mathematics," in Proceedings of the 35th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Chicago, IL: University of Illinois at Chicago, 737-740 (2013).

8. **Steven F. Wolf**, Daniel P. Dougherty, and Gerd Kortemeyer. "Differentiating expert and novice cognitive structures." AIP Conference Proceedings, **1513**, 426-429 (2013)

9. **S. Wolf**, P. Wrzesinski, and M. Dantus, "Standoff Chemical Detection Using Single-Beam CARS," in Conference on Lasers and Electro-Optics/International Quantum Electronics Conference, OSA Technical Digest (CD) (Optical Society of America, 2009), paper CFU1. *Invited Talk.*

10. Z Qin, RE Denton, N Tsyganenko, and **S Wolf**, " Solar Wind Parameters for Magnetic Field Modeling." AGU Spring Meeting Abstracts, (2006)

11. Nyden (NIST), et. al. "Towards the Development of a Unified Reaction Rate Theory for Large Molecules in Condensed Phases." The Fourteenth Annual BCC Conference on Flame Retardency (2003).

Presentations

Invited Talks

1. **Steven F. Wolf** "Gaining consensus within the department around computation." American Association of Physics Teachers Summer meeting *Invited Panelist.*

2. **Steven F. Wolf** "But can they DO it? Using educational research to investigate how students become practicing physicists." East Carolina University Department of Physics Colloquium, Greenville, NC March 19, 2015.

3. **Steven F. Wolf** "But can they DO it? Using educational research to investigate how students become practicing physicists." University of Lousiville Department of Physics and Astronomy Colloquium, Louisville, KY April 3, 2014.

4. **Steven F. Wolf** "But can they DO it? Using educational research to investigate how students become practicing physicists." Wright State University Physics Department Colloquium, Dayton, OH February 12, 2014.

5. **Steven F. Wolf** "Rigging your Card Games — Re-examining Expert and Novice Categorizations of Physics Problems—or—How I learned to love Graph Theory." Lyman Briggs College, SURIEM seminar series. East Lansing, MI, July 20, 2012.

National Conference Presentations

1. Timothy Sault, Hunter G. Close, and **Steven F. Wolf**, "Collaboration structure and student group exam performance" presented at the Physics Education Research Conference, Washington, D.C., *Contributed Poster*

2. Timothy Sault, Hunter G. Close, and **Steven F. Wolf**, "Collaboration structure and student group exam performance" presented American Association of Physics Teachers Summer Meeting, Washington, D.C., *Contributed Talk*

3. Erik Tyler Carr, Timothy Sault, and **Steven F. Wolf**, "Student Attitudes on Group Exams in STEM Courses" presented at the Physics Education Research Conference, Washington, D.C., *Contributed Poster*

4. Erik Tyler Carr, Timothy Sault, and **Steven F. Wolf**, "Student Attitudes on Group Exams in STEM Courses" presented at the American Association of Physics Teachers Summer Meeting, Washington, D.C., *Contributed Poster*

5. Feng Li, Mark W. Sprague, Joi P. Walker, and **Steven F. Wolf**, "Introductory physics lab practical exam development: Investigation design, explanation, and argument", presented at the Physics Education Research Conference, Washington, D.C., *Contributed Poster*

6. Ryan Mezera, Sarit Johnston, Kevin White, and **Steven F. Wolf**, "Surviving STEM: Pathways to getting a STEM degree", presented at the Physics Education Research Conference, Washington, D.C., *Contributed Poster*

7. Ryan Mezera, Sarit Johnston, Kevin White, and **Steven F. Wolf**, "Surviving STEM: Pathways to getting a STEM degree", presented at the American Association of Physics Teachers Summer Meeting, Washington, D.C., *Contributed Poster*

8. **Steven F. Wolf**, T. Sault, and H. Close, "Analyzing Information Flow During Physics Group Exams", presented at the Physics Education Research Conference 2017, Cincinatti, OH *Contributed Poster.*

