

# ELISE GROSJEAN

Kaiserslautern Universität (TUK), Germany

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## PROFESSIONAL

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**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

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**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

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**Study of a macroscopic problem for meniscus tissue regeneration**

*2022-2023*

Implementation with FreeFem++ (DG-FEM) and sensitivity analysis combined with model order reduction <sup>1</sup>

**Implementation of a Non-Intrusive Reduced Basis module in an open-source library** <sup>2</sup>

*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** <sup>3</sup>

*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 hospital, Sorbonne Université

*July - August 2016*

Implementation of Pipeline scripts on a cluster for DNA sequencing

## TEACHING

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**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<sup>st</sup> 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

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**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.

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<sup>1</sup><https://github.com/grosjean1/SensitivityAnalysisWithNIRBTwoGridMethod>

<sup>2</sup>[https://gitlab.com/mor\\_dicus/](https://gitlab.com/mor_dicus/)

<sup>3</sup><https://github.com/grosjean1/navierStokes>

## ACADEMIC ACHIEVEMENTS

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With Bernd Simeon & Christina Surulescu **A mathematical model for meniscus cartilage regeneration** (Preprint) 06/2023  
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** (Preprint) 09/2022  
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 05/05/2023  
Poster Session - application of reduced basis methods to wind farms 11/2019

### Recent talks:

- 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

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Supervision of Bachelor and Master students 2022/2023

- \_ Henry Jäger
- \_ Milena Röhrs
- \_ Aishwarya Nair
- \_ Yi-Chin Wang

### Reviews

- \_ Mathematics and Computers in Simulation (MATCOM) / Elsevier

Organization of the "lab tea", weekly conviviality events of the LJLL laboratory 2019/2020