

Geoffrey Lovelace

Department of Physics, California State University, Fullerton
800 North State College Blvd., Fullerton, CA 92834 (657) 278-7501
glovelace@fullerton.edu <https://geoffrey-lovelace.com>

Curriculum Vitae revised October 8, 2024

Personal Data, Education, and Appointments

Personal Data

Born April 1980, Huntingdon Valley, Pennsylvania
Married Elizabeth Wendel, August 2015; child William born April 2017

Education

Ph.D. in Physics <i>California Institute of Technology</i>	Oct. 2002 – Jun. 2007
B.S. in Physics <i>University of Oklahoma</i>	Aug. 1998 – May 2002

Employment

Professor of Physics <i>Department of Physics</i> <i>California State University, Fullerton</i>	Aug. 2021 – present
Associate Professor of Physics <i>Department of Physics</i> <i>California State University, Fullerton</i>	Aug. 2017 – Aug. 2021
Assistant Professor of Physics <i>Department of Physics</i> <i>California State University, Fullerton</i>	Aug. 2012 – Aug. 2017
Research Associate <i>Department of Astronomy</i> <i>Cornell University</i>	Sep. 2007 – Aug. 2012
Postdoctoral Scholar <i>Department of Physics</i> <i>California Institute of Technology</i>	Jul. 2007 – Aug. 2007

Visiting Appointments

Visitor in Theoretical Astrophysics Aug. 2018 – present
Division of Physics, Mathematics, and Astronomy
California Institute of Technology

Visiting Associate in Physics Aug. 2012 – July 2013
Department of Physics
California Institute of Technology

Research

Philanthropic Support

Nicholas and Lee Begovich's Bequest to Cal State Fullerton 2020
\$10,000,000 to CSUF, including \$6,650,000 to the Nicholas and Lee Begovich
Center for Gravitational-Wave Physics and Astronomy

Extramural Grants

12 extramural grants funded (9 as PI) for a total of \$4,671,024 (\$2,609,730 as PI) to Cal State Fullerton

1. Co-PI, National Science Foundation, EES — Centers for Research Excellence 2023
in Science and Technology (CREST), "CREST Phase I Preliminary Proposal:
Center for Gravitational-Wave Physics and Astronomy"
\$0, invited to submit full proposal in 2024
2. Co-PI, National Science Foundation, EES — Centers for Research Excellence 2023
in Science and Technology (CREST), "Planning Proposal: CREST Center for
Gravitational-Wave Physics and Astronomy"
\$200,000 over two years, funded 2023 – 2025
3. Key Personnel, W. M. Keck Foundation, Research Program Phase 1, 2023
"Revealing Signatures of Quantum Gravity in Gravitational Waves"
\$1,100,000 over three years, declined
4. Co-PI, National Science Foundation, PHY — LIGO Research Support, "Collaborative 2022
Research: Identifying and Evaluating Sites for Cosmic Explorer"
\$904,704 over three years, funded 2023 – 2026
5. PI, National Science Foundation, AST — Partnerships in Astronomy & Astrophysics 2022
Research and Education (PAARE), "The CSUF-led partnership
for inclusion of underrepresented groups in gravitational-wave astronomy"
*\$1,180,212 over five years, including sub-awards to Syracuse University,
Northwestern University, and Washington State University, funded 2022–2027*
6. PI, National Science Foundation, PHY — Gravitational Theory, "RUI: 2021
Next-generation numerical relativity for future gravitational-wave observatories"
\$225,832 over three years, funded 2022–2025

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7. PI for CSUF, National Science Foundation, PHY — Gravitational Experiments, “Collaborative Research: The Next Generation of Gravitational Wave Detectors” 2018
\$211,283 to CSUF, funded 2018–2021
 8. Co-PI for CSUF, National Science Foundation, PHY — Gravitational Experiments, “Collaborative Research: The Next Generation of Gravitational Wave Detectors” 2017
\$206,227 to CSUF, declined
 9. PI for CSUF, National Science Foundation, PHY — LIGO Research Support, “Collaborative Research: LSC Center for Coatings Research” 2016
\$136,819 to CSUF, funded 2017–2020, collaborative proposal spanning 10 institutions, led by Stanford
 10. PI, National Science Foundation, PHY — Integrative Activities in Physics, “CAREER: Computational gravitational-wave science and education in the era of first observations” 2016
\$400,070, funded 2017–2022
 11. PI, National Science Foundation, PHY — Gravitational Theory, “RUI: Computational gravitational-wave research for the era of first observations” 2015
\$135,000 over three years, funded 2016–2019
 12. Co-PI, National Science Foundation, AST — PAARE, “Catching a new wave: the CSUF-Syracuse partnership for inclusion of underrepresented groups in gravitational-wave astronomy” 2015
\$956,590 over five years, including sub-award to Syracuse University, funded 2016–2021
 13. PI, National Science Foundation, PHY — Integrative Activities in Physics, “CAREER: Computational gravitational-wave science and education for the era of first observations” 2015
\$420,190 over five years, declined
 14. PI, National Science Foundation, MRI, “MRI: Acquisition of a high-performance computer cluster for gravitational-wave astronomy with Advanced LIGO” 2014
\$119,791 over three years, funded 2014–2017
 15. Co-PI, National Science Foundation, AST - PAARE, “Catching the new wave: the CSUF-Syracuse partnership for advancing minority participation in gravitational-wave astronomy” 2013
\$977,931 over five years to CSUF, \$1,476,553 total budget, declined
 16. PI, Research Corporation for Science Advancement, Multi Investigator 2013 Cottrell College Science Award, “Developing a numerical injection analysis pipeline for gravitational waves from merging black holes and neutron stars” 2013
\$75,000 over two years, funded 2014–2017

17. PI, National Science Foundation, PHY - Gravitational Theory, 2012
 “RUI: 2012 Numerical Simulations of Merging Black Holes and Neutron Stars”
\$125,723 over three years, funded 2013–2016

Intramural Grants

- PI, Course Redesign with Technology: Sustaining Success, “Early intervention
 in introductory mechanics” 2015
\$8,824 (\$1,960 + \$6,864 teaching release), funded 2015–2016
- PI, Junior/Senior Faculty Grant for Research, Scholarship, 2015
 and Creative Activity, “Modeling thermal noise for gravitational-wave antennas”
\$6,312 teaching release, declined
- PI, Junior/Senior Faculty Grant for Research, Scholarship, 2013
 and Creative Activity, “Simulating merging black holes on a computer cluster”
\$1986 + \$4747 for teaching release, funded 2013–2014

External Computer Time Grants

- Co-PI, ACCESS Allocations Service, 2024
 “Gravitational Waves from Compact Binaries: Computational Contributions to LIGO”
*27 million CPU-hours computer time awarded
 to the Simulating eXtreme Spacetimes Collaboration*
- Co-PI, ACCESS Allocations Service, 2023
 “Gravitational Waves from Compact Binaries: Computational Contributions to LIGO”
*25 million CPU-hours computer time awarded
 to the Simulating eXtreme Spacetimes Collaboration*
- Co-PI, ACCESS Allocations Service, 2022
 “Gravitational Waves from Compact Binaries: Computational Contributions to LIGO”
*19 million CPU-hours computer time awarded
 to the Simulating eXtreme Spacetimes Collaboration*
- Co-PI, Frontera Large-Scale Community Partnerships, 2021
 “Gravitational Waves from Compact Binaries: Computational Contributions to LIGO”
*42 million CPU-hours computer time awarded
 to the Simulating eXtreme Spacetimes Collaboration*
- Co-PI, Extreme Science and Engineering Discovery Environment, 2021
 “Gravitational Waves from Compact Binaries: Computational Contributions to LIGO”
*8.2 million CPU-hours computer time awarded
 to the Simulating eXtreme Spacetimes Collaboration*
- Co-PI, Extreme Science and Engineering Discovery Environment, 2020
 “Gravitational Waves from Compact Binaries:
 Computational Contributions to LIGO”
*15.1 million CPU-hours computer time awarded
 to the Simulating eXtreme Spacetimes Collaboration*

Co-PI, Frontera Large-Scale Community Partnerships, "Gravitational Waves from Compact Binaries: Computational Contributions to LIGO" <i>56 million CPU-hours computer time awarded to the Simulating eXtreme Spacetimes Collaboration</i>	2020
Co-PI, Extreme Science and Engineering Discovery Environment, "Gravitational Waves from Compact Binaries: Computational Contributions to LIGO" <i>14 million CPU-hours computer time awarded to the Simulating eXtreme Spacetimes Collaboration</i>	2019
Co-PI, Extreme Science and Engineering Discovery Environment, "Gravitational Waves from Compact Binaries: Computational Contributions to LIGO" <i>7.1 million CPU-hours computer time awarded to the Simulating eXtreme Spacetimes Collaboration</i>	2018
Co-PI, Extreme Science and Engineering Discovery Environment, "Gravitational Waves from Compact Binaries: Computational Contributions to LIGO" <i>Declined</i>	2018
Co-PI, Extreme Science and Engineering Discovery Environment, "Gravitational Waves from Compact Binaries: Computational Contributions to LIGO" <i>6.41 million CPU-hours computer time awarded to the Simulating eXtreme Spacetimes Collaboration</i>	2016
Co-PI, Extreme Science and Engineering Discovery Environment, "Gravitational Waves from Compact Binaries: Computational Contributions to LIGO" <i>6.23 million CPU-hours computer time awarded to the Simulating eXtreme Spacetimes Collaboration</i>	2015
Co-PI, Extreme Science and Engineering Discovery Environment, "Gravitational Waves from Compact Binaries: Computational Contributions to LIGO" <i>6.15 million CPU-hours computer time awarded to the Simulating eXtreme Spacetimes Collaboration</i>	2014
Co-PI, Extreme Science and Engineering Discovery Environment, 2013 "Gravitational Waves from Compact Binaries: Computational Contributions to LIGO" <i>3.2 million CPU-hours computer time awarded to the Simulating eXtreme Spacetimes Collaboration</i>	2013

Selected Peer-Reviewed Publications

*Publications selected from the complete list of publications below. Note: California State University, Fullerton Student Co-Authors in **Bold-Italics**.*

1. Marissa Walker, Vijay Varma, Geoffrey Lovelace, and Mark A. Scheel. "Numerical-relativity surrogate modeling with nearly extremal black-hole spins." *Class. Quantum Grav.* **40**, 055003 (2023). <https://doi.org/10.1088/1361-6382/acb3a7>.

