

Philippe MARCHNER

Research and Development Engineer



Personal Data

Birth - 23 July 1994	Email - philippe.marchner23@gmail.com
Nationality - French, Swedish	

Work Experience

MAR 2022 - CURRENT	Research and Development Engineer , SIEMENS INDUSTRY SOFTWARE, Châtillon, France. <ul style="list-style-type: none">Investigation and development of numerical methods for time-harmonic wave problems
MAR 2018 - SEP 2018	Trainee , EUROPEAN SPACE AGENCY, Noordwijk, The Netherlands. <ul style="list-style-type: none">Noise reduction in metamaterial structures: application to the Vega launch padNumerically solving Helmholtz equation in periodic media (Fenics, Bempp)
MAR 2017 - AUG 2017	Research Intern , ONERA & MATELYS, Toulouse, France. <ul style="list-style-type: none">Acoustic nonlinear behavior of micro-perforated plates using Lattice Boltzmann MethodWork presented at SAPEM 2017 and at the French Acoustic Congress (CFA 18)
SEP 2015 - FEB 2016	Engineering Assistant , SIEMENS INDUSTRY SOFTWARE, Leuven, Belgium. <ul style="list-style-type: none">High-order finite elements, acoustic multi-port characterization

Higher Education

MAR 2019 - MAR 2022	PhD Student - Applied Mathematics , UNIVERSITY OF LORRAINE & UNIVERSITY OF LIÈGE. Industrial CIFRE contract - SIEMENS INDUSTRY SOFTWARE. Non-reflecting boundary conditions and domain decomposition methods for industrial flow acoustics <ul style="list-style-type: none">Flow acoustics, distributed computing, absorbing boundary conditions, perfectly matched layers.
SEP 2017 - SEP 2018	Master of Science - Applied Mathematics , PARIS-SACLAY UNIVERSITY (ENSTA), France. Simulation and modeling. <ul style="list-style-type: none">HPC, multi-scale modeling, integral methods for scattering, optimization, uncertainty quantification.
SEP 2014 - AUG 2017	Master of Science - Mechanical Engineering , COMPIÈGNE UNIVERSITY OF TECHNOLOGY, France. Specialization in sound and vibration. <ul style="list-style-type: none">Engineering mathematics, acoustics, signal processing, fluid mechanics, vibration analysis.
SEP 2016 - FEB 2017	Erasmus program, TECHNISCHE UNIVERSITÄT BERLIN, Germany. <ul style="list-style-type: none">Aerodynamics, gas dynamics, numerical methods, nonlinear vibrations, harmonic analysis.

Teaching Experience

SPRING 2023	Numerical solution of PDEs and applications , UNIVERSITY OF LUXEMBOURG. <ul style="list-style-type: none">Lecture and exercises, Master in Mathematics (1st year), 35 hours.
WINTER 2023	Numerical analysis , UNIVERSITY OF LUXEMBOURG.
WINTER 2022	<ul style="list-style-type: none">Lecture and exercises, Master in Mathematics (1st year), 35 hours.

Computer Skills

Programming: C++, Python, MPI | **Others:** Git, LaTeX, Gmsh

Languages

French: Mother tongue	Swedish: Fluent	Spanish: Conversational
English: Professional proficiency	German: Good knowledge	

Conferences

- Solving large scale flow acoustics time-harmonic problems in a HPC framework using domain decomposition, *Rencontre Jeunes Chercheuses Jeunes Chercheurs Ondes 2022*, Inria Université Côte d’Azur, France.
- Towards an efficient domain decomposition solver for industrial time-harmonic flow acoustics, *8th European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS 2022)*, Oslo, Norway.
- Local absorbing boundary conditions for heterogeneous and convected time-harmonic acoustic problems, *Conference on Mathematics of Wave Phenomena 2022*, Karlsruhe, Germany.
- Non-Overlapping Schwarz Domain Decomposition for Flow Acoustics, *14th World Congress on Computational Mechanics (WCCM) and ECCOMAS Congress 2020*, Virtual Congress.

Publications

- P. Marchner, H. Bériot, S. Le Bras, X. Antoine and C. Geuzaine. A domain decomposition solver for large scale time-harmonic flow acoustics problems. *Submitted*, 2023.
- P. Marchner, X. Antoine, C. Geuzaine, and H. Bériot. Construction and numerical assessment of local absorbing boundary conditions for heterogeneous time-harmonic acoustic problems. *SIAM Journal on Applied Mathematics*, 2022.
- P. Marchner, H. Bériot, X. Antoine, and C. Geuzaine. Stable perfectly matched layers with Lorentz transformation for the convected Helmholtz equation. *Journal of Computational Physics*, 2021.
- A. Lieu, P. Marchner, G. Gabard, H. Bériot, X. Antoine, and C. Geuzaine. A non-overlapping Schwarz domain decomposition method with high-order finite elements for flow acoustics. *Computer Methods in Applied Mechanics and Engineering*, 2020.

Awards

- Finalist of the 2023 AMIES mathematics-industry PhD award