Dr Ronan Dupont

Curriculum Vitae

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Looking for a Post-Doctoral position in Applied Mathematics

Education

2021–2024	**PhD, Applied Mathematics for Computational Physics**, *GeoSciences, IMAG, CNRS, Montpellier University*, Montpellier, France.
	Wave-morphodynamic coupling of the coastline by minimization principle. Under the supervision of Pr. Mohammadi Bijan and Pr. Bouchette Fréderic (**PDF**).
2018–2021	**Advanced Engineering Master in Computational Fluid Dynamics.**, *SeaTech, Engineering School, Toulon University, France*.
2020–2021	**Master in Marine Sciences**, *University of Toulon, France*.
	Physics of the Environment for the Evaluation of Risks (PHYMER).
2016–2018	**Higher education Program**, *Caen, France*.

Publications

Journal Articles

2024	**Ronan Dupont**, Frédéric Bouchette, and Bijan Mohammadi. Beaches morphodynamic modeling based on hadamard sensitivity analysis. ***Ocean Modelling***, page 102370. Elsevier, 2024, **(Impact Factor: 3.2)**, (**PDF**).
2023	**Ronan Dupont**, Megan Cook, Frédéric Bouchette, Bijan Mohammadi, and Samuel Meulé. Sandy beach dynamics by constrained wave energy minimization. ***Ocean Modelling***, page 102197. Elsevier, 2023, **(Impact Factor: 3.2)**, (**PDF**).

In Conference Proceedings

2022	**Ronan Dupont**, Megan Cook, Frédéric Bouchette, Bijan Mohammadi, and Damien Sous. Optimorph: un modèle de morphodynamique du littoral par principe de minimisation. analyse de sensibilité en 1d et application multi-1d. volume 17, pages 327–336. JNGCGC, 2022, (**PDF**).

In progress (Submitted)

202X	**Ronan Dupont, Mathias Dauphin and Romain Mottier**, An Arbitrary-Order Virtual Element Method for the Helmholtz Equation Applied to Wave Field Calculation in Port, submitted to Ocean Modelling, (**DRAFT**).

Research Experience

Montpellier University

2024	***Solving the mild-slope equation using the Virtual Element Method (VEM)***.
	Virtual element method of order k with Robin's Boundary condition. Application to a concrete problem: the port of Cherbourg, (**PDF**).
Associate :	**M. Mathias DAUPHIN**, *PhD students on high-order numerical methods*.

SeaTech, Engineering School, Toulon University

2021 ***2D mesh of a sphere***.
Modeling the surface mesh (2D) of a sphere in Fortran 90 and display in Python. Create types and functions to number vertices and store their coordinates. Application to poisson problems.

Advisor : **Pr. Cédric GALUSINSKI**, *Professor, Department of Mathematics*, IMATH, Toulon University (*Personal Web-page*).

2021 ***Sudoku solving using a genetic algorithm method***.
Establishing the optimization method for a given problem.

Advisor : **Dr. Sylvain MAIRE**, *Associate Professor, Department of Mathematics*, IMATH, Toulon University

2021 ***Resolution of bi-fluid Euler equations, application with the BBAMR code***.
Resolution in Fortran 90. Solving by the Finite Volume method using different schemes (Godunov, HLLC, Lax) on Fortran.

Advisor : **Dr. Frederic GOLAY**, *Associate Professor, Department of Mathematics*, IMATH, Toulon University (*Personal Web-page*).

2020 ***Modeling the spread of epidemics in France using the SIR model***.
Modeling and solving systems of partial differential with diffusion in Python. Change from SIR to SZR model of zombie propagation. zombie propagation.

Advisor : **Dr. Gloria FACCANONI**, *Associate Professor, Department of Mathematics*, IMATH, Toulon University (*Personal Web-page*).

Segula Technologies, Trappes, France

2021 ***CFD optimization of the performance of windsurf sails intended for high speeds***.
6-month end-of-studies research internship.

Advisor : **M. Laurent LANQUETIN** & **Dr. Thibaut ALLEAU**.

Talks

2024 ***PhD Defense - Montpellier (France)***.
On September 30, 2024, I defended my thesis in Montpellier (**PDF**).

2024 ***NuMerics2024 : Numerical Methods for Problems in Fluid Dynamics - Naples (Italy)***.
I was a **guest speaker** at this workshop and my work was entitled *Numerical solution of Mild-slope equation using Virtual Element Method* (*Conference website*), (**PDF**).

2023 ***AGU 2023 - San Francisco (United States)***.
I presented a poster at this international conference showing *The generic version of the OptiMorph model* (*Conference website*), (**PDF**).

2023 ***Journées de Modélisation des Vagues à Phases Résolues - Île d'Aix (France)***.
I took part in this workshop and presented *The OptiMorph model forced by a wave-to-wave resolution model (Shallow Water)* (*Conference website*), (**PDF**).

2022 ***Journée Nationales Génie Côtier - Génie Civil 2022 - Chatou (France)***.
I took part in this conference and presented *OptiMorph: a coastal morphodynamics model based on the minimization principle. Sensitivity analysis in 1D and multi-1D application.* (*Conference website*), (**PDF**).

Skills

Programming	Python, Matlab, Fortran, C, C++, LaTeX.
CFD Solfware	OpenFoam, Fluent, ADINA.
Optimization	Optimal transport, Gradient descent, Genetic algorithms, Stochastic methods.
HPC	Bash, Slurm.

Interests   Numerical modelling, Fluid mechanics, Coastal physics, Finite Elements, Virtual Elements, Finite Volumes.

Languages

French 🇫🇷	Native language.
English 🇬🇧	Fluent - B2/C1.
Italian 🇮🇹	Intermediate - B1.
German 🇩🇪	Pre-Intermediate - A2.
Spanish 🇪🇸	Basic - A1.

Teaching Experience

2025 **High school mathematical teacher**, *High school*, Bordeaux, France.

2023-2024 **Algebra, Calculus, Cardinality, Geometry**, *First year of mathematics degree*, Montpellier University, France, (*Article mentioning my support for a top sportswoman*).

2023 **Advanced coastal and port hydromorphodynamics**, *Master of Coastal Engineering*, Montpellier University, France, (*Course material*).

2023 **Coastal and port hydromorphodynamic modeling tools: OptiMorph**, *Master of Coastal Engineering*, Montpellier University, France, (*Course material*).

2023 **Python Courses**, *Master of Coastal Engineering*, Montpellier University, France, (*Course material*).

Referees

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