2. Nils L. Fischer, *Samuel Rodriguez*, Tom Wlodarczyk, **Geoffrey Lovelace**, Harald P. Pfeiffer, Gabriel S. Bonilla, Nils Deppe, François Hébert, Lawrence E. Kidder, Jordan Moxon, William Throwe. “High-accuracy numerical models of Brownian thermal noise in thin mirror coatings.” *Class. Quantum Grav.* **40**, 025015 (2023). <https://doi.org/10.1088/1361-6382/acad62>.
3. Nils Deppe, François Hébert, Lawrence E. Kidder, William Throwe, Isha Anantpurkar, Cristóbal Armaza, Gabriel S. Bonilla, Michael Boyle, Himanshu Chaudhary, Matthew D. Duez, Nils L. Fischer, Francois Foucart, Matthew Giesler, Jason S. Guo, Yoonsoo Kim, Prayush Kumar, Isaac Legred, Dongjun Li, **Geoffrey Lovelace**, Sizheng Ma, Alexandra Macedo, *Denyz Melchor*, *Marlo Morales*, Jordan Moxon, Kyle C. Nelli, Eamonn O’Shea, Harald P. Pfeiffer, *Teresita Ramirez*, Hannes R. Rüter, *Jennifer Sanchez*, Mark A. Scheel, *Sierra Thomas*, Daniel Vieira, Nikolas A. Wittek, Tom Wlodarczyk, Saul A. Teukolsky. “Simulating magnetized neutron stars with discontinuous Galerkin methods.” *Phys. Rev. D* **105**, 123031 (2022). <https://doi.org/10.1103/PhysRevD.105.123031>.
4. Michael Boyle, Daniel Hemberger, Dante A.B. Iozzo, **Geoffrey Lovelace**, Serguei Ossokine, Harald P. Pfeiffer, Mark A. Scheel, Leo C. Stein, Charles J. Woodford, Aaron B. Zimmerman, *Nousha Afshari*, Kevin Barkett, Jonathan Blackman, Katerina Chatziioannou, Tony Chu, *Nicholas Demos*, Nils Deppe, Scott E. Field, Nils L. Fischer, *Evan Foley*, Heather Fong, *Alyssa Garcia*, Matthew Giesler, Francois Hebert, Ian Hinder, *Reza Katebi*, *Haroon Khan*, Lawrence E. Kidder, Prayush Kumar, *Kevin Kuper*, Halston Lim, Maria Okounkova, *Teresita Ramirez*, *Samuel Rodriguez*, Hannes R. Rüter, Patricia Schmidt, Bela Szilagy, Saul A. Teukolsky, Vijay Varma, and Marissa Walker. “The SXS Collaboration catalog of binary black hole simulations.” *Class. Quantum Grav.* **36**, 195006 (2019).
5. Katerina Chatziioannou, **Geoffrey Lovelace**, Michael Boyle, Matthew Giesler, Daniel A. Hemberger, *Reza Katebi*, Lawrence E. Kidder, Harald P. Pfeiffer, Mark A. Scheel, and Béla Szilágyi. “Measuring the properties of nearly extremal black holes with gravitational waves.” *Phys. Rev. D* **98**, 044028 (2018). <https://doi.org/10.1103/PhysRevLett.121.231103>
6. **Geoffrey Lovelace**, *Nicholas Demos*, and *Haroon Khan*. “Numerically modeling Brownian thermal noise in amorphous and crystalline thin coatings.” *Class. Quantum Grav.* **35**, 025017 (2017).
7. **Geoffrey Lovelace**, Carlos O. Lousto, James Healy, Mark A. Scheel, *Alyssa Garcia*, Richard O’Shaughnessy, Michael Boyle, Manuela Campanelli, Daniel A. Hemberger, Lawrence E. Kidder, Harald P. Pfeiffer, Béla Szilágyi, Saul A. Teukolsky, and Yosef Zlochower. “Modeling the source of GW150914 with targeted numerical-relativity simulations.” *Class. Quantum Grav.* **33**, 244002 (2016).
8. B. P. Abbott et al., for the LIGO Scientific Collaboration and the Virgo Collaboration. “Observation of Gravitational Waves from a Binary Black Hole Merger.” *Phys. Rev. Lett.* **116**, 061102 (2016).

9. Geoffrey Lovelace, Mark A. Scheel, Robert Owen, Matthew Giesler, **Reza Katebi**, Béla Szilágyi, Tony Chu, **Nicholas Demos**, Daniel A. Hemberger, Lawrence E. Kidder, Harald P. Pfeiffer, **Nousha Afshari**. “Nearly extremal apparent horizons in simulations of merging black holes.” *Class. Quantum Grav.* **32**, 065007 (2015). *IOPselect article. Selected for CQG+ Author Insight.*
10. Abdul H. Mroué, Mark A. Scheel, Béla Szilágyi, Harald P. Pfeiffer, Michael Boyle, Daniel A. Hemberger, Lawrence E. Kidder, Geoffrey Lovelace, Serguei Ossokine, Nicholas W. Taylor, Anil Zenginoglu, Luisa T. Buchman, Tony Chu, **Evan Foley**, **Matthew Giesler**, Robert Owen, Saul A. Teukolsky. “A catalog of 174 high-quality binary black-hole simulations for gravitational-wave astronomy.” *Phys. Rev. Lett.* **111**, 241104 (2013).

Undergraduate and Graduate Research Students Advised

1. **Kyle Pannone** M.S., 2024
2. **Esther Lopez** M.S., 2024
3. **Daniel Tellez** B.S., 2024
4. **Andrea Ceja** B.S., 2023
Now pursuing a Ph.D. in physics at Northwestern University
5. **Noora Ghadiri** B.S., 2022
Pursuing a Ph.D. in physics at University of Illinois Urbana Champaign
6. **Marlo Morales** B.S., 2022
M.S. in physics from Washington State University, 2023
7. **Samuel Rodriguez** M.S., 2021
8. **Teresita Ramirez Aguilar** B.S., 2021
*Pursuing Ph.D. in astronomy at Northwestern University
NSF Graduate Research Fellow*
9. **Sierra Thomas** B.S., 2020
Pursuing Ph.D. in physics at Syracuse University
10. **Jennifer Sanchez** B.S., 2020
M.S. in physics at Northwestern University, 2024
11. **Denyz Melchor** B.S., 2020
*Pursuing Ph.D. in astrophysics at University of California, Los Angeles
NSF Graduate Research Fellow*
12. **Nicholas Demos** B.S., 2017
Pursing Ph.D. in physics at Massachusetts Institute of Technology
13. **John Derby** M.S., 2017

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14. **Alyssa Garcia** B.S., 2017
Ph.D. in Physics, University of Michigan, 2023
NSF Graduate Research Fellow
 15. **Haroon Khan** B.S., 2017
Now Electrical Engineer at NASA Ames
 16. **Nousha Afshari** B.S., 2016
Pursuing a graduate degree in medical physics at Louisiana State University
 17. **Kevin Kuper** B.S., 2015
Ph.D. in optics, University of Arizona, 2022
 18. **Evan Foley** M.S., 2014
Now Senior EMC Engineer at Rivian
 19. **Reza Katebi** M.S., 2014
Ph.D. in physics, Ohio University, 2019
Now a Senior Staff AI Engineer at Tesla
 20. **Matthew Giesler** B.S., 2013
Ph.D. in physics, California Institute of Technology, 2020

Selected Invited Presentations

1. “Modeling binary black holes with numerical relativity for LISA” Sep. 2024
Fundamental Physics Meets Waveforms with LISA, Max Planck Institute for Gravitational Physics, Golm, Germany
2. “Simulating merging binary black holes with SpECTRE” Jun. 2024
NAHOMCon’24 and NENAD’24 mini-symposium 12: high-order methods for computational relativity, Dartmouth College, Hanover, New Hampshire
3. “Simulating binary black holes with nearly extremal spins” Mar. 2024
Taking it to the extreme: symmetries and dynamics of extremal black holes, Princeton University, Princeton, New Jersey
4. “Modeling merging black holes with numerical relativity for current and future gravitational-wave observatories” Feb. 2023
University of Arkansas Physics Colloquium, Fayetteville, Arkansas
5. “Numerical relativity for next-generation gravitational-wave observatories” Apr. 2022
Kavli Institute for Theoretical Physics Conference: Storming the Gravitational-Wave Frontier, Santa Barbara, California
6. “Numerical relativity in the era of gravitational-wave observations” Jan. 2019
High energy and Gravity Seminar, University of California, Santa Barbara Santa Barbara, California
7. “The first observations of gravitational waves from merging black holes” Mar. 2017
Physics and Astronomy Colloquium, Swarthmore College, Swarthmore, Pennsylvania

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8. "Simulations of binary-black-hole mergers" Jan. 2017
American Physical Society April Meeting, Washington, D.C.
 9. "The first observations of gravitational waves from merging black holes" Sep. 2016
Physics and Astronomy Colloquium, University of Oklahoma, Norman, Oklahoma
 10. "Simulating colliding black holes and mirror thermal noise for gravitational-wave astronomy" Sep. 2015
Physics Colloquium, California State University, Northridge, California

Selected Contributed Presentations

1. "Simulating merging binary black holes with SpECTRE" Apr. 2024
American Physical Society April Meeting Sacramento, California
2. "Using SpECTRE to simulate binary-black-hole inspirals" Apr. 2023
American Physical Society April Meeting Minneapolis, Minnesota
3. "Status of binary-black-hole simulations with SpECTRE" Apr. 2022
American Physical Society April Meeting New York, New York
4. "Progress toward simulating merging black holes with SpECTRE" Apr. 2021
Virtual April APS Meeting
5. "Progress toward simulating merging black holes with SpECTRE" Apr. 2020
Virtual April APS Meeting
6. "Can LIGO measure the spins of nearly extremal, merging binary black holes?" Apr. 2018
American Physical Society April Meeting Columbus, Ohio
7. "Time series projections" Oct. 2017
Interactive tutorial on projecting theoretical gravitational waveforms onto gravitational-wave detector data in the time domain
LIGO-Virgo Waveform Research and Development Team
Face-to-face Meeting, Berlin, Germany
8. "Numerically modeling Brownian thermal noise in amorphous and crystalline thin coatings" Jul. 2017
12th Eduardo Amaldi Conference on Gravitational Waves Pasadena, California
9. "Simulations of binary-black-hole mergers" Feb. 2017
The Dawning Era of Gravitational-Wave Astrophysics, Aspen Center for Physics Winter Conference, Aspen, Colorado

