

Center for Quantum Computing
Amazon Web Services, San Francisco, California

gbozzola@amazon.com
sbozzolo.github.io

INTERESTS

High-performance computing, (research) software engineering, open source software, open science, community and inclusion.

WORK EXPERIENCE

- Applied Scientist, Center for Quantum Computing, Amazon, San Francisco (CA). Jun 2025 –
- Senior Software Engineer at [CLiMA](#), California Institute of Technology, Pasadena (CA). Nov 2024 – Jun 2025
- Software Engineer at [CLiMA](#), California Institute of Technology, Pasadena (CA). Aug 2023 – Nov 2024
- Research and Teaching Assistant at University of Arizona, Tucson (AZ). Jan 2018 – Aug 2023

EDUCATION

- 2018–2023 University of Arizona — MSc and PhD in Astronomy and Astrophysics (GPA: 4/4, Advisor: Prof. [Vasileios Paschalidis](#))
- 2015–2017 University of Milan — Master in Physics (*cum laude*, GPA: 30/30, Advisor: Prof. Nikolaos Stergioulas)
- 2012–2015 University of Milan — Bachelor in Physics (*cum laude*, GPA: 29.35/30, Advisor: Prof. Valentino Liberali)

PEER-REVIEWED PUBLICATIONS (16 total; 10 first author, 3 second author; 2 single author; 2 letters)

16. M. Smith, V. Paschalidis, **G. Bozzola**, *High-energy interactions of charged black holes in full general relativity. II. Near-extremal merger remnants and universality with the irreducible mass*, [PRD 111, 104302 \(2025\)](#)
15. M. Smith, V. Paschalidis, **G. Bozzola**, *High-energy interactions of charged black holes in full general relativity. I. Zoom-whirl orbits and universality with the irreducible mass*, [PRD 111, 104031 \(2025\)](#)
14. V. Manikantan, V. Paschalidis, **G. Bozzola**, *Coincident Multimessenger Bursts from Eccentric Supermassive Binary Black Holes*, [APJL 984, L47 \(2025\)](#)
13. M. Naseri, **G. Bozzola**, V. Paschalidis, *Exploring pathways to forming twin stars*, [PRD 110, 4, 044037 \(2024\)](#)
12. **G. Bozzola**, C. Chan, V. Paschalidis, *Not all spacetime coordinates for general-relativistic ray tracing are created equal*, [PRD 108, 8, 084004 \(2023\)](#)
11. **G. Bozzola**, V. Paschalidis, *Can quasi-circular mergers of charged black holes produce extremal black holes?*, [PRD 108, 064010 \(2023\)](#)
10. P. Espino, **G. Bozzola**, V. Paschalidis, *Quantifying uncertainties in general relativistic magnetohydrodynamic codes*, [PRD 107, 104059 \(2023\)](#)
9. R. Luna, **G. Bozzola**, V. Cardoso, V. Paschalidis, M. Zilhão, *Kicks in charged black hole binaries*, [PRD 106, 8, 084017 \(2022\)](#)
8. **G. Bozzola**, C. Chan, V. Paschalidis, *Black Hole Physics and Computer Graphics*, [CISE 24, 2 \(2022\)](#) (selected as cover of the issue)
7. **G. Bozzola**, *Does charge matter in high-energy collisions of black holes?*, [PRL 128, 4, 071101 \(2022\)](#)
6. **G. Bozzola**, V. Paschalidis, *Numerical-relativity simulations of the quasi-circular inspiral and merger of non-spinning, charged black holes: methods and comparison with approximate approaches*, [PRD 104, 4, 044004 \(2021\)](#)
5. **G. Bozzola**, *kuibit: Analyzing Einstein Toolkit simulations with Python*, [JOSS 6\(6\), 3099 \(2021\)](#)
4. **G. Bozzola**, V. Paschalidis, *General relativistic simulations of the quasi-circular inspiral and merger of charged black holes: GW150914 and fundamental physics implications*, [PRL 126, 041103, \(2021\)](#)
3. **G. Bozzola**, P. Espino, C. Lewin, V. Paschalidis, *Maximum mass, solution space and universal relations of rotating relativistic hadron-quark hybrid stars*, [EPJ A 55 9, 149, \(2019\)](#)
2. **G. Bozzola**, V. Paschalidis, *Initial data for general relativistic simulations of multiple electrically charged black holes with linear and angular momenta*, [PRD 99, 10, 104044 \(2019\)](#)
1. **G. Bozzola**, N. Stergioulas, A. Bauswein, *Universal relations for differentially rotating relativistic stars at the threshold to collapse*, [MNRAS 474, 3557–3564 \(2017\)](#)

