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Pauline Chassonnery

Curriculum Vitæ

Current position

Postdoctoral fellowship (June 2024 – May 2026)

Title **High performance simulation of Thermo-Hydro-Mechanical models in faulted geological systems.**
Project ANR Earth–Beat.
Institutes Bureau de Recherches Géologiques et Minières (BRGM) & Université Côte d'Azur.

Research Experiences

PhD Thesis (September 2020 – December 2023)

Title **Mathematical 3D modelling of connective tissues architecture emergence.**
Supervisors Louis CASTEILLA and Diane PEURICHARD.
Institutes Restore Institute, University Toulouse 3 & LJLL, Sorbonne University (France).

Master 2 intership (April – July 2020)

Title **Mathematical 3D modelling of adipose tissue morphogenesis.**
Supervisor Diane PEURICHARD.
Institute Laboratoire Jacques-Louis Lions, Sorbonne University (France).

Predoctoral year of research abroad (October 2018 – June 2019)

Title **Dynamical, multi-body interaction in a dense stellar system : formation of a super-massive black-hole.**
Supervisor Roberto CAPUZZO-DOLCETTA.
Institute Astrophysics Department, University of Roma La Sapienza (Italy).

Master 1 internship (April – July 2017)

Title **Integrating primitive tumors's shape to cancer modelization by a level-set approach.**
Supervisors Annabelle COLLIN and Olivier SAUT.
Institute Inria team MONC & Bordeaux Institute of Mathematics (France).

Bachelor internship (spring 2016)

Title **An interactive internet solver for the Riemann problem in digital fluid dynamic.**
Supervisors Matthieu ANCELLIN and Jean-Michel GHIDAGLIA.
Institute Center for MathematicaL studies and their Applications, ENS Cachan (France).

Academic Background

Dec 2023 **PhD in Applied Mathematics**, *Paul Sabatier University*, Toulouse, France

July 2020 **Master's degree in Mathematics of Modelling, major Mathematics applied to Biological and Medical Sciences**, *Sorbonne University*, Paris, France

July 2018 **Master's degree in Mathematics Secondary-school and University Teaching**, *École Normale Supérieure de Cachan*, France

2012 – 2015 **CPGE Physics and Chemistry**, *Aristide Briand High School*, Évreux, France

Teaching Experience

2020 – 2022 **Numerical series and Function series**, *Bachelor 2 of Mathematics, Sorbonne University*, Paris, France.
Teaching assistant (tutorial/exercises, exam correction and feedback), 112 hours total in french.

2020 – 2022 **Numerical analysis**, *Bachelor 3 of Mathematics, Sorbonne University*, Paris, France.
Teaching assistant (practical work with Python), 84 hours total in french.

Professional formations

Aug 2021 Virtual Summer school "Kinetic and fluid equations for collective dynamics", *France-Korea International Research Laboratory in Mathematics*, online.

2021 Organisation of the CARe graduate school workshop "Regeneration and Senescence : From Biological Mechanisms to Numerical Tools", *IUCT-Oncopole*, Toulouse, France.

Publications

[1] Pauline Chassonnery and Roberto Capuzzo-Dolcetta. "Dynamics of a superdense cluster of black holes and the formation of the Galactic supermassive black hole". *Monthly Notices of the Royal Astronomical Society*, 504(3):3909–3921, Apr 2021. doi:10.1093/mnras/stab1016.

[2] Pauline Chassonnery, Roberto Capuzzo-Dolcetta and Seppo Mikkola. "ARWV Code User Manual", 2019. arXiv:1910.05202.

[3] Pauline Chassonnery, Jenny Paupert, Anne Lorsignol, Childérick Sévérac, Marielle Ousset, Pierre Degond, Louis Casteilla and Diane Peurichard. "Fiber crosslinking drives the emergence of order in a three-dimensional dynamical network model". *Royal Society Open Science*, 11:231 456, Jan 2024. doi:10.1098/rsos.231456.

[4] Pauline Chassonnery, Diane Peurichard and Sinan Haliyo. "3D visualisation and segmentation tools for systems of spherical and rod-like objects", (in preparation).

[5] Pauline Chassonnery, Jenny Paupert, Anne Lorsignol, Childérick Sévérac, Matthieu Vigneau, Laetitia Pieruccioni, Marielle Ousset, Pierre Degond, Louis Casteilla and Diane Peurichard. "Morphogenesis of adult adipose tissues emerges from simple local mecanical interactions", (in preparation).

Oral Communications and Posters

Jan 2024 CBI-IMT workshop "Modeling of life in Toulouse: from the atom to the animal" (flash talk)

Jan 2023 CARe graduate school workshop "Numerical and technical tools to better investigate metabolism, inflammation and cancer" (oral communication)

Aug-Sep 2022 Mathematical Biology on the Mediterranean Conference, 3rd edition (oral communication)

June 2022 Restore Institute Scientific day (poster)

Languages

French Native

English Fluent, TOEFL certification with a mark of 640/677

Computer Skills

Writing Proficient with LaTeX.

Programming Advanced skills in Python, Fortran and Matlab. Proficient with C^{++}.