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| 10. "The Discovery of Gravitational Waves from Merging Black Holes" | Oct. 2016 |
| <i>Outreach talks to science classes at Dock Mennonite Academy</i> | |
| <i>Grades 9-12 Campus, Lansdale, PA</i> | |
| 11. "Modeling merging black holes with numerical relativity in the era of first gravitational-wave observations" | Jul. 2016 |
| <i>21st International Conference on General Relativity and Gravitation, Columbia University, New York, New York</i> | |
| 12. "Modeling merging, rapidly rotating black holes with numerical relativity for the era of first gravitational-wave observations" | Apr. 2016 |
| <i>American Physical Society April Meeting, Salt Lake City, Utah</i> | |
| 13. "Modeling crystalline Brownian coating noise with high performance computing" | Jul. 2015 |
| <i>LIGO monthly coatings teleconference</i> | |
| 14. "Nearly extremal apparent horizons in simulations of merging black holes" | Jun. 2015 |
| <i>International Conference on Black Holes, Fields Institute, Toronto, Ontario</i> | |
| 15. "Nearly extremal apparent horizons in simulations of merging black holes" | Apr. 2015 |
| <i>American Physical Society April Meeting, Baltimore, Maryland</i> | |
| 16. "Collisions in Warped Space and Time" | Oct. 2014 |
| <i>Outreach talk to physics classes at Grand Terrace High School, Grand Terrace, California</i> | |
| 17. "Results from numerical simulations of binaries containing nearly extremal black holes" | Sep. 2013 |
| <i>2013 Numerical Relativity and Data Analysis Meeting, Mallorca, Spain</i> | |
| 18. "Nearly extremal black-hole spin in numerical simulations of compact binaries" | Jul. 2013 |
| <i>20th International Conference on General Relativity and Gravitation and 10th Amaldi Conference on Gravitational Waves, Warsaw, Poland</i> | |
| 19. "The tidal disruption of a neutron star by a nearly extremal black hole" | Mar. 2013 |
| <i>29th Annual Pacific Coast Gravity Meeting, Davis, California</i> | |
| 20. "Supercomputer simulations of colliding black holes and neutron stars" | Jun. 2012 |
| <i>Introductory talk to summer research undergraduates, University of Oklahoma, Norman, Oklahoma</i> | |

Teaching

Supervision

Supervision of 20 undergraduate and master's students
for research projects in computational gravitational-wave physics
California State University, Fullerton Aug. 2012 – present

Co-supervision of 4 undergraduate students and 1 graduate
student for computational relativity research projects
Cornell University Jun. 2008 – Jul. 2012

Courses Taught

ASTR 101: Introduction to Astronomy Fall 2024
PHYS 499: Independent Study
PHYS 599: Independent Graduate Research
PHYS 597: Master's Project

ASTR 444: Applications of Gravitation Spring 2024
PHYS 330B: Electromagnetic Theory II
PHYS 499: Independent Study
PHYS 599: Independent Graduate Research
PHYS 597: Master's Project

ASTR 101: Introduction to Astronomy Fall 2023
PHYS 499: Independent Study
PHYS 599: Independent Graduate Research
PHYS 597: Master's Project

PHYS 320: Classical Mechanics Spring 2023
PHYS 499: Independent Study
PHYS 599: Independent Graduate Research
PHYS 597: Master's Project

ASTR 101: Introduction to Astronomy (2 sections) Fall 2022
PHYS 499: Independent Study
PHYS 599: Independent Graduate Research
PHYS 597: Master's Project

ASTR 101: Introduction to Astronomy Spring 2022
ASTR 444: Applications of Gravitation
PHYS 499: Independent Study
PHYS 599: Independent Graduate Research
PHYS 597: Master's Project

CSNM 101: Think Like Einstein	Fall 2021
PHYS 520: Analytical Mechanics	
PHYS 499: Independent Study	
PHYS 599: Independent Graduate Research	
PHYS 597: Master's Project	
ASTR 101: Introduction to Astronomy	Spring 2021
PHYS 330B: Electromagnetic Theory II	
PHYS 499: Independent Study	
PHYS 599: Independent Graduate Research	
PHYS 597: Master's Project	
ASTR 101: Introduction to Astronomy	Fall 2020
PHYS 330A: Electromagnetic Theory I	
PHYS 499: Independent Study	
PHYS 599: Independent Graduate Research	
PHYS 597: Master's Project	
ASTR 101: Introduction to Astronomy	Spring 2020
ASTR 444: Applications of Gravitation — <i>new course pilot</i>	
PHYS 499: Independent Study	
PHYS 599: Independent Graduate Research	
PHYS 597: Master's Project	
ASTR 101: Introduction to Astronomy	Fall 2019
PHYS 499: Independent Study	
PHYS 225: Fundamental Physics: Mechanics — <i>flipped classroom redesign</i>	Spring 2018
ASTR 444: Applications of Gravitation — <i>new course pilot</i>	
PHYS 499: Independent Study	
PHYS 599: Independent Graduate Research	
PHYS 520: Analytical Mechanics	Fall 2017
PHYS 499: Independent Study	
PHYS 225: Fundamental Physics: Mechanics — <i>flipped classroom redesign</i>	Spring 2017
PHYS 300: Survey of Mathematical Physics	
PHYS 499: Independent Study	
PHYS 597: Master's Project	
PHYS 599: Independent Graduate Research	
PHYS 520: Analytical Mechanics	Fall 2016
PHYS 499: Independent Study	
PHYS 597: Master's Project	
PHYS 599: Independent Graduate Research	

PHYS 225: Fundamental Physics: Mechanics — <i>flipped classroom redesign</i>	Spring 2016
ASTR 444: Applications of Gravitation — <i>new course pilot</i>	
PHYS 499: Independent Study	
PHYS 597: Master's Project	
PHYS 599: Independent Graduate Research	
PHYS 499: Undergraduate Independent Study	Fall 2015
PHYS 520: Analytical Mechanics	
PHYS 599: Independent Graduate Research	
PHYS 211: Elementary Physics	Spring 2015
PHYS 211L: Elementary Physics Laboratory	
PHYS 499: Undergraduate Independent Study	
PHYS 499: Undergraduate Independent Study	Fall 2014
PHYS 520: Analytical Mechanics	
PHYS 225: Fundamental Physics: Mechanics — <i>flipped classroom redesign</i>	Spring 2014
PHYS 499: Undergraduate Independent Study	
PHYS 597: Master's Project	
PHYS 599: Independent Graduate Research	
PHYS 499: Undergraduate Independent Study	Fall 2013
PHYS 520: Analytical Mechanics	
PHYS 597: Master's Project	
PHYS 599: Independent Graduate Research	
PHYS 211: Elementary Physics	Spring 2013
PHYS 499: Undergraduate Independent Study	
PHYS 597: Master's Project	
PHYS 599: Independent Graduate Research	
PHYS 211: Elementary Physics	Fall 2012
PHYS 499: Undergraduate Independent Study	
PHYS 599: Independent Graduate Research	

Other Teaching Accomplishments

Workshop on Gravitational Waves and High-Performance Computing <i>Introduced 11 students from Citrus College to gravitational-wave science and high-performance computing through a 1-week summer workshop</i>	Aug. 2024
Workshop on Gravitational Waves and High-Performance Computing <i>Introduced 15 students from Citrus College to gravitational-wave science and high-performance computing through a 1-week summer workshop</i>	Aug. 2023
Workshop on Gravitational Waves and High-Performance Computing <i>Introduced 7 students from Citrus College to gravitational-wave science and high-performance computing through a 1-week summer workshop</i>	Aug. 2022

Virtual Workshop on Gravitational Waves and High-Performance Computing <i>Introduced 22 students from Citrus College to gravitational-wave science and high-performance computing through a 1-week virtual summer workshop</i>	Aug. 2021
Workshop on Gravitational Waves and High-Performance Computing <i>Introduced 22 students from Citrus College to gravitational-wave science and high-performance computing through a 1-week summer workshop</i>	Aug. 2019
Workshop on Gravitational Waves and High-Performance Computing <i>Introduced 16 students from Citrus College to gravitational-wave science and high-performance computing through a 1-week summer workshop</i>	Aug. 2018
Discussion Leader at Gordon Research Conference discussing “Relativity and Gravitation: Contemporary Research and Teaching of Einstein’s Physics” <i>Salve Regina University, Newport, Rhode Island</i>	Jun. 2016
Participant in “Proven Course Redesign” eAcademy on research-based, “flipped classroom” pedagogy <i>California State Polytechnic University, Pomona</i>	Jul. 2013
Designed and presented online lecture introducing aspects of object-oriented programming and the Spectral Einstein Code <i>Cornell University, Ithaca, New York</i>	Jun. 2011

Service

Professional Leadership

Head of Computational Modeling, Cosmic Explorer Project	May 2024 – present
Secretary and Treasurer, American Physical Society Division of Gravitation	Jan. 2017 – Jan. 2021
Senior member, Gravitational-Wave Physics and Astronomy Center (GWPAC) at California State University, Fullerton	Aug. 2012 – present
Member, Executive Committee of the Simulating eXtreme Spacetimes (SXS) collaboration	Nov. 2009 – present

Professional Membership

Active member, Cosmic Explorer Project	Jul. 2018 – present
Active member, LIGO Scientific Collaboration	May 2014 – present
Active member, Simulating eXtreme Spacetimes (SXS) Collaboration	Sep. 2007 – present
Active member, American Physical Society, Division of Gravitation	Feb. 2006 – present

