Ronan Dupont

Curriculum Vitae

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My Webpage
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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 Fréderic.

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 mouth 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 Solfware	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

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

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

Pr. Bouchette Frederic
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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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