

Ariel Surya Boiardi

Curriculum Vitæ et Studiorum

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Education

2021–present	Ph.D. in Mathematical Analysis, Modelling, and Applications , <i>SISSA – International School for Advanced Studies</i> , Trieste, Italy
supervisor	Prof. G. Noselli I am studying instabilities and non-reciprocal phenomena in artificial active materials through simple theoretical models, numerical simulations and physical experiments.
2019–2021	Master of Science in Mathematics , <i>University of Parma</i> , Parma, Italy 110/110 <i>summa cum laude</i>
2015–2019	Bachelor of Science in Mathematics , <i>University of Parma</i> , Parma, Italy 106/110
2010–2015	Maturità classica , <i>Liceo L. Ariosto</i> , Reggio Emilia, Italy 100/100

Master’s thesis

title	The Energetic Boundary Element Method in the Isogeometric Analysis paradigm
supervisor	Prof. A. Aimi

Bachelor’s thesis

title	Adaptive finite element method for advection-diffusion problems
supervisors	Prof. M. Diligenti and Prof. A. Aimi

Schools and workshops

February 2024	RAM3 - Recent Advances in Mechanics and Mathematics of Materials , <i>Sapienza University of Rome</i> , Rome, Italy
September 2023	XLVIII Summer School on Mathematical Physics , <i>GNFM</i> , Ravello, Italy
June 2023	Interfacial Flows - The Power and Beauty of Asymptotic Methods , <i>CISM</i> , Udine, Italy
July 2022	Geometric Deep Learning , <i>First Italian School</i> , Pescara
July 2020	Transport and Fluids , <i>Scuola Matematica Interuniversitaria</i> , Cortona, Online

Conferences

2024	ICTAM 2024 , 26 th <i>International Congress of Theoretical and Applied Mechanics</i> , Daegu, Korea, August 25-30 2024
2024	ICoNSoM 2024 , 3 rd <i>International Conference on Nonlinear Solid Mechanics</i> , Cagliari, June 11-14, 2024
2023	GIMC, GMA e GBMA 2023 , <i>Conference of the AIMETA Groups GIMC, GMA and GBMA</i> , Reggio Calabria, July 12-14, 2022
2022	FAATNA20>22 , <i>Functional Analysis, Approximation Theory and Numerical Analysis</i> , Matera, July 5-8, 2022

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Publications

2024

A. S. Boiardi and R. Marchello. “Breaking the left-right symmetry in fluttering artificial cilia that perform nonreciprocal oscillations”. In: *Meccanica* (2024). DOI: 10.1007/s11012-024-01765-7.

2024

A. S. Boiardi and G. Noselli. “Minimal actuation and control of a soft hydrogel swimmer from flutter instability”. In: *Journal of the Mechanics and Physics of Solids* (2024), p. 105753. DOI: 10.1016/j.jmps.2024.105753.

2022

A. Aimi and A. S. Boiardi. “IGA-Energetic BEM: An Effective Tool for the Numerical Solution of Wave Propagation Problems in Space-Time Domain”. In: *Mathematics* 10.3 (2022). DOI: 10.3390/math10030334.

Participation to research projects

2023 - present	PRIN 2022 DISCOVER , <i>Unveiling embodied intelligence in natural systems for bioinspired actuator design</i>
Role	Member
PI	G. Noselli
Amount	75 k€

Experience

Teaching

2024

Mathematical Analysis I, B.S. in *Industrial Engineering*, University of Trieste
Exercise lessons and tutoring.

2024

Applied Mathematics: an Introduction to Scientific Computing by Numerical Analysis, M.Sc. in *Data Science and Scientific Computing*, SISSA and University of Trieste
Hands-on sessions with Python coding; homework exam text and grading.

2021

Numerical Calculus, B.S. in *Computer Science*, University of Parma
Homework exercises with guided solutions.

2020

Numerical Analysis, B.S. in *Mathematics*, University of Parma
Homework exercises with guided solutions.

Miscellaneous

2023–present	Webmaster , SISSA, Trieste
2024	ITCS Helpdesk , SISSA, Trieste
2014	Library assistant , <i>Biblioteca Rosta Nuova</i> , Reggio Emilia
2010–2014	Electronics repair , Reggio Emilia

Organizing activity

2024

ICTAM2024, *Daegu, Korea*, Co-moderator (with D. Riccobelli) for the thematic session *SM13 Stability and instability of materials and structures*.

2022–2023

Analysis Junior Seminars, SISSA, Organizer

Languages

Italian	Native
English	Proficient
German	Basic (learning)

Technical skills

Operating systems	I am a knowledgeable user of all major operating systems; I do most of my daily work on Windows and Rocky Linux.
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Scientific computing	I know quite well the MATLAB and MATHEMATICA. In my research work I often use COMSOL multiphysics for FEM simulations.
Programming	I used Python for numerical analysis and machine learning, Fortran and MPI for my M.Sc. thesis. More recently, I used C++ for GUI and embedded (Arduino) development.
CAD and 3D print	I design with Solidworks and Autodesk Inventor. I print with a Markforged Mark Two and a Nanoscribe GT2 system.

Hobbies and interests

Activities	cross-country skiing, hiking, mountaineering, rowing, running, yoga,...
Books	<i>Zen in der Kunst des Bogenschießens</i> , Мастер и Маргарита, 1984, Ossi di Sepia, <i>The Waste Land</i> ,...
Films	$8\frac{1}{2}$, <i>Underground</i> , <i>The Cook, the Thief, His Wife and Her Lover</i> , <i>Nosferatu</i> (1922), 수취인불명,...
Music	J. S. Bach, L. Cohen, M. Davis, MONO, A. Vivaldi,...
Plants	Gardening, Orchids, Bonsai,...

Trieste, February 13, 2025