PUBLICATIONS UNDER REVIEW (3 total)

3. K. Deck et al. (with **G. Bozzola**), *ClimaLand: A Land Surface Model Designed to Enable Data-Driven Parameterizations*, Submitted to JAMES (2025)
2. D. Yatinin et al. (with **G. Bozzola**), *The Climate Modeling Alliance Atmosphere Dynamical Core: Concepts, Numerics, and Scaling*, Submitted to JAMES (2025)
1. V. Manikantan, V. Paschalidis, **G. Bozzola**, *Effects of Eccentricity on Accreting Binary Black Holes: MHD Simulations in Full GR Reveal Novel Periodicities in Jet Power and Synchrotron Spectra*, *APJL* **984**, L47 (2025)

BOOK CHAPTERS (1 first author, peer reviewed)

1. **G. Bozzola**, V. Paschalidis, *Generation of Initial Data for General-Relativistic Simulations of Charged Black Holes*, in "Einstein Equations: Physical and Mathematical Aspects of General Relativity", Birkhäuser (2019)

CONFERENCE PAPERS (1 first author)

1. **G. Bozzola**, L. Frontini, V. Liberali, S. Shojaii, A. Sabile, *Improvement of radiation tolerance in CMOS ICs through layout-oriented simulation*, in "5th International Conference on Modern Circuits and Systems Technologies (MOCAST)", IEEE (2016)

WHITEPAPERS

2. Afshordi N. et al. (with **G. Bozzola**), *Waveform Modelling for the Laser Interferometer Space Antenna*, [arXiv:2311.01300 \(2023\)](#)
1. E. Barausse et al. (with **G. Bozzola**), *Prospects for Fundamental Physics with LISA*, *GR&Grav* **52**, 81 (2020)

SOFTWARE (3 total (published); 1 lead developer)

3. Einstein Toolkit maintainers et al. (with **G. Bozzola**), *The Einstein Toolkit*, [Zenodo](#), 3350841 (2021 and later)
2. H. Witek, M. Zilhão, **G. Bozzola**, et al., *Canuda*, [Zenodo](#), 3565474 (2021 and later)
1. **G. Bozzola**, *kuibit*, [Zenodo](#), 4679862 (2021 and later)

AWARDS AND PRIZES

- 2024 [Metropolis Award on Outstanding Doctoral Work in Computational Physics](#), American Physical Society
- 2022 Graduate Student Research Prize, Theoretical Astrophysics Program, University of Arizona
- 2022 Department of Astronomy award for excellence in Teaching, University of Arizona

SUPERCOMPUTING TIME (AS PI OR CO-I)

- Time on national supercomputers was awarded through a competitive process
- 2021–2023 146,250 SBUs on NASA's High-End Computing Center (HECC) (equivalent to \$ 68,738)
- 2020 50,000 SUs on Frontera at Texas Advanced Computing Center (TACC)

GRANTS

- 2020–2023 NASA Future Investigator in NASA Earth and Space Science (\$ 135,000)
- 2020–2021 TACC Frontera Fellowship (\$ 44,000)
- 2017– Travel grants from NewCompStar, American Physical Society (APS) divisions, University of Arizona Theoretical Astrophysics Program (TAP), Graduate Student and Professional Council (GSPC), National Science Foundation (NSF), Institute of Theoretical Physics at the Goethe University (total: \$ 9,500)

INVITED TALKS AND SEMINARS (24 in total)