9. **Steven F. Wolf**, T. Sault, and H. Close, "Analyzing Information Flow During Physics Group Exams", presented at the American Association of Physics Teachers Summer Meeting, Cincinatti, OH *Contributed Talk.*

10. **Steven F. Wolf**, Cody Blakeney, and Hunter G. Close "Group Formation on Group Exams" 2016 Physics Education Research Conference, Sacramento, CA *Poster Presentation.*

11. **Steven F. Wolf**, Cody Blakeney, and Hunter G. Close "Group Formation on Group Exams" 2016 American Association of Physics Teachers Summer Meeting, Sacramento, CA. *Contributed Talk* Session ID CB02.

12. **Steven F. Wolf** and David Donnelly "Development of a Survey to Assess Transformative Experience in an Introductory Calculus-Based Mechanics Course." 2015 Physics Education Research Conference, College Park, MD. *Poster presentation.*

13. **Steven F. Wolf**, Christopher Gardner, and Hunter Close, "Group Formation and Student Response Patterns on Group Exams." 2015 American Association of Physics Teachers Summer Meeting, College Park, MD. *Contributed Talk* Session ID EK04.

14. **Steven F. Wolf**, Leanne Doughty, Paul W. Irving, Eleanor C. Sayre, and Marcos D. Caballero, "Just Math: A New Epistemic Frame." 2014 Physics Education Research Conference, Minneapolis, MN. *Poster presentation* Poster P2-59.

15. **Steven F. Wolf**, Leanne Doughty, Paul W. Irving, Eleanor C. Sayre, and Marcos D. Caballero, "Just Math: A New Epistemic Frame." American Association of Physics Teachers Summer Meeting 2014, Minneapolis, MN, *Poster presentation* Session ID PST1C26.

16. **Steven F. Wolf**, Daniel P. Dougherty, and Gerd Kortemeyer, "Re-examining the Foundations of Expert-Novice Categorization Experiments." National Association of Research in Science Teaching Conference, Strand 5. Rio Grande, Puerto Rico, April 6, 2013 *Contributed Talk.*

17. **Steven F. Wolf**, Daniel P. Dougherty, and Gerd Kortemeyer, "Rigging Your Card Games – Differentiating Expert from Novice." Physics Education Research Conference Summer 2012, Philiadelphia, PA. *Poster presentation*, Poster F2.

18. **Steven F. Wolf**, Daniel P. Dougherty, and Gerd Kortemeyer, "Interpreting Card-Sorting Data with Categorization Graphs" American Association of Physics Teachers Summer Meeting 2012, Philiadelphia, PA. Session ID DH06. *Contributed Talk*

19. **Steven F. Wolf**, Daniel P. Dougherty, and Gerd Kortemeyer, "An Empirical Approach to Interpreting Card-sorting Data." Physics Education Research Conference Summer 2011, Omaha, NE. *Poster presentation*

20. **Steven F. Wolf**, Daniel P. Dougherty, and Gerd Kortemeyer, "An Empirical Approach to Interpreting Card-sorting Data." American Association of Physics Teachers Summer Meeting 2011, Omaha, NE. Session ID GH02. *Contributed Talk*

Intramural Talks and Poster Presentations

1. Marshall Adkins, Austin McCauley, Eleanor W. Close, and **Steven F. Wolf**, "Conversation Dynamics and Building Connections through Conversations." ECU Research and Creative Achievement Week. (2019, April). Contributed Poster.

2. Aaron Bain, Timothy Sault, **Steven F. Wolf**, "Describing Collaborative Exams Using Random Graphs." ECU Research and Creative Achievement Week. (2019, April). Contributed Poster.

3. Marshall Adkins, Austin McCauley, Eleanor W. Close, and **Steven F. Wolf**, "Conversation Dynamics and Building Connections through Conversations." North Carolina Section AAPT Meeting. (2019, March). Contributed Poster.