Professional Service

National Science Foundation Review Panelist	Mar. 2024
External examiner, Oberlin College Physics honors program	Jan. 2022 – May 2022
Member, Classical and Quantum Gravity Editorial Board	Mar. 2021 – present
Member, Classical and Quantum Gravity Advisory Panel	Dec. 2016 – Mar. 2021
Member, American Physical Society LeRoy Apker Award Selection Committee	May 2019 – Aug. 2021
Ph.D. committee member for Rochester Institute of Technology student Jacob Lange	Mar. 2018 – Aug. 2020
National Science Foundation Review Panelist	Feb. 2019
Referee for journal Physical Review Letters, APS publishing	Apr. 2008 – present
Referee for journal Physical Review D, APS publishing	Mar. 2008 – present
Participate in CSU Webinar on grant writing	Feb. 2017
Organize and host 32 nd annual Pacific Coast Gravity Meeting	Apr. 2016
Organize and host Theoretical Astrophysics in Southern California conference	Nov. 2015
National Science Foundation Review Panelist	Feb. 2015
Referee, Gravitational Physics Program, National Science Foundation	Jan. 2014 – present
Co-organize and host Numerical and Analytical Relativity and Data Analysis (NARDA) 2014 meeting	Aug. 2014
Reviewer, NASA Postdoctoral Program	May 2013
Reviewer, NSF Physics at the Information Frontier program	Feb. 2013
Referee for journal Classical and Quantum Gravity, IOP publishing	Mar. 2008 – present

Department, College, and University Committee Service

Supplemental Instruction Physics Faculty Liaison	August 2023 – present
Department of Physics Personnel Committee	Aug. 2021 – present
College of Natural Sciences and Mathematics Personnel Committee	Aug. 2021 – July 2022
Reviewer, NSM Jr/Sr Intramural Award Committee	Mar. 2020

Chair, Physics Department Faculty Search Committee	Aug. 2019 – Aug. 2020
Discuss NSF CAREER proposal writing with CSUF professors, hosted by the Office of Research Development & College of Engineering	Mar. 2019
Member, Center for Computational and Applied Mathematics Computing Committee	Aug. 2017 – present
Discuss NSF CAREER proposal writing with CSUF professors, hosted by the Office of Research Development	April 2017
Curriculum Committee Chair, Department of Physics, CSUF	Aug. 2015 – Aug. 2018
Member, search committee for high-performance computing system administrator	Aug. 2016 – Oct. 2017
Lab Development Committee, Department of Physics, California State University, Fullerton	Aug. 2015 – Aug. 2016
Curriculum Committee, College of Natural Sciences and Mathematics, California State University, Fullerton	Sep. 2014 – present
Safety Committee, College of Natural Sciences and Mathematics, California State University, Fullerton	Aug. 2013 – Sep. 2014

Outreach, Advocacy, and Fundraising

Tutorial on constructing SpECTRE executables at SXSCon, Institute for Computational and Experimental Research in Mathematics, Brown University, Providence, Rhode Island	Aug. 2024
Week-long workshop course and tutorials on next-generation numerical-relativity, discontinuous Galerkin methods, and task-based parallelism in SpECTRE International Centre for Theoretical Sciences, Tata Institute of Fundamental Physics, Bengaluru, India.	Aug. 2023
Outreach seminar at Morningside of Fullerton	Jul. 2023
Outreach seminar at Fullerton College	Mar. 2023
Outreach seminar at Cal State Fullerton Osher Lifelong Learning Institute	Dec. 2022
Outreach talk with Josh Smith and Jocelyn Read at Fullerton Community Center	Oct. 2022
Speak and facilitate keynote address by Kip Thorne at the renaming ceremony for the Nicholas and Lee Begovich Center for Gravitational-Wave Physics and Astronomy	Oct. 2019
Outreach seminar at Citrus College, recruiting for a 1-week CSUF summer workshop on high-performance computing	Apr. 2019
Participant in American Physical Society Congressional Outreach Day	Feb. 2019

Interview with Tom Lovelace on local New York radio station WTBQ	Sep. 2018
Guest teaching in introductory calculus courses, demonstrating Monte Carlo integration with dice	Sep. 2018
Present 15-minute public lecture at Dock Mennonite Academy (high school)	Sep. 2018
Outreach seminar at Citrus College, recruiting for a 1-week CSUF summer workshop on high-performance computing	Apr. 2018
Q&A with Joshua Smith at Fullerton Community Center, hosted by Parents' Voice and the Lions Club	May 2017
Supervision of high school volunteer intern for a computational research project	Jun. 2016 – Aug. 2016
Presenter at CSUF fundraising dinner event, "Gravitational Waves: Examining the Universe in a Whole New Way"	Apr. 2016
Discuss gravitational-wave research with CSU Chancellor, CSUF President, GWPAC student researchers and professors	Feb. 2016
Co-lead CSUF press conference announcing the discovery of gravitational waves from merging black holes	Feb. 2016
Contribute to CSUF media relations outreach for gravitational-wave discovery http://news.fullerton.edu/gravitational-waves/	Feb. 2016
Present, with undergraduate researchers Nick Demos and Alyssa Garcia and Profs. Josh Smith and Josh Der, to California State University, Fullerton Philanthropic Foundation Board of Directors	Nov. 2015
Attend Posters on the Hill with student Haroon Khan to advocate for undergraduate STEM research to members of Congress and their staff in Washington, D.C.	Apr. 2015
Supervision of high school volunteer intern for a computational research project	Jun. 2013 – Aug. 2013
Participant in Discover STEM event, Cyprus College	Apr. 2013
Participant in Welcome to Fullerton Day, California State University, Fullerton	Apr. 2013
Interview with local middle school student	Jan. 2013
Participant in GWPAC opening celebration, California State University, Fullerton	Sep. 2012

Awards and Other Accomplishments

Awards

Alumni of the Year 2023 - Outstanding Achievement Award <i>One of two Outstanding Achievement Awards given in 2023, Dock Mennonite Academy, Lansdale, Pennsylvania</i>	Oct. 2023
Outstanding Untenured Faculty Member <i>\$2,500, annual award given by the California State University, Fullerton College of Natural Sciences and Mathematics</i>	May 2017
Titan on the Rise: Early Career Investigator Award <i>\$750, award given by the California State University, Fullerton Office of Research Development</i>	May 2017
Special Breakthrough Prize in Fundamental Physics co-recipient <i>\$1,976, portion of \$2 million shared among 1,012 contributors to the LIGO experiment “for the observation of gravitational waves, opening new horizons in astronomy and physics.”</i>	May 2016
Woodward Faculty Research Award <i>\$2,000, annual award given by the California State University, Fullerton Department of Physics</i>	May 2015

Media

Appeared with CSUF undergraduate Teresita Ramirez in documentary “LIGO: A Discovery that Shook the World” by Les Guthman https://vimeo.com/378452738 starting at 3:07	Dec. 2019
Quoted in Scientific American article on LIGO observation GW190814 https://www.scientificamerican.com/article/astronomers-spy-a-black-hole-devouring-a-neutron-star/	Aug. 2019
Visualization of LIGO’s first ten binary-black-hole observations, created by CSUF undergraduate Teresita Ramirez, Geoffrey Lovelace, the SXS Collaboration, and the LIGO Virgo Collaboration, featured in national media https://youtu.be/gmmD72cFOU4 — 109,000+ views on YouTube https://arstechnica.com/science/2018/12/physicists-detected-gravitational-waves-from-four-new-black-hole-mergers/ https://www.scientificamerican.com/article/has-ligo-seen-galaxy-warped-gravitational-waves/	Dec. 2018
Visualization of GW170814 created by CSUF undergraduate Nicholas Demos, Peter Holderness at Caltech, and the SXS Collaboration featured in the New York Times Second figure in https://nyti.ms/2ss9syS	Jan. 2017

Scientific results from and outreach concerning the discovery of gravitational waves from merging black holes featured in local, national, and international media (e.g. <i>visualization starting at 00:53 in https://youtu.be/z7pKXVkcDzs</i>)	Feb. 2016
Article selected for cover of Phys. Rev. Lett. vol. 116, no. 6 <i>Contributed to creating cover image</i>	Feb. 2016
Article selected for cover of Phys. Rev. Lett. vol. 106, no. 15	Apr. 2011
Research on visualizing curved spacetime featured in news media (e.g. http://www.universetoday.com/84807/a-new-way-to-visualize-warped-space-and-time/)	Apr. 2011

Complete Lists of Publications and Presentations

Peer-Reviewed Publications

*California State University, Fullerton Student Co-Authors in **Bold-Italics**.* Excludes publications resulting from membership in the LIGO Scientific Collaboration, Cosmic Explorer Project, and LISA Consortium.

1. Guillermo Lara, Harald P. Pfeiffer, Nikolas A. Wittek, Nils L. Vu, Kyle C. Nelli, **Alexander Carpenter**, **Geoffrey Lovelace**, Mark A. Scheel, William Throwe. “Scalarization of isolated black holes in scalar Gauss-Bonnet theory in the fixing-the-equations approach.” Phys. Rev. D **110**, 024033 (2024). <https://doi.org/10.1103/PhysRevD.110.024033>.
2. Sizheng Ma, Jordan Moxon, Mark A. Scheel, Kyle C. Nelli, Nils Deppe, Marceline S. Bonilla, Lawrence E. Kidder, Prayush Kumar, **Geoffrey Lovelace**, William Throwe, Nils L. Vu. “Fully relativistic three-dimensional Cauchy-characteristic matching for physical degrees of freedom.” Phys. Rev. D **109**, 124027 (2024). <https://doi.org/10.1103/PhysRevD.109.124027>.
3. Marissa Walker, Vijay Varma, Geoffrey Lovelace, and Mark A. Scheel. “Numerical-relativity surrogate modeling with nearly extremal black-hole spins.” Class. Quantum Grav. **40**, 055003 (2023). <https://doi.org/10.1088/1361-6382/acb3a7>.
4. Nils L. Fischer, **Samuel Rodriguez**, Tom Włodarczyk, **Geoffrey Lovelace**, Harald P. Pfeiffer, Gabriel S. Bonilla, Nils Deppe, François Hébert, Lawrence E. Kidder, Jordan Moxon, William Throwe. “High-accuracy numerical models of Brownian thermal noise in thin mirror coatings.” Class. Quantum Grav. **40**, 025015 (2023). <https://doi.org/10.1088/1361-6382/acad62>.
5. Nils L. Fischer, Harald P. Pfeiffer, Gabriel S. Bonilla, Nils Deppe, François Hébert, Lawrence E. Kidder, **Geoffrey Lovelace**, Jordan Moxon, Mark A. Scheel, Saul A. Teukolsky, William Throwe, Nikolas A. Wittek, Tom Włodarczyk. “A scalable elliptic solver with task-based parallelism for the SpECTRE numerical relativity code.” Phys. Rev. D **105**, 084027 (2022). <https://doi.org/10.1103/PhysRevD.105.084027>.