- Links are recorded talks available online
- 2025 *The History of the RSE Movement*, Caltech Software Accelerator, Caltech (CA)
- 2024 *All'Intersezione tra Software e Scienza* [in Italian], Inspiration Valley (virtual)
- 2024 [The Future of Research is Code: Embracing Research Software Engineering](#), University of Arizona (AZ)
- 2024 *Numerical relativity, gravitational waves, and fundamental physics with charged black holes*, American Physical Society March Meeting in Minneapolis (MN)
- 2023 [Workflows to analyze Cactus simulations with Python](#), Einstein Toolkit North American School (virtual)
- 2023 [A guided example of an interesting visualization with kuibit](#), Einstein Toolkit European School (virtual)
- 2023 [A crash course on the Einstein Toolkit](#), Instituto Superior Tecnico (PT)
- 2023 [The high energy collisions of \(charged\) black holes](#), Instituto Superior Tecnico (PT)
- 2023 [The high energy collisions of \(charged\) black holes](#), University of Valencia (ES)

- 2023 *The high energy collisions of (charged) black holes*, Goethe University in Frankfurt (DE)
- 2022 *Nonlinear simulations of charged binary black holes as a tool for theoretical physics*, Perimeter Institute (virtual)
- 2022 *Exploring nonlinear interactions between charged black holes with numerical relativity: gravitational waves and fundamental physics*, KIPAC Tea talks, Stanford (virtual)
- 2022 *Advancements in fundamental physics with numerical relativity simulations of charged black holes*, Theoretical Astrophysics Program Colloquia, University of Arizona (AZ)
- 2022 *Advancements in fundamental physics with numerical relativity simulations of charged black holes*, University of Milan-Bicocca, Milan (IT)
- 2022 *Post-processing Cactus simulations with Python*, Einstein Toolkit North American School, University of Idaho (ID)
- 2022 *Strumenti avanzati per progetti Python* [in Italian], LCM (Multimedia and Computing Lab) in Milan (IT)
- 2021 *A brief introduction to the Journal of Open-Source Software*, Theoretical Astrophysics Program, Computation&Data Initiative, University of Arizona (AZ)
- 2021 *kuibit: Analyzing Einstein Toolkit simulations with Python*, Einstein Toolkit North American School (virtual)
- 2021 *Ray-tracing and radiation-transfer in dynamical spacetimes*, Texas Advanced Center for Computing (virtual)
- 2021 *Exploring the future of supercomputing*, IBM EMEA Project Managers workshop (virtual)
- 2021 *kuibit: a community-friendly tool to analyze Cactus simulations*, Einstein Toolkit seminars (virtual)
- 2020 *Numerical relativity simulations of charged black holes*, Los Alamos National Laboratory (virtual)
- 2017 *Computational tools for physicists*, series of seminars, Aristotle University of Thessaloniki (GR)
- 2016 *Introduzione a GNU/Linux* [in Italian], series of seminars, LCM (Multimedia and Computing Lab) in Milan (IT)

CONTRIBUTED TALKS (14 in total)

Links are recorded talks available online

- 2025 *The Research Software Engineering Revolution*, Southern California Linux Expo, Pasadena (CA)
- 2024 *GPUs in climate research*, NVidia AI/GPU day, Caltech (CA)
- 2024 *The Future of Research is Code: Embracing Research Software Engineering*, Postdoc L(a)unch, Caltech (CA)
- 2024 *How to lower the entry barrier to your scientific software*, Southern California Linux Expo, Pasadena (CA)
- 2022 *Fundamental physics probed via high-energy collisions of electrically charged black holes*, American Physical Society April Meeting in New York City (NY)
- 2022 *Fundamental physics probed via high-energy collisions of electrically charged black holes*, Midwest Relativity Meeting (virtual)
- 2021 *General-relativistic simulations of quasi-circular inspirals of charged black holes*, American Physical Society April Meeting (virtual)
- 2021 *telega.el and the Emacs community on Telegram*, EmacsConf 2021 (virtual)
- 2020 *Advancements in general-relativistic simulations of charged black holes*, Pacific Coast Gravity Meeting (virtual)
- 2020 *Are black holes charged?*, Early Career Scientist Talks at Steward Observatory (virtual)
- 2020 *A tour of vterm*, EmacsConf 2020 (virtual)
- 2019 *Initial data for general-relativistic simulations of generic black hole systems with electric charge, linear and angular momenta*, American Physical Society April Meeting in Denver (CO)
- 2018 *Initial data for general-relativistic simulations of generic black hole systems with electric charge, linear and angular momenta*, Alpine School for Theoretical Physics in Domodossola (IT)
- 2018 *Quasi-radial instability of differentially rotating relativistic stars*, American Physical Society April Meeting in Columbus (OH)

