ELISE GROSJEAN

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PROFESSIONAL

Postdoctoral research in Applied Mathematics, Inria-Saclay (M3DISIM) *10/2023 - present*

Postdoctoral research in Applied Mathematics, Felix-Klein-Institute für Mathematik, Kaiserslautern, Germany *03/2022 - 09/2023*

PhD in Applied Mathematics, Sorbonne Université, Paris *11/2018 - 03/2022*

EDUCATION

PhD in Applied Mathematics *11/2018 - 03/2022*
under the supervision of Yvon Maday at Jacques-Louis Lions laboratory (LJLL)
Subject: Non-Intrusive Reduced Basis methods (NIRB)

Master in the mathematics of modeling *2015 - 2018*
at Sorbonne-Universite

Engineer school in Applied Mathematics and Computer Science *2015 - 2018*
at Polytech-Paris UPMC

Bachelor in Fundamental Mathematics (Sorbonne-Universite) *2012 - 2015*

PROFESSIONAL PROJECTS

Study of a macroscopic problem for meniscus tissue regeneration *2022-2023*
Implementation with FreeFem++ (DG-FEM) and sensitivity analysis combined with model order reduction [1]

Implementation of a Non-Intrusive Reduced Basis module in an open-source library [2] *2018-2021*
Contributed to the online library with EDF and other partners on NIRB methods in Python and C++. Application on offshore wind turbines.

C++ Finite Elements Method implementation [3] *2018*
Implemented the Finite Elements method to solve 2D Navier-Stokes equation in a channel.

Internship at Jacques-Louis Lions laboratory *March - August 2018*
Study of the velocity stability threshold in a steam generator of a nuclear power plant by an algebraic method and an ALE finite element method (Freefem, Matlab)

Internship at the climate research institute IMK-IFU at Garmisch-Partenkirchen (Germany) *June - August 2017*
Dynamic global vegetation model (DGVM) to improve crops and the quality of soils in East Africa (R, LPJ-GUESS)

Internship at Saint-Antoine hostpial, Sorbonne Université *July - August 2016*
Implementation of Pipeline scripts on a cluster for DNA sequencing

TEACHING

Tutor (TD) - Differential-Algebraic Equations, Master 1, Kaiserslautern Universität *2022 - 2023*
Tutor (TP) - Approximation of PDEs, Master 1, Sorbonne Université *2018 - 2021*
Tutor (TD/TP) - Numerical analysis, 1^{rst} year *2020 - 2021*
l'École nationale de la statistique et de l'administration économique Paris (ENSAE)
Tutor (TP) - Python, L3, Sorbonne Université *2018 - 2020*
Tutor (TP) - Numerical methods for ODEs, L3, Sorbonne Université *2018 - 2020*
Tutor (TD/TP) - Numerical methods for differential equations, L3, Sorbonne Université *2018 - 2020*

SKILLS

[1] https ://github.com/grosjean1/SensitivityAnalysisWithNIRBTwoGridMethod
[2] https://gitlab.com/mor_dicus/
[3] https://github.com/grosjean1/navierStokes

Langage French (Mother tongue), English (Fluent,TOEIC 900), German (B2), Hindi (Notions)
Computer skills C/C++, Bash, Python, Matlab, Git, Scilab, MPI, OpenMP, FreeFem, Paraview, GMSH, Salome, Code Saturne.

ACADEMIC ACHIEVEMENTS

With Bernd Simeon & Christina Surulescu **A mathematical model for meniscus cartilage regeneration** (Wiley PAMM) *07/2023*
With Bernd Simeon, **The non-intrusive reduced basis two-grid method applied to sensitivity analysis** (Preprint) *01/2023*
With Yvon Maday, **Error estimate of the Non-Intrusive Reduced Basis (NIRB) two-grid method with parabolic equations** (accepted in SMAI-JCM) *10/2023*
With Yvon Maday, **A doubly reduced approximation for the solution to PDE's based on a domain truncation and a reduced basis method: Application to Navier-Stokes equations** (Preprint) *02/2022*
With Yvon Maday, **Error estimate of the Non-Intrusive Reduced Basis method with finite volume schemes** (m2an 10.1051/m2an/2021044) *07/2021*

Poster Session - CMBBE *05/2023*
Poster Session - application of reduced basis methods to wind farms *11/2019*
Recent talks:

- ICCB2023, Vienna (Austria) - Meniscus tissue regeneration and sensitivity RB approach *09/2023*
- SPP2311-Kick-off, Magdeburg (Germany) - Coupled analysis of active biological processes for meniscus tissue regeneration *09/2023*
- GAMM, Dresden Universität (Germany) - A cell-based model and its numerical treatment *06/2023*
- Department of Mathematics, university of Dhaka (Bangladesh) - Studying mathematics in France *01/2023*
- MAP5 Seminar - NIRB method applied to sensitivity analysis *11/2022*
- CANUM2022 - NIRB method applied to parabolic equations *06/2022*
- Simulation and Optimization for Renewable Marine Energies (EMRSIM22), talk on the NIRB method applied to wind farms *06/2022*
- SPP2311-Kick-off, presentation of the sensitivity analysis applied to the meniscus regeneration tissue problem, Stuttgart *05/2022*
- Workshop Mathematics of High-Performance Computing, Prague *09/2021*
- CANUM2020 - contributions *12/2020*
- Presentation of the two-grids method with EDF *10/2020*
- GTT of LJLL *10/2020*
- Model Order Reduction Summer School MORSS2020 *09/2020*

RESPONSABILITIES

- Supervision of Bachelor and Master students *2022/2023*
  - _ Henry Jäger (M2 Internship)
  - _ Milena Röhrs (L3 Internship)
  - _ Aishwarya Nair (L3 Internship)
  - _ Yi-Chin Wang (M2 Internship)
- Reviews in Mathematics and Computers in Simulation (MATCOM) / Elsevier
- Organization of the "lab tea", weekly conviviality events of the LJLL laboratory *2019/2020*