6. Nils Deppe, François Hébert, Lawrence E. Kidder, William Throwe, Isha Anantpurkar, Cristóbal Armaza, Gabriel S. Bonilla, Michael Boyle, Himanshu Chaudhary, Matthew D. Duez, Nils L. Fischer, François Foucart, Matthew Giesler, Jason S. Guo, Yoonsoo Kim, Prayush Kumar, Isaac Legred, Dongjun Li, **Geoffrey Lovelace**, Sizheng Ma, Alexandra Macedo, *Denyz Melchor*, *Marlo Morales*, Jordan Moxon, Kyle C. Nelli, Eamonn O'Shea, Harald P. Pfeiffer, *Teresita Ramirez*, Hannes R. Rüter, *Jennifer Sanchez*, Mark A. Scheel, *Sierra Thomas*, Daniel Vieira, Nikolas A. Wittek, Tom Wlodarczyk, Saul A. Teukolsky. "Simulating magnetized neutron stars with discontinuous Galerkin methods." *Phys. Rev. D* **105**, 123031 (2022). <https://doi.org/10.1103/PhysRevD.105.123031>.
7. Michael Boyle, Daniel Hemberger, Dante A.B. Iozzo, **Geoffrey Lovelace**, Serguei Ossokine, Harald P. Pfeiffer, Mark A. Scheel, Leo C. Stein, Charles J. Woodford, Aaron B. Zimmerman, *Nousha Afshari*, Kevin Barkett, Jonathan Blackman, Katerina Chatziioannou, Tony Chu, *Nicholas Demos*, Nils Deppe, Scott E. Field, Nils L. Fischer, *Evan Foley*, Heather Fong, *Alyssa Garcia*, Matthew Giesler, François Hébert, Ian Hinder, *Reza Katebi*, *Haroon Khan*, Lawrence E. Kidder, Prayush Kumar, *Kevin Kuper*, Halston Lim, Maria Okounkova, *Teresita Ramirez*, *Samuel Rodriguez*, Hannes R. Rüter, Patricia Schmidt, Bela Szilagyi, Saul A. Teukolsky, Vijay Varma, and Marissa Walker. "The SXS Collaboration catalog of binary black hole simulations." *Class. Quantum Grav.* **36**, 195006 (2019). <https://doi.org/10.1088/1361-6382/ab34e2>
8. Katerina Chatziioannou, Roberto Cotesta, Sudarshan Ghonge, Jacob Lange, Ken KY Ng, Juan Calderón Bustillo, James Clark, Carl-Johan Haster, Sebastian Khan, Michael Pürrer, Vivien Raymond, Salvatore Vitale, *Nousha Afshari*, Stanislav Babak, Kevin Barkett, Jonathan Blackman, Alejandro Bohé, Michael Boyle, Alessandra Buonanno, Manuela Campanelli, Gregorio Carullo, Tony Chu, *Eric Flynn*, Heather Fong, *Alyssa Garcia*, Matthew Giesler, Maria Haney, Mark Hannam, Ian Harry, James Healy, Daniel Hemberger, Ian Hinder, Karan Jani, Bhavesh Khamersa, Lawrence E Kidder, Prayush Kumar, Pablo Laguna, Carlos O Lousto, **Geoffrey Lovelace**, Tyson B Littenberg, Lionel London, Margaret Millhouse, Laura K Nuttall, Frank Ohme, Richard O'Shaughnessy, Serguei Ossokine, Francesco Pannarale, Patricia Schmidt, Harald P Pfeiffer, Mark A Scheel, Lijing Shao, Deirdre Shoemaker, Bela Szilagyi, Andrea Taracchini, Saul A Teukolsky, and Yosef Zlochower. "On the properties of the massive binary black hole merger GW170729." *Phys. Rev. D* **100**, 104015 (2019). <https://doi.org/10.1103/PhysRevD.100.104015>
9. Michael Boyle, Daniel Hemberger, Dante A.B. Iozzo, **Geoffrey Lovelace**, Serguei Ossokine, Harald P. Pfeiffer, Mark A. Scheel, Leo C. Stein, Charles J. Woodford, Aaron B. Zimmerman, *Nousha Afshari*, Kevin Barkett, Jonathan Blackman, Katerina Chatziioannou, Tony Chu, *Nicholas Demos*, Nils Deppe, Scott E. Field, Nils L. Fischer, *Evan Foley*, Heather Fong, *Alyssa Garcia*, Matthew Giesler, François Hébert, Ian Hinder, *Reza Katebi*, *Haroon Khan*, Lawrence E. Kidder, Prayush Kumar, *Kevin Kuper*, Halston Lim, Maria Okounkova, *Teresita Ramirez*, *Samuel Rodriguez*, Hannes R. Rüter, Patricia Schmidt, Bela Szilagyi, Saul A. Teukolsky, Vijay Varma, and Marissa Walker. "The SXS Collaboration catalog of binary black hole simulations." *Class. Quantum Grav.* **36**, 195006 (2019). <https://doi.org/10.1088/1361-6382/ab34e2>

10. Katerina Chatziioannou, Geoffrey Lovelace, Michael Boyle, Matthew Giesler, Daniel A. Hemberger, *Reza Katebi*, Lawrence E. Kidder, Harald P. Pfeiffer, Mark A. Scheel, and Béla Szilágyi. “Measuring the properties of nearly extremal black holes with gravitational waves.” *Phys. Rev. D* **98**, 044028 (2018). <https://doi.org/10.1103/PhysRevLett.121.231103>
11. “Assessing the Energetics of Spinning Binary Black Hole Systems.” Serguei Ossokine, Tim Dietrich, *Evan Foley*, *Reza Katebi*, and **Geoffrey Lovelace**. *Phys. Rev. D* **98**, 104057 (2018). <https://doi.org/10.1103/PhysRevD.98.104057>
12. Chaitanya Afle, Anuradha Gupta, Bhooshan Gadre, Prayush Kumar, *Nick Demos*, **Geoffrey Lovelace**, Han Gil Choi, Hyung Mok Lee, Sanjit Mitra, Michael Boyle, Daniel A. Hemberger, Lawrence E. Kidder, Harald P. Pfeiffer, Mark A. Scheel, and Béla Szilágyi. “Detection and characterization of spin-orbit resonances in the advanced gravitational wave detectors era.” *Phys. Rev. D* **98**, 083014 (2018). <https://dx.doi.org/10.1103/PhysRevD.98.083014>
13. **Geoffrey Lovelace**, *Nicholas Demos*, and *Haroon Khan*. “Numerically modeling Brownian thermal noise in amorphous and crystalline thin coatings.” *Class. Quantum Grav.* **35**, 025017 (2017). <http://doi.org/10.1088/1361-6382/aa9ccc>.
14. B. P. Abbott et al., for the LIGO Scientific Collaboration and the Virgo Collaboration. “GW170817: Observation of Gravitational Waves from a Binary Neutron Star Inspiral.” *Phys. Rev. Lett.* **119**, 161101 (2017). <https://doi.org/10.1103/PhysRevLett.119.161101>
15. B. P. Abbott et al., for the LIGO Scientific Collaboration and the Virgo Collaboration. “GW170814: A three-detector observation of gravitational waves from a binary black hole coalescence.” *Phys. Rev. Lett.* **119**, 141101 (2017). <https://doi.org/10.1103/PhysRevLett.119.141101>
16. Jacob Lange, Richard O’Shaughnessy, Michael Boyle, Juan Calderón Bustillo, Manuela Campanelli, Tony Chu, James A Clark, *Nicholas Demos*, Heather Fong, James Healy, Daniel Hemberger, Ian Hinder, Karan Jani, Bhavesh Khamesra, Lawrence E Kidder, Prayush Kumar, Pablo Laguna, Carlos O Lousto, **Geoffrey Lovelace**, Serguei Ossokine, Harald Pfeiffer, Mark A Scheel, Deirdre Shoemaker, Bela Szilagyi, Saul Teukolsky, Yosef Zlochower. “A Parameter Estimation Method that Directly Compares Gravitational Wave Observations to Numerical Relativity.” *Phys. Rev. D* **96**, 104041 (2017), <http://doi.org/10.1103/PhysRevD.96.104041>.
17. B. P. Abbott et al., for the LIGO Scientific Collaboration and the Virgo Collaboration. “GW170104: Observation of a 50-Solar-Mass Binary Black Hole Coalescence at Redshift 0.2.” *Phys. Rev. Lett.* **118**, 221101 (2017). <https://doi.org/10.1103/PhysRevLett.118.221101>
18. B. P. Abbott et al., for the LIGO Scientific Collaboration and the Virgo Collaboration. “Effects of waveform model systematics on the interpretation of GW150914.” *Class. Quantum Grav.* **34**, 104002 (2017). <https://doi.org/10.1088/1361-6382/aa6854>