CONFERENCE POSTERS (2 in total)

- 2024 *The CliMA software stack*, Virtual Earth Science Research Institute Cross Meeting, Cambridge (UK)
- 2017 *Stability and universal relations of differentially rotating neutron stars*, NewCompStar School in Sofia (BG)

TEACHING

- Fall 2022 Guest lecture on gravitational waves in ASTRO300A (main instructor: A. Youdin)
- Fall 2022 *Introduction to the Einstein Toolkit*, series of seminars at the University of Arizona
- Spring 2022 TA for PHYS105A: *Introduction to Scientific Computing* (main instructor: C. Chan)
- Spring 2022 Physics consultation room (academic support for undergraduate physics courses)
- Fall 2021 TA for ASTR300A: *Dynamics and Mechanics in Astrophysics* (main instructor: A. Youdin)
- Fall 2021 Mentor for [Astronomy Tutoring for Majors & Minors Program](#) (ATOMM)
- Spring 2017 [Computational tools for physicists](#), series of seminars at the Aristotle University of Thessaloniki (GR)

RESEARCH MENTORING

- Graduate, University of Arizona (main advisor: V. Paschalidis):
 - M Smith (2021–2023), Mahdi Naseri (2022–2023)
- Undergraduate, University of Arizona (main advisor: V. Paschalidis):
 - Collin Lewin (2018–2019), William Lake (2018–2019), Cyrus Worely (2022–2023)

COMMUNITY, DIVERSITY, EQUITY, INCLUSION

- 2020– Building, maintaining, and providing support for software for the scientific community (mainly, [kuibit](#)) and for the open-source community (mainly, [emacs-libvterm](#))
- 2020– Contributing to the public codes [Einstein Toolkit](#) and [canuda](#)
- 2022 Graduate student representative for Steward Observatory graduate school admissions
- 2020– Founding member of [Steward Observatory International Scholars Task Force](#)
- 2020– Creating and supporting software to lower the entry-barrier to numerical relativity
- 2019 Outreach activities with K-12 classes at the Planetarium of the University of Arizona

PROFESSIONAL MEMBERSHIPS

- 2023– US RSE (US Research Software Engineer)
- 2018–2023 LISA (Laser Interferometer Space Antenna) Science Group
- 2018–2023 TAP (Theoretical Astrophysics Program) at the University of Arizona
- 2018–2023 APS (American Physical Society)

CONTRIBUTIONS TO OPEN-SOURCE SOFTWARE

Lead developer:

- [CliMA packages](#) Various packages for the CliMA ecosystem
- [kuibit](#) Post-processing and visualization Python package for [Einstein Toolkit](#).
- [motionpicture](#) Effortlessly make animations with Python.
- [ivy-emoji](#) Insert emojis in Emacs buffers.
- [vterm-extra](#) Additional features for Emacs's vterm.
- [sphinx-citations](#) Fetch citations from ADS and add them to Sphinx-generated pages.
- [Jhuki](#) Preparing simulations for [Einstein Toolkit](#).

Contributor / maintainer:

- [CliMA packages](#) Various packages for the CliMA ecosystem
- [Einstein Toolkit](#) Relativistic astrophysics, gravitational-wave astronomy, and numerical relativity simulations.
- [Canuda](#) Fundamental physics with numerical relativity.
- [vterm](#) The best terminal emulator for Emacs. (Maintainer, with [libvterm-mirror](#))