EDOARDO ZONI

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CAREER SUMMARY

Researcher with many years of research experience in applied mathematics, computational physics, and scientific computing, transitioning to climate modeling and simulation:

- **Experience contributing to complex scientific software research projects** at the interface between applied mathematics, computational physics, and scientific computing, within multidisciplinary teams in Europe and the United States.
- **Experience in the numerical modeling and simulation of electromagnetic plasmas** for diverse physics applications (nuclear fusion devices, plasma accelerators) through the **development of open-source simulation software** (SeLaLib, WarpX).
- **Experience presenting science talks** at international scientific conferences.
- **Experience mentoring students** for short-term internship research projects.
- **Scientific code contributions** available on GitHub.
- **Scientific publications** available on Google Scholar.

KEY SKILLS

- Mathematics, physics, scientific computing
- C++, Python, Fortran
- Numerical modeling and simulation
- Collaborative scientific software development

- Software engineering good practices: version control, continuous integration, software documentation
- Object-oriented programming
- High-performance computing
- Linux OS

- Communication (oral,written)
- Teamwork
- Adaptability
- Italian (native)
- English (fluent)
- German (basic)

EDUCATION

PhD, **Mathematics**   2019
Max Planck Institute for Plasma Physics & Technical University of Munich, Munich, Germany

Master of Science, **Physics**   2015
University of Milano-Bicocca, Milan, Italy

Bachelor of Science, **Physics**   2013
University of Milano-Bicocca, Milan, Italy

Diploma, **Piano Performance**   2013
Conservatory of Music "Guido Cantelli", Novara, Italy

PROFESSIONAL EXPERIENCE

Euro-Mediterranean Center on Climate Change, Bologna, Italy   Nov 2023 - present
An Italian research center dedicated to investigate and model our climate system and its interactions with society to provide reliable, rigorous, and timely scientific results as well as foresights and quantitative analysis of our future planet and society.
Senior Research Associate

Lawrence Berkeley National Laboratory, Berkeley, CA, USA   Apr 2022 - Oct 2023
A U.S. Department of Energy national laboratory, committed to create new tools for scientific discovery and enable transformational solutions for energy, health, and environment.
Physicist Research Scientist
Contribute to the development and maintenance of the high-performance electromagnetic particle-in-cell code [WarpX](#) for the numerical modeling and simulation of plasma devices, particle accelerators, and beams.
- Derive discrete mathematical models based on diverse numerical methods (finite difference, pseudo-spectral) for the simulation of electromagnetic plasmas.
- Implement algorithms and continuous integration tests (C++, Python).
- Support onboarding and training of new developers.
- Mentor students for short-term research projects.

Lawrence Berkeley National Laboratory, Berkeley, CA, USA   Jan 2020 - Mar 2022
A U.S. Department of Energy national laboratory, committed to create new tools for scientific discovery and enable transformational solutions for energy, health, and environment.
Postdoctoral Researcher
Contributed to the development and maintenance of the high-performance electromagnetic particle-in-cell code [WarpX](#) for the numerical modeling and simulation of plasma devices, particle accelerators, and beams.
- Derive discrete mathematical models based on diverse numerical methods (finite difference, pseudo-spectral) for the simulation of electromagnetic plasmas.
- Implement algorithms and continuous integration tests (C++, Python).

Max Planck Institute for Plasma Physics, Munich, Germany   May 2016 - Dec 2019
One of the largest fusion research centers in Europe, committed to conduct plasma physics research and determine the physical principles for designing a fusion power plant.
PhD Researcher
Contributed to the development and maintenance of the high-performance electromagnetic semi-Lagrangian code [SeLaLib](#) for the numerical modeling and simulation of plasmas in nuclear fusion devices.
- Derive discrete mathematical models based on diverse numerical methods (method of characteristics, finite element) for the simulation of electromagnetic plasmas.
- Implement algorithms and continuous integration tests (Fortran, Python).