19. Alejandro Bohé, Lijing Shao, Andrea Taracchini, Alessandra Buonanno, Stanislav Babak, Ian W. Harry, Ian Hinder, Serguei Ossokine, Michael Pürrer, Vivien Raymond, Tony Chu, Heather Fong, Prayush Kumar, Harald P. Pfeiffer, Michael Boyle, Daniel A. Hemberger, Lawrence E. Kidder, **Geoffrey Lovelace**, Mark A. Scheel, and Béla Szilágyi. “An improved effective-one-body model of spinning, nonprecessing binary black holes for the era of gravitational-wave astrophysics with advanced detectors.” *Phys. Rev. D* **95**, 044028 (2017). <https://doi.org/10.1103/PhysRevD.95.044028>
20. **Geoffrey Lovelace**, Carlos O. Lousto, James Healy, Mark A. Scheel, *Alyssa Garcia*, Richard O’Shaughnessy, Michael Boyle, Manuela Campanelli, Daniel A. Hemberger, Lawrence E. Kidder, Harald P. Pfeiffer, Béla Szilágyi, Saul A. Teukolsky, and Yosef Zlochower. “Modeling the source of GW150914 with targeted numerical-relativity simulations.” *Class. Quantum Grav.* **33**, 244002 (2016). <https://doi.org/10.1088/0264-9381/33/24/244002>
21. B. P. Abbott et al., for the LIGO Scientific Collaboration and the Virgo Collaboration. “GW151226: Observation of Gravitational Waves from a 22-Solar-Mass Binary Black Hole Coalescence.” *Phys. Rev. Lett.* **116**, 241103 (2016). <https://doi.org/10.1103/PhysRevLett.116.241103>
22. B. P. Abbott et al., for the LIGO Scientific Collaboration and the Virgo Collaboration. “Directly comparing GW150914 with numerical solutions of Einstein’s equations for binary black hole coalescence.” *Phys. Rev. D* **94**, 064035 (2016). <https://doi.org/10.1103/PhysRevD.94.064035>
23. B. P. Abbott et al., for the LIGO Scientific Collaboration and the Virgo Collaboration. “An improved analysis of GW150914 using a fully spin-precessing waveform model.” *Phys. Rev. X* **6**, 041014 (2016). <https://doi.org/10.1103/PhysRevX.6.041014>
24. B. P. Abbott et al., for the LIGO Scientific Collaboration and the Virgo Collaboration. “Tests of general relativity with GW150914.” *Phys. Rev. Lett.* **116**, 221101 (2016). <https://doi.org/10.1103/PhysRevLett.116.221101>
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27. Prayush Kumar, Kevin Barkett, Swetha Bhagwat, *Nousha Afshari*, Duncan A. Brown, **Geoffrey Lovelace**, Mark A. Scheel, and Béla Szilágyi. “Accuracy and precision of gravitational-wave models of inspiraling neutron star-black hole binaries with spin: Comparison with matter-free numerical relativity in the low-frequency regime.” *Phys. Rev. D* **92**, 102001 (2015). <https://doi.org/10.1103/PhysRevD.92.102001>
28. Mark A. Scheel, Matthew Giesler, Daniel A. Hemberger, **Geoffrey Lovelace**, *Kevin Kuper*, Michael Boyle, Béla Szilágyi, and Lawrence E. Kidder. “Improved methods for simulating nearly extremal binary black holes.” *Class. Quantum Grav.* **32**, 105009 (2015). <https://doi.org/10.1088/0264-9381/32/10/105009>

29. **Geoffrey Lovelace**, Mark A. Scheel, Robert Owen, Matthew Giesler, *Reza Katebi*, Béla Szilágyi, Tony Chu, *Nicholas Demos*, Daniel A. Hemberger, Lawrence E. Kidder, Harald P. Pfeiffer, *Nousha Afshari*. “Nearly extremal apparent horizons in simulations of merging black holes.” *Class. Quantum Grav.* **32**, 065007 (2015). *IOPselect article. Selected for CQG+ Author Insight.* <https://doi.org/10.1088/0264-9381/32/6/065007>
30. The LIGO Scientific Collaboration, the Virgo Collaboration, and the NINJA-2 Collaboration: J. Aasi et al. “The NINJA-2 project: Detecting and characterizing gravitational waveforms modelled using numerical binary black hole simulations.” *Class. Quantum Grav.* **31**, 115004 (2014). <https://doi.org/10.1088/0264-9381/31/11/115004>
31. Andrea Taracchini, Alessandra Buonanno, Yi Pan, Tanja Hinderer, Michael Boyle, Daniel A. Hemberger, Lawrence E. Kidder, **Geoffrey Lovelace**, Abdul H. Mroué, Harald P. Pfeiffer Mark A. Scheel, Béla Szilágyi, Nicholas W. Taylor, and Anil Zenginoglu. “Effective-one-body model for black-hole binaries with generic mass ratios and spins.” *Phys. Rev. D* **89**, 061502 (2014). <https://doi.org/10.1103/PhysRevD.89.061502>
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33. Abdul H. Mroué, Mark A. Scheel, Béla Szilágyi, Harald P. Pfeiffer, Michael Boyle, Daniel A. Hemberger, Lawrence E. Kidder, **Geoffrey Lovelace**, Serguei Ossokine, Nicholas W. Taylor, Anil Zenginoglu, Luisa T. Buchman, Tony Chu, *Evan Foley*, *Matthew Giesler*, Robert Owen, Saul A. Teukolsky. “A catalog of 174 high-quality binary black-hole simulations for gravitational-wave astronomy.” *Phys. Rev. Lett.* **111**, 241104 (2013). <https://doi.org/10.1103/PhysRevLett.111.241104>
34. Alexandre Le Tiec, Alessandra Buonanno, Abdul H. Mroué, Harald P. Pfeiffer, Daniel A. Hemberger, **Geoffrey Lovelace**, Lawrence E. Kidder, Mark A. Scheel, Béla Szilágyi, Nicholas W. Taylor, and Saul A. Teukolsky. “Periastron Advance in Spinning Black Hole Binaries: Gravitational Self-Force from Numerical Relativity.” *Phys. Rev. D* **88**, 124027 (2013).
35. Tanja Hinderer, Alessandra Buonanno, Abdul H. Mroué, Daniel A. Hemberger, **Geoffrey Lovelace**, Harald P. Pfeiffer, Lawrence E. Kidder, Mark A. Scheel, Béla Szilágyi, Nicholas W. Taylor, and Saul A. Teukolsky. “Periastron advance in spinning black hole binaries: comparing effective-one-body and numerical relativity.” *Phys. Rev. D* **88**, 084005 (2013). <https://doi.org/10.1103/PhysRevD.88.124027>
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37. **Geoffrey Lovelace**, Matthew D. Duez, Francois Foucart, Lawrence E. Kidder, Harald P. Pfeiffer, Mark A. Scheel, and Béla Szilágyi. “Massive disk formation in the tidal disruption of a neutron star by a nearly extremal black hole.” *Class. Quantum Grav.* **30**, 135004 (2013). *Class. Quantum Grav.* 2013-2014 *Highlight article*. <https://doi.org/10.1088/0264-9381/30/13/135004>
38. Daniel A. Hemberger, Mark A. Scheel, Lawrence E. Kidder, Béla Szilágyi, **Geoffrey Lovelace**, Nicholas W. Taylor, and Saul A. Teukolsky. “Dynamical excision boundaries in spectral evolutions of binary black hole spacetimes.” *Class. Quantum Grav.* **30**, 115001 (2013). <https://doi.org/10.1088/0264-9381/30/11/115001>
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43. Andrea Taracchini, Yi Pan, Alessandra Buonanno, Enrico Barausse, Tony Chu, Lawrence E. Kidder, **Geoffrey Lovelace**, Harald P. Pfeiffer, and Mark A. Scheel. “A prototype effective-one-body model for non-precessing spinning inspiral-merger-ringdown waveforms.” *Phys. Rev. D* **86**, 024011 (2012). <https://doi.org/10.1103/PhysRevD.86.024011>
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46. David A. Nichols, Robert Owen, Fan Zhang, Aaron Zimmerman, Jeandrew Brink, Yanbei Chen, Jeffrey D. Kaplan, **Geoffrey Lovelace**, Keith D. Matthews, Mark A. Scheel, and Kip S. Thorne. “Visualizing spacetime curvature via frame-drag vortexes and tidal tendexes: General theory and weak-gravity applications.” *Phys. Rev. D* **84**, 124014 (2011). <https://doi.org/10.1103/PhysRevD.84.124014>

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50. **Geoffrey Lovelace**, Yanbei Chen, Michael Cohen, Jeffrey D. Kaplan, Drew Keppel, Keith D. Matthews, David A. Nichols, Mark A. Scheel, and Ulrich Sperhake. "Momentum flow in black-hole binaries: II. Numerical simulations of equal-mass, head-on mergers with antiparallel spins." *Phys. Rev. D* **82**, 064031 (2010). <https://doi.org/10.1103/PhysRevD.82.064031>
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52. **Geoffrey Lovelace**, Robert Owen, Harald P. Pfeiffer, and Tony Chu. "Binary-black-hole initial data with nearly extremal spins." *Phys. Rev. D* **78**, 084017 (2008). <https://doi.org/10.1103/PhysRevD.78.084017>
53. Chao Li and **Geoffrey Lovelace**. "Generalization of Ryan's theorem: Probing tidal coupling with gravitational waves from nearly circular, nearly equatorial, extreme-mass-ratio inspirals." *Phys. Rev. D* **77**, 064022 (2008). <https://doi.org/10.1103/PhysRevD.77.064022>
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56. **Geoffrey Lovelace**. "The dependence of test-mass thermal noises on beam shape in gravitational-wave interferometers." *Class. Quantum Grav.* **24**, 4491 (2007). <https://doi.org/10.1088/0264-9381/24/17/014>
57. Hua Fang and **Geoffrey Lovelace**. "Tidal coupling of a Schwarzschild black hole and circularly orbiting moon." *Phys. Rev. D* **72**, 124016 (2005). <https://doi.org/10.1103/PhysRevD.72.124016>

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59. Yun Wang and **Geoffrey Lovelace**. "Unbiased estimate of dark energy density from type Ia supernova data." Astrophys. J. **562** L115 (2001). <https://doi.org/10.1086/338142>

Thesis

Geoffrey Lovelace. "Topics in gravitational-wave physics." Ph.D. thesis, California Institute of Technology (2007). URL <http://resolver.caltech.edu/CaltechETD:etd-05232007-115433>.

