GABRIELE BOZZOLA, PHD *Applied Scientist, Center for Quantum Computing, Amazon Web Services*

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IN A NUTSHELL

- Award-winning **computational physicist** and **software engineer**, specialized in **high-performance** and **scientific computing** and large simulations (CPU&GPU, 10M+ core-hours awarded on national supercomputers).
- Strong track record of **independent research**, resulting in 15+ papers, 30+ talks, $ 200k+ in grants, and 4 awards.
- Proven ability to develop **production-grade scientific codes** across various numerical methods and physical domains (black holes, nuclear fusion, climate, quantum) in **interdisciplinary and collaborative projects**.
- **Software engineer** with 6 years of experience working at the intersection between science and software (mainly with **Python** & **Julia**). Vocal advocate for recognizing the crucial value of software in research environments.

WORK EXPERIENCE

APPLIED SCIENTIST at the Amazon Center for Quantum Computing.   June 2025 –

SENIOR (SCIENTIFIC) SOFTWARE ENGINEER at CliMA, California Institute of Technology (CA).   Oct 2024 – June 2025
(SCIENTIFIC) SOFTWARE ENGINEER at CliMA, California Institute of Technology (CA).   Aug 2023 – Oct 2024

- **Leading and mentoring** half of the CliMA engineering team (5 reports). Owning infrastructure and data processing.
- Designed and implemented the **data infrastructure** for the CliMA climate model, including: efficient ingestion of input files (GPU/MPI compatible) (ClimaUtilities.jl); a flexible framework for online observables (ClimaDiagnostics.jl); a library for post-processing and visualization (ClimaAnalysis.jl). Fostered a culture of data provenance (ClimaArtifacts). Implemented automated pipelines to **validate** model against observational data.
- Added **GPU support** (CUDA) to ClimaLand.jl, making it the first land model that runs on GPUs.
- Automated and centralized compute and simulation infrastructure, reducing downtime and maintenance by >80%.
- Steered CliMA's software development toward enhanced user experience, accessibility, and maintainability.

RESEARCH AND TEACHING ASSISTANT at University of Arizona in Tucson (AZ).   Jan 2018 – Aug 2023

- Designed and implemented a new Python library for **post-processing and visualization** (kuibit, >30k lines of code) of simulations, which reduced time to implement new analyses and train new Einstein Toolkit users by >90 %.
- Advanced theoretical models of black holes by designing and performing **massively-parallel simulations** (∼1000 cores, numerical relativity, general relativistic magnetohydrodynamic, and radiation transfer).
- Disseminated results through 15+ peer-reviewed publications (one selected as journal cover), 30+ talks. Results are recognized by 3 awards for excellence in research and $ 200k+ in grants.
- Enabled new scientific capabilities by building new modules for the Einstein Toolkit, a popular public code for high-energy astrophysics, including the **entire postprocessing infrastructure**. Worked with a large legacy code base (> 500k lines of C/Fortran, MPI+OpenMP) and in a **distributed and multidisciplinary community**.
- Taught classes, mentored 5 students, reviewed publications for international academic journals.
- Developed and maintained **open-source packages** for science and Emacs.

EDUCATION

2018–2023   University of Arizona — MSc and PhD in Astrophysics (GPA: 4/4)
2012–2017   University of Milan — BSc and MSc in Physics (*summa cum laude*, GPA: 30/30)

SELECTED GRANTS AND AWARDS

2024   Metropolis award for **Outstanding Doctoral Work in Computational Physics** by the American Physical Society
2021   Selected as one of 21 NASA Future Investigator in Space Science ($ 135k + 146k node-hours valued $ 69k)
2020   Selected as one of 5 Texas Advanced Center for Computing Frontera Fellows ($ 44k + 50k node-hours)

LANGUAGES AND NATIONALITY: Italian (mother tongue), English (full proficiency); Italian nationality.