4. Aaron Bain, Timothy Sault, **Steven F. Wolf**, "Describing Collaborative Exams Using Random Graphs." North Carolina Section AAPT Meeting. (2019, March). Contributed Poster.

5. Timothy Sault, Hunter Close, and **Steven F. Wolf** "What makes a Student Network a Social Network?" North Carolina Section AAPT Fall 2018 Meeting. **Award: *Best Graduate Student Poster***.

6. Joi P. Walker and Steven F. Wolf "X-Labs: Cross-Disciplinary Practice Focused Undergraduate Laboratory Transformation" ECU Physics Colloquium.

7. Timothy Sault, **Steven F. Wolf**, Hunter Close "Student Cognition in Physics Group Exams" North Carolina Section AAPT Spring 2018 Meeting. *Contributed talk.*

8. Erik "Tyler" Carr, Timothy Sault, **Steven F. Wolf** "Student Attitudes on Group Exams in STEM Courses" North Carolina Section AAPT Spring 2018 Meeting. *Contributed poster.*

9. Ryan Mezera, Sarit Johnson, Kevin White, and **Steven F. Wolf** "Surviving STEM: Pathways to getting a STEM degree" North Carolina Section AAPT Spring 2018 Meeting. *Contributed poster.*

10. **Steven F. Wolf**, Kristine Callis-Duehl, Daniel L. Dickerson, and Joi P. Walker "Learning Assistant Programs: A tool for transforming Introductory STEM courses and recruiting Science teachers" North Carolina Section AAPT Fall 2017 Meeting. *Contributed talk.*

11. Timothy Sault, **Steven Wolf**, and Hunter Close "Information Flow on Group Exams" North Carolina Section AAPT Fall 2017 Meeting. *Contributed talk.*

12. Ryan Mezera and **Steven Wolf** "Using National Assessments to Evaluate the Effectiveness of Instruction" North Carolina Section AAPT Fall 2017 Meeting. *Contributed poster.*

13. **Steven F. Wolf**, Timothy Sault, and Hunter G. Close, "Information Flow on Group Exams" North Carolina Section AAPT Spring 2017 Meeting. *Poster Presentation*

14. Erica Clark, Eleanor Close, and **Steven F. Wolf**, "Using symbols to convey physical meaning" ECU Research and Creative Achievement Week *Poster Presentation*

15. Timothy Sault, David Donnelly, and **Steven F. Wolf**, "Understanding Transformative Experience in Physics" ECU Research and Creative Achievement Week *Poster Presentation.*

16. Dickerson, D.L., Wolf, S.F., Callis-Duehl, K., & Walker, J. (February 24, 2017). *ECU STEM CoRE: A partner for healthcare workforce diversity solutions.* The annual Jean Mills Health Symposium. Greenville, NC.

17. Erica Clark, Eleanor Close, and **Steven F. Wolf**, "Using symbols to convey physical meaning" North Carolina Section AAPT Fall 2016 Meeting. *Poster Presentation*

18. Timothy Sault, David Donnelly, and **Steven F. Wolf**, "Understanding Transformative Experience in Physics" North Carolina Section AAPT Fall 2016 Meeting. *Poster Presentation.*

19. **Steven F. Wolf**, Cody Blakeney, and Hunter Close, "Group Formation on Physics Exams" North Carolina Section AAPT Fall 2015 Meeting. *Contributed Talk.*

20. **Steven F. Wolf** and Marcos "Danny" Caballero, "It's Just Math: A new Epistemic Frame" CREATE for STEM Institute 2014 Mini-Conference. *Poster presentation*

21. Kenneth Bradfield, Raven McCrory, and **Steven Wolf**, "TEAM: Teacher Education and Mathematics for Improving outcomes in MTH1825/100E" CREATE for STEM Institute 2014 Mini-Conference. *Poster presentation*

22. Kristen Bieda, Raven McCrory, and **Steven Wolf**, "TEAM: Teacher Education and Mathematics for Improving outcomes in MTH1825/100E" CREATE for STEM Institute 2013 Mini-Conference. *Poster presentation*

23. **Steven F. Wolf**, Daniel P. Dougherty, and Gerd Kortemeyer, "Rigging Your Card Games – Differentiating Expert from Novice." CREATE for STEM Institute 2012 Mini-Conference. *Poster presentation*

24. **Steven F. Wolf**, "Rigging your Card Games—Re-examining Expert Categorizations of Physics Problems." CRCSTL seminar, Michigan State University (2011).