Submitted for Peer-Reviewed Publication

*California State University, Fullerton Student Co-Authors in **Bold-Italics***

1. Kathryn J. Daniel, Joshua R. Smith, Stefan Ballmer, Warren Bristol, Jennifer C. Driggers, Anamaria Effler, Matthew Evans, Joseph Hoover, Kevin Kuns, Michael Landry, **Geoffrey Lovelace**, Chris Lukinbeal, Vuk Mandic, Kiet Pham, Jocelyn Read, Joshua B. Russell, Francois Schiettekatte, Robert M. S. Schofield, Christopher A. Scholz, David H. Shoemaker, Piper Sledge, and Amber Strunk. "Criteria for identifying and evaluating locations that could potentially host the Cosmic Explorer observatories." Submitted to Review of Scientific Instruments (2024). Preprint <https://arxiv.org/abs/2410.00293>.
2. **Geoffrey Lovelace**, Kyle C. Nelli, Nils Deppe, Nils L. Vu, William Throwe, Marceline S. Bonilla, *Alexander Carpenter*, Lawrence E. Kidder, *Alexandra Macedo*, Mark A. Scheel, *Azer Afram*, Michael Boyle, *Andrea Ceja*, Matthew Giesler, Sarah Habib, *Ken Z. Jones*, Prayush Kumar, Guillermo Lara, *Denyz Melchor*, Iago B. Mendes, Keefe Mitman, *Marlo Morales*, Jordan Moxon, Eamonn O'Shea, *Kyle Pannone*, Harald P. Pfeiffer, *Teresita Ramirez-Aguilar*, *Jennifer Sanchez*, *Daniel Tellez*, Saul A. Teukolsky, Nikolas A. Wittek. "Simulating binary black hole mergers using discontinuous Galerkin methods."
3. Nils Deppe, Francois Foucart, Marceline S. Bonilla, Michael Boyle, Nicholas J. Corso, Matthew D. Duez, Matthew Giesler, François Hébert, Lawrence E. Kidder, Yoonsoo Kim, Prayush Kumar, Isaac Legred, **Geoffrey Lovelace**, Elias R. Most, Jordan Moxon, Kyle C. Nelli, Harald P. Pfeiffer, Mark A. Scheel, Saul A. Teukolsky, William Throwe, and Nils L. Vu. "Binary neutron star mergers using a discontinuous Galerkin-finite difference hybrid method." Submitted to Class. Quantum Grav. (2024). Preprint <https://arxiv.org/abs/2406.19038>.

Other Products

- i. Deppe, Nils; Throwe, William; Kidder, Lawrence E.; Vu, Nils L.; Nelli, Kyle C.; Armaza, Cristóbal; Bonilla, Marceline S.; Hébert, François; Kim, Yoonsoo; Kumar, Prayush; **Lovelace, Geoffrey**; **Macedo, Alexandra**; Moxon, Jordan; O'Shea, Eamonn; Pfeiffer, Harald P.; Scheel, Mark A.; Teukolsky, Saul A.; Wittek, Nikolas A.; Anantpurkar, Isha; Anderson, Carter; Boyle, Michael; **Carpenter, Alexander**; **Ceja, Andrea**; Chaudhary, Himanshu; Corso, Nicholas; Fayyazuddin Ljungberg, Nora; Foucart, Francois; **Ghadiri, Noora**; Giesler, Matthew; Guo, Jason S.; Habib, Sarah; Iozzo, Dante A. B.; **Jones, Ken Z.**; Lara, Guillermo; Legred, Isaac; Li, Dongjun; Ma, Sizheng; **Melchor, Denyz**; Mendes, Iago; **Morales, Marlo**; Most, Elias R.; Nee, Peter James; **Osorio, Alejandro**; Pajkos, Michael A.; **Pannone, Kyle**; **Ramirez, Teresita**; Ring, Noah; Rüter, Hannes R.; **Sanchez, Jennifer**; Stein, Leo C.; **Tellez, Daniel**; **Thomas, Sierra**; Tommasini, Vittoria; Vieira, Daniel; Wlodarczyk, Tom; Wu, David; Yoo, Jooheon. "SpECTRE numerical relativity code". (2024). <https://zenodo.org/records/13858965>.
- ii. LISA Consortium Waveform Working Group: Niayesh Afshordi, Sarp Akçay, Pau Amaro Seoane, Andrea Antonelli, Josu C. Aurekoetxea, Leor Barack, Enrico Barausse, Robert Benkel, Laura Bernard, Sebastiano Bernuzzi, Emanuele Berti, Matteo Bonetti, Béatrice Bonga, Gabriele Bozzola, Richard Brito, Alessandra Buonanno, Alejandro Cárdenas-Avendaño, Marc Casals, David F. Chernoff, Alvin J. K. Chua, Katy Clough, Marta Colleoni, Mekhi Dhesi, Adrien Druart, Leanne Durkan, Guillaume Faye, Deborah Ferguson, Scott E. Field, William E. Gabella, Juan García-Bellido, Miguel Gracia-Linares, Davide Gerosa, Stephen R. Green, Maria Haney, Mark Hannam, Anna Heffernan, Tanja Hinderer, Thomas Helfer, Scott A. Hughes, Sascha Husa, Soichiro Isoyama, Michael L. Katz, Chris Kavanagh, Gaurav Khanna, Larry E. Kidder, Valeriya Korol, Lorenzo Küchler, Pablo Laguna, François Larrouturou, Alexandre Le Tiec, Benjamin Leather, Eugene A. Lim, Hyun Lim, Tyson B. Littenberg, Oliver Long, Carlos O. Lousto, **Geoffrey Lovelace**, Georgios Lukes-Gerakopoulos, Philip Lynch, Rodrigo P. Macedo, Charalampos Markakis, Elisa Maggio, Ilya Mandel, Andrea Maselli, Josh Mathews, Pierre Mourier, David Neilsen, Alessandro Nagar, David A. Nichols, Jan Novák, Maria Okounkova, Richard O'Shaughnessy, Naritaka Oshita, Conor O'Toole, Zhen Pan, Paolo Pani, George Pappas, Vasileios Paschalidis, Harald P. Pfeiffer, Lorenzo Pompili, Adam Pound, Geraint Pratten, Hannes R. Rüter, Milton Ruiz, Zeyd Sam, Laura Sberna, Stuart L. Shapiro, Deirdre M. Shoemaker, Carlos F. Sopuerta, Andrew Spiers, Hari Sundar, Nicola Tamanini, Jonathan E. Thompson, Alexandre Toubiana, Antonios Tsokaros, Samuel D. Upton, Maarten van de Meent, Daniele Vernieri, Jeremy M. Wachter, Niels Warburton, Barry Wardell, Helvi Witek, Vojtěch Witzany, Huan Yang, Miguel Zilhão, Angelica Albertini, K. G. Arun, Miguel Bezares, Alexander Bonilla, Christian Chapman-Bird, Bradley Cownden, Kevin Cunningham, Chris Devitt, Sam Dolan, Francisco Duque, Conor Dyson, Chris L. Fryer, Jonathan R. Gair, Bruno Giacomazzo, Priti Gupta, Wen-Biao Han, Roland Haas, Eric W. Hirschmann, E. A. Huerta, Philippe Jetzer, Bernard Kelly, Mohammed Khalil, Jack Lewis, Nicole Lloyd-Ronning, Sylvain Marsat, Germano Nardini, Jakob Neef, Adrian Ottewill, Christiana Pantelidou, Gabriel Andres Piovano, Jaime Redondo-Yuste, Laura Sagunski, Leo C. Stein, Viktor Skoupý, Ulrich Sperhake, Lorenzo Speri, Thomas F.M. Spieksma, Chris Stevens, David Trestini, and Alex Vañó-Viñuales. "Waveform Modelling for the Laser Interferometer Space Antenna." (2023). <https://arxiv.org/abs/2311.01300>

- iii. Matthew Evans, Alessandra Corsi, Chaitanya Afle, Alena Ananyeva, K.G. Arun, Stefan Ballmer, Ananya Bandopadhyay, Lisa Barsotti, Masha Baryakhtar, Edo Berger, Emanuele Berti, Sylvia Biscoveanu, Ssohrab Borhanian, Floor Broekgaarden, Duncan A. Brown, Craig Cahillane, Lorna Campbell, Hsin-Yu Chen, Kathryne J. Daniel, Arnab Dhani, Jennifer C. Driggers, Anamaria Effler, Robert Eisenstein, Stephen Fairhurst, Jon Feicht, Peter Fritschel, Paul Fulda, Ish Gupta, Evan D. Hall, Giles Hammond, Otto A. Hannuksela, Hannah Hansen, Carl-Johan Haster, Keisi Kacanja, Brittany Kamai, Rahul Kashyap, Joey Shapiro Key, Sanika Khadkikar, Antonios Kontos, Kevin Kuns, Michael Landry, Philippe Landry, Brian Lantz, Tjonnie G. F. Li, **Geoffrey Lovelace**, Vuk Mandic, Georgia L. Mansell, Denys Martynov, Lee McCuller, Andrew L. Miller, Alexander Harvey Nitz, Benjamin J. Owen, Cristiano Palomba, Jocelyn Read, Hemantakumar Phurailatpam, Sanjay Reddy, Jonathan Richardson, Jameson Rollins, Joseph D. Romano, Bangalore S. Sathyaprakash, Robert Schofield, David H. Shoemaker, Daniel Sigg, Divya Singh, Bram Slagmolen, Piper Sledge, Joshua Smith, Marcelle Soares-Santos, Amber Strunk, Ling Sun, David Tanner, Lieke A. C. van Son, Salvatore Vitale, Benno Willke, Hiro Yamamoto, and Michael Zucker. "Cosmic Explorer: A Submission to the NSF MPSAC ngGW Subcommittee." (2023). <https://arxiv.org/abs/2306.13745>.
- iv. Francois Foucart, Pablo Laguna, **Geoffrey Lovelace**, David Radice, Helvi Witek. "Snowmass2021 Cosmic Frontier White Paper: Numerical relativity for next-generation gravitational-wave probes of fundamental physics." (2022). <https://arxiv.org/abs/2203.08139>.
- v. **Geoffrey Lovelace**. "Computational challenges in numerical relativity in the gravitational-wave era." *Nature Computational Science* 1, 450 (2021). <https://doi.org/10.1038/s43588-021-00102-2>. Invited comment.
- vi. Matthew Evans, Rana X Adhikari, Chaitanya Afle, Stefan W. Ballmer, Sylvia Biscoveanu, Ssohrab Borhanian, Duncan A. Brown, Yanbei Chen, Robert Eisenstein, Alexandra Gruson, Anuradha Gupta, Evan D. Hall, Rachael Huxford, Brittany Kamai, Rahul Kashyap, Kevin Kuns, Philippe Landry, Amber Lenon, **Geoffrey Lovelace**, Lee McCuller, Ken K. Y. Ng, Alexander H. Nitz, Jocelyn Read, B. S. Sathyaprakash, David H. Shoemaker, Bram J. J. Slagmolen, Joshua R. Smith, Varun Srivastava, Ling Sun, Salvatore Vitale, Rainer Weiss. "A Horizon Study for Cosmic Explorer: Science, Observatories, and Community." *Cosmic Explorer Technical Report CE-P2100003* (2021). <https://arxiv.org/abs/2109.09882>.
- vii. David Reitze, Rana X. Adhikari, Stefan Ballmer, Barry Barish, Lisa Barsotti, GariLynn Billingsley, Duncan A. Brown, Yanbei Chen, Dennis Coyne, Robert Eisenstein, Matthew Evans, Peter Fritschel, Evan D. Hall, Albert Lazzarini, **Geoffrey Lovelace**, Jocelyn Read, B. S. Sathyaprakash, David Shoemaker, Joshua Smith, Calum Torrie, Salvatore Vitale, Rainer Weiss, Christopher Wipf, and Michael Zucker. "Cosmic Explorer: The U.S. Contribution to Gravitational-Wave Astronomy beyond LIGO." *Bulletin of the American Astronomical Society* 51, 034 (2019). <https://arxiv.org/abs/1907.04833>.

