TIPHAINE DELAUNAY

Born April 21, 1997, Paris
Driving license

https://tiphainedelaunay.github.io

EDUCATION

PhD in applied mathematics, *2020 - 2023*

MΞDISIM, Inria & École Polytechnique, Institut Polytechnique de Paris - CNRS, Palaiseau, France

Supervisors : Philippe Moireau and Sébastien Imperiale

Title : *Adaptative observers for wave equations and associated discretization: formulations and analyses*

Defense : December 19 2023, Inria, Palaiseau

Jury :			
	Laurent Bourgeois	Professor, ENSTA Paris	President
	Lucie Baudouin	Research director, CNRS	Rapporteur
	Takéo Takahashi	Professor, Université de Lorraine	Rapporteur
	Yannick Privat	Professor, Université de Lorraine	Examiner
	Sébastien Imperiale	Researcher, Inria	Director
	Philippe Moireau	Research director, Inria	Director
	Muriel Boulakia	Professor, Univ. Versailles Saint-Quentin	Guest

Engineering diploma *2015 - 2020*

INSA Rouen Normandie, Saint-Etienne du Rouvray, France

Major : Applied mathematics

Master's degree in applied mathematics *2019 - 2020*

Université de Rouen Normandie, Saint-Etienne du Rouvray, France

Thesis : *3D reconstruction from two-dimensional slices applied to medicine*

RESEARCH EXPERIENCE

Post-doctorate *depuis Février 2024*

MONC, Inria & Institut de Mathématiques de Bordeaux, Talence, France

Supervisors : Annabelle Collin, Christèle Etchegaray and François Moisan

Topic : *Deciphering tumor response to propranolol in angiosarcomas by mathematical modeling and data assimilation*

Research internship *Mars - Août 2020*

MΞDISIM, Inria & École Polytechnique, Palaiseau, France

Topic : *Data assimilation by observers strategies for wave equations*

Research internship *Juin - Août 2018*

Université de Dundee, Dundee, Écosse

Topic : *Elliptic curves and cryptography*

TEACHING EXPERIENCE

Tutored interdisciplinary project, *2024*
Master Cancer Biology of University of Bordeaux, Talence, France
Master's degree (M2) - 5h - Creation and supervision of a project: *Mathematical modeling of the growth of spheroids in free growth and in responses to a non-cytotoxic drug*

IIntroduction to PDEs and finite differences *2022 & 2023*
ENSTA Paris, Palaiseau, France
Niveau L3 - 2 x 14h - Tutorial, practical class, exam monitoring, grading

Finite elements method *2021 & 2022*
ENSTA Paris, Palaiseau, France
Niveau M1 - 2 x 14h - Tutorial, practical class, exam monitoring, grading

COMMUNICATIONS

Talks at national and international conferences

- **Rencontres Normandes sur les apsects théorique et numérique des EDP** *(Invited)* *2024*
  Saint-Etienne du Rouvray, France
- **WAVES** *2022*
  Palaiseau, France
- **ECCOMAS** *2022*
  Oslo, Norvège
- **Rencontre Jeunes Chercheuses, Jeunes Chercheurs : Ondes** *(Invited)* *2022*
  Inria Université Côte d'Azur, Sophia Antipolis, France
- **Rencontre pour les Ondes et leurs applications** *(Invited)* *2022*
  INSA Rouen Normandie, Saint-Etienne du Rouvray, France
- **Congrès des Jeunes Chercheurs en Mathématiques Appliquées** *2021*
  Palaiseau, France

Talk at seminar

- **Séminaire EDP de Nancy** *(Invited)* *2024*
  Institut Elie Cartan de Lorraine, Nancy, France
- **Seminar on the mathematical and statistical foundation of future data-driven engineering** *2023*
  Isaac Newton Institute, Cambridge, Royaume-Uni
- **Workshop on assimilation, control and computational speedup** *2023*
  LAGA, Université Sorbonne Paris-Nord, Villetaneuse, France

Posters

- **Journées des rencontres IDEFIX-MΞDISIM-POEMS** *2020 & 2021*
  Palaiseau, France

PUBLICATIONS

Adaptative observers for wave equations and associated discretizations: formulations and analysis
Tiphaine Delaunay (2023)
Thèse de doctorat, Institut Polytechnique de Paris
https://theses.hal.science/tel-04511683v1

Mathematical analysis of an observer for solving inverse source wave problem
Tiphaine Delaunay, Sébastien Imperiale, Philippe Moireau (2024)
Accepted in *Inverse problem and imaging*, under revisions
https://hal.science/hal-04344193v1

Uniform boundary stabilization of a high-order finite element space discretization of the 1-d wave equation
Tiphaine Delaunay, Sébastien Imperiale, Philippe Moireau (2024)
Published in *Numerische Mathematik*
https://hal.science/hal-04172229v1
DOI: 10.1007/s00211-024-01440-9

Solving inverse source wave problem - From Carleman estimates to observer design
Muriel Boulakia, Maya de Buhan, Tiphaine Delaunay, Sébastien Imperiale, Philippe Moireau (2024)
Accepted in *Mathematical Control and Related Fields*, under revisions
https://hal.science/hal-04788439v1

SCIENTIFIC POPULARIZATION

Participation to Science fair *2021*
Institut Polytechnique de Paris, Palaiseau, France

Production of a popularization video *2021*
Topic : *Mathematical modelling and computer simulation*
https://www.youtube.com/watch?v=28C1C3UmStE

Animation of "Rendez-vous des jeunes mathématiciennes et informaticiennes" *2021*
Online

Popularization conference in a High School *2021*
Académie de Créteil, online
Topic : *Cryptography*

ACADEMIC INTERESTS

- Inverse problem
- Data assimilation
- Mathematical modelling with PDEs
- Evolution problems
- Wave and applications

PROGRAMMING

- Java
- C++
- Matlab
- Python
- R
- FreeFEM++

SOFTWARES

- LaTeX
- Monolix
- Office
- Photoshop
- Paraview

LANGUAGES

- English : Strong reading, writing and speaking skills (TOEIC 825)
- Spanish : Beginner