

# Alberto Artoni

<https://albertolartoni.github.io/>

I am a Ph.D. student at Modeling and Scientific Computing (MOX), a laboratory inside the Mathematical Department at Politecnico di Milano. My main interests are *Computational Fluid Dynamics* (CFD), high order methods like *Spectral Element Methods* (SEM) or *Discontinuous Galerkin* (DG) and *computational geometry* applied to **aeroacoustic problems**.



## Personal Data

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Place and Date of Birth	Parma   13 November 1995
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## Education

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Nov. 2020 - Oct. 2023	Ph.D. in Mathematical Models and Methods for Engineering, Politecnico di Milano Ph.D. scholarship is funded by Mathematical and Mechanical Departments
Sept. 2017 - April 2020	M.Sc. Mathematical Engineering, Politecnico di Milano
Sept. 2014 - Sept. 2017	Bachelor in Mathematical Engineering, Politecnico di Milano

## Work Experience

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Dec. 2023 - Dec. 2024	Post-doc at Politecnico di Milano. Implement space-time methods for hyperbolic problems.
June 2020 - Oct. 2020	Data Engineer at Reply DWH maintenance, dashboard development.

## Programming Skills

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Good knowledge	Mathematica, OpenFOAM, Python, shell, HPC, SQL
Optimal knowledge	MPI, Fortran, Matlab, vim, C++, Linux

## Teaching

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Feb. 2024 - June. 2024	Teaching Assistant	Advanced Programming for Scientific Computing, <i>Mathematical Engineering</i> , Politecnico di Milano
Sept. 2023 - Dec. 2023	Teaching Assistant	Algorithms and Parallel Computing, <i>Mathematical Engineering</i> , Politecnico di Milano
Sept. 2022 - Dec. 2022	Teaching Assistant	Curve e Superfici per il Design, <i>Design della Moda</i> , Politecnico di Milano
Feb. 2022 - June 2022	Teaching Assistant	Metodi Analitici e Numerici per l'Ingegneria, <i>Ingegneria Energetica</i> , Politecnico di Milano
Sept. 2021 - Dec. 2021	Teaching Assistant	Curve e Superfici per il Design, <i>Design della Moda</i> , Politecnico di Milano
Feb. 2021 - June 2021	Teaching Assistant	Metodi Analitici e Numerici per l'Ingegneria, <i>Ingegneria Energetica</i> , Politecnico di Milano

## Publications

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Jun. 2024	Artoni et al., <i>A High Order Discontinuous Galerkin Spectral Element Solver for the Lighthill's Wave Equation</i> , DOI: <a href="https://doi.org/10.2514/6.2024-3360">10.2514/6.2024-3360</a>
Feb. 2024	Artoni et al., <i>A hybrid finite volume - spectral element method for aeroacoustic problems</i> , DOI: <a href="https://doi.org/10.1016/j.camwa.2023.12.004">10.1016/j.camwa.2023.12.004</a>
Mar. 2023	Artoni et al., <i>AeroSPEED: a high order acoustic solver for aeroacoustic applications</i> , DOI: <a href="https://doi.org/10.1007/978-3-031-40864-9_3">10.1007/978-3-031-40864-9_3</a>

## Supervised Master Students

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June 2023 - Dec. 2023	<i>A high order DGSEM solver for human voice</i> , Michelangelo G. Garrone Application of a high order DGSEM solver for the prediction of human voice.
April 2023 - Sept. 2023	<i>Convergence estimates for a segregated FV-SEM method for an aeroacoustic problem</i> , Maddalena Zanrosso Analysis of the high order hybrid DGSEM strategy for the aeroacoustic problem.
April 2022 - Dec. 2022	<i>Aeroacoustic characterization of a 3D organ pipe</i> , Óscar Martínez Díaz Direct numerical computation of the aeroacoustic sound inside an organ pipe.
June 2020 - Oct. 2020	<i>Validation and application of the Curle's aeroacoustic analogy</i> , Dario Colombo Validation of a semi-analytical model based on the Curle analogy for automotive applications.

## Conferences & Schools

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June 2024		<i>30th AIAA/CEAS Aeroacoustics Conference, Rome</i>
May 2023		Invited speaker at <i>Math 2 Product, Taormina</i>
Jan. 2023		Lecture series, <i>Remote microphone techniques for the characterization of aeroacoustic sources</i> , Von Karman Institute
July 2022		<i>17th OpenFOAM workshop, Cambridge</i>
Jan. 2021		Winter school at Trento, <i>Advanced numerical methods on hyperbolic PDE</i>

## Projects

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Feb. 2023	Iscra C winner	High order methods for the aeroacoustic problem - 2 Iscra C grants 60000 core hours and the access to CINECA's computational resources.
Nov. 2021	Iscra C winner	High order methods for the aeroacoustic problem Iscra C grants 120000 core hours and the access to CINECA's computational resources.
Nov. 2020	Ph.D. Project	High order methods for Aeroacoustics I developed and analysed a new projection strategy with high order numerical methods within the hybrid aeroacoustic framework. OpenFOAM is employed to compute the flow solution. A Discontinuous Galerkin - Spectral Element Method is employed to solve the acoustic problem.
Oct. 2019	MSc Thesis	DG FEM for the Poisson equation on polyhedral meshes Design of a Matlab and Fortran library to solve the Poisson equation on polyhedral meshes

## Languages

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French	Basic
English	Fluent: TOEIC (Score 920/990), 2020
Italian	Mother tongue