

Ronan Dupont

Curriculum Vitae

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Looking for a Post-Doctoral position in Numerical Methods

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 Frédéric.
- 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](#)).

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**, *Associate 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 study research internship.

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

Talks

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++.

CFD Software OpenFoam, Fluent, ADINA.

Optimization Optimal transport, Gradient descent, Genetic algorithms, Stochastic methods.

Other Numerical modelling, Fluid mechanics, Coastal physics.

Languages

French  Native language

English  Fluent - B2/C1

Italian  Intermediate - B1

German  Basic

Teaching Experience

- 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](#)).
- 2023-2024 **Algebra, Calculus, Cardinality, Geometry**, *First year of mathematics degree*, Montpellier University, France.

Referees

Pr. Bouchette Frederic

*Professor, Department of
GeoSciences*

Géosciences Montpellier

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Pr. Bijan Mohammadi

*Professor, Department of
Mathematics*

Institut Montpelliérain Alexander Grothendieck

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Dr. Ersoy Mehmet

*Associate Professor, Department of
Mathematics*

IMATH Toulon

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