Marguerite Champion

Graduate Engineer from Mines ParisTech
4th Year PhD Student at COMMEDIA (joint Inria Paris & LJLL Sorbonne University & CNRS team)
Seeking a postdoctoral position in mathematical modeling, analysis, and numerical simulation.

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Born October 31, 1997

PhD Thesis

2021 – 2024 **Inria Paris & LJLL SU (COMMEDIA)** *PhD in Applied Mathematics (ongoing)*
Thesis topic: Modeling, analysis and simulation of fluid-structure-contact interaction. Supervised by Miguel A. Fernandez, Céline Grandmont, Fabien Vergnet, and Marina Vidrascu. PhD funded by a CNRS Disability Fellowship.

International scientific talks:

- ECCOMAS Coupled Conference, June 2023, Greece.
- Lions-Magenes Days, May 2024, Pavia.
- ECCOMAS Congress 2024, June 2024, Lisbon.

Publication: *On the analysis of a mechanically consistent model of fluid-structure-contact interaction*, co-authored with Miguel Angel Fernández, Céline Grandmont, Fabien Vergnet, and Marina Vidrascu, 2024, Mathematics in Engineering. doi: 10.3934/mine.2024018
Additional activities:

- Teaching duties at Sorbonne University (2022-2024, 64 hours/year). Supervision of Numerical Analysis tutorials (3rd year) and Python practicals (2nd year).
- Co-organization of the Inria Paris Young Women in Mathematics and Computer Science Meetings (RJMI) 2023. Hosted 30 high school girls at the Inria Paris center.

Education

2017 – 2020 **Mines ParisTech** *Engineering Degree Program*
2015 – 2017 **Lycée Louis-Le-Grand** *Preparatory Classes* MPSI then MP

Professional Experience

2020 – 2021 (8 months) **SystolDynamics in collaboration with Inria (COMMEDIA)** *R&D Engineer*
3D simulation of an intra-aortic cardiac pump based on the finite element library FELiScE developed by COMMEDIA.

- Evaluation of the hydraulic performance of the SystolDynamics pump.
- Investigation of numerical methods (mobile mesh techniques)

2020 (6 months) **Thales** *End-of-study internship*
Study of a neuroevolutionary algorithm (NEAT). Python implementation. Application on benchmark classification problems and a reinforcement learning problem for traffic optimization (SUMO).

2019 (3 months) **Mathematics and Computer Science Department, Emory University (USA)** *Research internship*
Numerical modeling and simulation of hemodynamics in the aorta to optimize Left Ventricular Assist Device (LVAD) placement. Group project of 5 students supervised by Alessandro Veneziani.

2018 – 2019 (2 months) **Inria Paris** *Research internship* Modeling of blood flow.

Languages and Computing Skills

English Fluent
Computing Python, C++, Freefem++, LaTeX, Office, Paraview, Ensight