Invited Presentations

1. "Modeling binary black holes with numerical relativity for LISA" Sep. 2024
Fundamental Physics Meets Waveforms with LISA, Max Planck Institute for Gravitational Physics, Golm, Germany
2. "Simulating merging binary black holes with SpECTRE" Jun. 2024
NAHOMCon'24 and NENAD'24 mini-symposium 12: high-order methods for computational relativity, Dartmouth College, Hanover, New Hampshire
3. "Simulating binary black holes with nearly extremal spins" Mar. 2024
Taking it to the extreme: symmetries and dynamics of extremal black holes, Princeton University, Princeton, New Jersey
4. "Modeling merging black holes with numerical relativity for current and future gravitational-wave observatories" Feb. 2023
University of Arkansas Physics Colloquium, Fayetteville, Arkansas
5. "Status of binary-black-hole simulations with SpECTRE" Jul. 2022
Frontiers in Numerical Relativity 2022, Jena, Germany
6. "The SpEC and SpECTRE Codes (for binary black holes)" Jun. 2022
Einstein Toolkit Workshop, Moscow, Idaho
7. "Numerical relativity for next-generation gravitational-wave observatories" Apr. 2022
Kavli Institute for Theoretical Physics Conference: Storming the Gravitational-Wave Frontier, Santa Barbara, California
8. "Modeling binary black holes with numerical relativity in the era of gravitational-wave observations" Mar. 2021
Virtual HEP-Astro Seminar, University of Michigan
9. "Computational Gravitational-Wave Physics and Astronomy at California State University, Fullerton" Oct. 2020
CSU Chancellor's Office STEM-NET webcast
10. "Gravitational-Wave Astronomy and Cal State Fullerton" Aug. 2020
Virtual CSU Fullerton Emeriti Meeting
11. "Numerical relativity for next-generation gravitational-wave observatories" May 2019
Presentation and discussion on invited panel, Physics and Astrophysics at the eXtreme (PAX) workshop, Cascina, Italy
12. "Numerical relativity in the era of gravitational-wave observations" Jan. 2019
High energy and Gravity Seminar, University of California, Santa Barbara Santa Barbara, California
13. "Numerically modeling Brownian thermal noise in crystalline coatings." Jun. 2018
Workshop on AlGaAs thermal noise at American University Washington, D.C.

14. "Numerical relativity in the era of gravitational-wave observations." Mar. 2018
*Center for Computational Relativity and Gravitation Seminar,
 Rochester Institute of Technology,
 Rochester, New York*
15. "Numerical relativity in the era of gravitational-wave observations." Mar. 2018
*Center for Astrophysics and Space Sciences Seminar,
 University of California, San Diego,
 San Diego, California*
16. "Undergraduate research in the era of gravitational-wave astronomy." Mar. 2018
*Society of Physics Students Zone 18 Meeting Keynote,
 Bakersfield, California*
17. "Simulating colliding black holes with the Spectral Einstein Code Nov. 2017
 in the era of gravitational-wave astronomy"
*Cal Poly Pomona Physics and Astronomy Seminar
 Pomona, California*
18. "Using supercomputers to simulate merging black holes in the era of Apr. 2017
 gravitational-wave astronomy"
*Osher Lifelong Learning Institute Seminar
 Irvine, California*
19. "The first observations of gravitational waves from merging black holes" Mar. 2017
*Physics and Astronomy Colloquium, Swarthmore College,
 Swarthmore, Pennsylvania*
20. "Using supercomputers to simulate merging black holes in the era of Mar. 2017
 gravitational-wave astronomy"
*Osher Lifelong Learning Institute Eclectics Seminar,
 Fullerton, California*
21. "Colliding black holes and the dawn of gravitational-wave astronomy" Feb. 2017
*California State University, Fullerton Emeriti Association Lunch
 Placentia, California*
22. "Doing science in the 21st century: colliding black holes and Feb. 2017
 gravitational-wave astronomy"
*Keynote presentation, Better Together: CSU Fullerton EdTalk South—Next
 Generation Science Standards, Discovery Cube Orange County,
 Santa Ana, CA*
23. "Simulations of binary-black-hole mergers" Jan. 2017
American Physical Society April Meeting, Washington, D.C.
24. "The discovery of gravitational waves from merging black holes" Oct. 2016
*Scientific Symposium, Society for Advancement of Chicanos/Hispanics
 and Native Americans in Science*

25. "The first observations of gravitational waves from merging black holes" Sep. 2016
Physics and Astronomy Colloquium, California State University, Los Angeles, Los Angeles, California
26. "The first observations of gravitational waves from merging black holes" Sep. 2016
Physics and Astronomy Colloquium, University of Oklahoma, Norman, Oklahoma
27. "Observation of gravitational waves from merging black holes" Jul. 2016
Orange County Astronomers General Meeting, Orange, California
28. "Modeling merging black holes with numerical relativity in the era of first gravitational-wave observations" May 2016
Center for Astrophysics & Space Sciences Astrophysics Seminar, University of California, San Diego, San Diego, California
29. "The discovery of gravitational waves from merging black holes" Apr. 2016
Jim Woodward Faculty Research Award Colloquium, California State University, Fullerton, Fullerton, California
30. "The discovery of gravitational waves from merging black holes" Apr. 2016
STEM² Seminar, Cypress College, Cypress, California
31. "The discovery of gravitational waves from merging black holes" Apr. 2016
Osher Lifelong Learning Institute Presentation, California State University, Fullerton, Fullerton, California
32. "Colliding black holes and ripples in space and time" Nov. 2015
Public lecture, Santiago Canyon College, Orange, California
33. "Simulating colliding black holes and mirror thermal noise for gravitational-wave astronomy" Sep. 2015
Physics Colloquium, California State University, Northridge, California
34. "Supercomputer simulations of merging black holes for gravitational-wave astronomy" May 2015
Public lecture, Santiago Canyon College, Orange, California
35. "Simulations of colliding black holes for gravitational-wave astronomy" Mar. 2015
Physics Colloquium, Fresno State University, Fresno, California
36. "Supercomputer simulations of colliding black holes" Mar. 2015
College of Natural Sciences and Mathematics Inter-club Council Symposium, Fullerton, California
37. "Numerical simulations of merging black holes and neutron stars for gravitational-wave astronomy" Oct. 2014
Physics Colloquium, Washington State University
38. "Colliding black holes and ripples in space and time" May 2014
Public lecture, Santiago Canyon College, Orange, California

39. "Einstein's Gravitational Waves: Recent and Future Discoveries" May 2014
*Town and Gown Series public lecture, co-presented with
 Jocelyn Read and Joshua Smith, Fullerton Public Library, Fullerton, California*
40. "Collisions in warped space and time" May 2014
Orange County Astronomers General Meeting, Orange, California
41. "Numerical simulations of merging black holes for Apr. 2014
 gravitational-wave astronomy"
American Physical Society April Meeting, Savannah, Georgia
42. "Supercomputer simulations of colliding black holes" Oct. 2013
*Physics & Astronomy Colloquium, California State University,
 Long Beach, Long Beach, California*
43. "Supercomputer simulations of merging black holes and neutron stars" Sep. 2013
*N. D. Pearson Colloquium Series in Physics, California State University,
 Dominguez Hills, Dominguez Hills, California*
44. "Supercomputer simulations of colliding black holes and neutron stars" Nov. 2012
Natural Science Seminar, Fullerton College, Fullerton, California
45. "Simulating compact-binary mergers containing Sep. 2012
 nearly extremal black holes"
*Fall 2012 Meeting of the Eastern Section of the
 American Mathematical Society, Rochester, New York*
46. "Numerical simulations of binary black holes in the presence of spins" Jul. 2012
*Rattle and Shine: Gravitational Wave and Electromagnetic Studies
 of Compact Binary Mergers conference, Santa Barbara, California*
47. "Supercomputer simulations of colliding black holes" Jan. 2012
*Physics Department Colloquium,
 California State University, Fullerton, California*
48. "Numerical simulations of coalescing black holes with nearly extremal Sep. 2011
 spins: gravitational waveforms and horizon dynamics"
*Center for Computational Relativity and Gravitation Seminar,
 Rochester Institute of Technology, Rochester, New York*
49. "Simulating merging black holes with spins above the Bowen-York limit" May 2011
*Advances and Challenges in Computational General Relativity
 Workshop, Providence, Rhode Island*
50. "Implicit-explicit evolutions of black-hole spacetimes" Apr. 2010
 "Selected Topics in Analysis and Numerics for PDEs" session,
*Spring 2010 Meeting of the Western Section of the American
 Mathematical Society, Albuquerque, New Mexico*

51. "Numerical simulations of binary black holes with nearly extremal spins" Nov. 2009
Center for Gravitational Wave Physics Seminar, Penn State University, University Park, Pennsylvania
52. "Numerical simulations of binary black holes with nearly extremal spins" Sep. 2009
Canadian Institute for Theoretical Astrophysics Seminar, University of Toronto, Toronto, Ontario
53. "Momentum flow in numerical simulations of binary black hole mergers" Sep. 2009
*Canadian Institute for Theoretical Astrophysics
 20-minute Blackboard Lunch, University of Toronto, Toronto, Ontario*
54. "Momentum flow in numerical simulations of binary black hole mergers" Jun. 2009
30-minute seminar, Syracuse University, Syracuse, New York
55. "Spin and shape in binary-black-hole simulations" Feb. 2008
Theoretical Astrophysics and Relativity Seminar, California Institute of Technology, Pasadena, California
56. "Improving binary-black-hole initial data" Nov. 2007
General Relativity and Astrophysics Seminar, University of Illinois at Urbana-Champaign, Urbana, Illinois