25. **Steven F. Wolf**, "Expert Categorization and Solution of Introductory Physics Problems." CRCSTL seminar, Michigan State University (2010).

Professional Memberships

- American Association of Physics Teachers – Physics Education Research Topical Group
- American Physical Society – Topical Group on Physics Education Research
- National Association of Research in Science Teaching
- PICUP (Partnership for the Integration of Computation in Undergraduate Physics) member

Honors and Awards

- 2012 American Association of Physics Teachers Outstanding Teaching Assistant award.
- 2012 Lyman Briggs College Outstanding TA award. ($1000)
- 2011 Michigan State University CoGS travel grant award. ($500)
- 2003 Inducted into Sigma Pi Sigma, National Physics Honors society.
- 2000–2003 Valparaiso University Presidential Academic Honors for Student Athletes (one award per year).

Service

2019 – present	Member ECU Enterprise Data Management Steering Committee
2019 – present	Editor Physics Education Research Conference Proceedings
2018 – 2019	Assistant Editor Physics Education Research Conference Proceedings
2018 – present	Officer North Carolina Section of the American Association of Physics Teachers – 4 year college representative
Fall 2017	Site host of the North Carolina Section AAPT fall meeting
2017 – present	ECU Learning Assistant Program Director
2017 – present	ECU Faculty Senate (Physics department representative)
2016 – present	IMAGINE-NC Grant Evaluator with the Aurora Fossil Museum
2016 – 2017	Referee *European Journal of Physics*
2016 – present	ECU Physics Department PHYS 2350/2360 Topics committee
2016 – present	Chair: ECU Physics Department PHYS 2350/2360 Textbook committee
2016 – 2018	North Carolina Regional Science Olympiad event coordinator (Electric Vehicle, Battery Buggy, Mousetrap Vehicle)
2016 – present	ECU Physics Department PHYS 1251/1261 Laboratory committee
2015 – present	ECU Physics Department Undergraduate Program Committee
2015 – present	ECU Physics Department student advisor
2014 – 2015	TXST Physics Undergraduate Majors Committee Member
2014 – 2015	H-LSAMP (Houston-Louis Stokes Alliance for Minority Scholars Program) Mentor
2011 – 2012, 2014 – 2017	Article Referee PERC Proceedings
2013 - 2014	CREATE Seminar Series committee member
2009, 2010, 2014	Michigan Science Olympiad State competition volunteer

Research Students Mentored

Aaron Bain (ECU)
Marshall Adkins (ECU)
Austin McCauley (TXST)
Erik "Tyler" Carr (ECU)
Rohin Gawdi (ECU)
William Burgess (ECU)
Erica Clark (ECU)
Ryan Mezera (ECU)
Samantha Kijowski (ECU)
Patricia Malcolm (ECU)
Christopher Gardner (TXST)
Yinebeb Zenaw (TXST)
Cody Blakeney (TXST)
Kenneth Bradfield (MSU)

Supervised Theses

Timothy (Salazar) Sault (ECU) *In Progress*

Related Professional Skills

- Project Management
- Team Leadership and Mentoring
- Proficient programmer in R and LaTeX.
- Experienced with parallel computing using R.
- Experienced with the following statistical and computational techniques:
  - Structural equation modeling (SEM)
  - Non-parametric data analysis
  - Regression modeling
  - Principal Components Analysis
  - Network Analysis
  - Monte Carlo analysis
  - Simulated Annealing
  - Graph Theory parameterization and visualization
  - Power analysis
  - Matched sampling