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Updated May 2026

CV Raphaël LECOQ

MATHEMATICS GRADUATE IN SYSTEMS COMPLEXITY REDUCTION

Interested in all mathematical methods aiming to reduce the computational complexity of simulated systems.

Scientific computing Reduced Order Models ; Machine Learning ; Data Assimilation

Numerical analysis Numerical Methods for PDEs ; Stochastic Models ; Approximation theory

EDUCATION

2024-2025
Paris, France

2nd year MSc Mathematical Modeling major PDEs and Data Science
Sorbonne Université (Highest Honours)

2022-2026
Rennes, France

Ecole Normale Supérieure de Rennes diploma
Mathematics licence / Physics licence / 1st year MSc Pure mathematics.
ENS Rennes, Université de Rennes

2019-2022
Tours, France

CPGE Mathematics and Physics
Intensive Maths and Physics (MP). Admitted at ENS Rennes as trainee civil servant.
Descartes Highschool

ONGOING PROJECTS

Since April 2026

Non-linear Compressed Reduced Basis Methods with sparse observations
Group of work with SPEIT IoT lab (Shanghai Jiao Tong) and LJLL (Sorbonne University).

EXPERIENCE

May–August 2026
Saclay, France

Laboratory of Mechanics Paris-Saclay (LMPS), ENS Paris-Saclay | **Research internship**
ANR PowerTwin : study of Reduced Order Models for power modules.
Focus on different methods, especially Proper Generalized Decomposition and AI, to create reliable ROM of power modules.
Partnership with SAFRAN for benchmarking on industrial applications.
Supervised by Ludovic CHAMOIN.

Nov 2025-April 2026
Shanghai, China

Shanghai Jiao Tong University, Paris Elite Institute of Technology | **Research internship**
Nonlinear Compressed Reduced Order Models for sensor-observed systems with slow Kolmogorov width decay.
Reconstruction of sparse data with reduced basis methods using an ML autoencoder to reduce the online optimization procedure down to a few POD coefficients instead of all of them.
Supervised by Helin GONG (SJTU) and Yvon MADAY (Sorbonne University).

April-September 2025
Saclay, France

CEA Saclay (French Atomic Agency) | **R&D internship**
Discontinuous Galerkin Method and "a posteriori" error estimation.
Implementation in MATLAB of an a local "a posteriori" error estimator for Symmetric Weighted Interior Penalty scheme of Discontinuous Galerkin methods.
Enabled local mesh refinement recovering optimal convergence for low-regularity solutions.
Supervised by Andrew PEITAVY and Erell JAMELOT.

May-August 2024
Pisa, Italy

Institute of Biorobotics, Sant'Anna Scuola Superiore | **Research internship**
A posteriori error estimation for Finite Volume based Reduced Order Models.
Used a Discontinuous Galerkin variational formulation of Finite Volumes to enable a parameter-wise posteriori error estimators for Reduced Basis generation defined in the Continuous Finite Elements framework.
Supervised by Giovanni STABILE, ERC StG Project DANTE.

May-July 2023
Saclay, France

Laboratory of Theoretical Physics and Statistical Models, CNRS | **Research internship**
Modeling, simulation and statistical analysis of branching stochastic processes.
Modelling and statistical analysis of critical branching processes (Lévy flights, Brownian motion) with birth and death and their clustering statistics in neutronic (controled population size) and avalanche (free population size) cases.
Supervised by Alberto ROSSO. Collaboration with CEA Saclay.

EXPERTISE

Langages :	**Programming :**	**Tools & Environment :**
English C1 (TOEIC 955/990)	Matlab, FreeFEM++	Linux
French mother tongue	Python (sklearn, skfem, pandas, tensorflow)	Github/Git
	Notions of C++	Latex

TEACHING

2025-2026	CEA CAPA – 2026 Summer intensive Calculus III lecturer (50 hours). English taught. Mentor of a Shanghai Jiao Tong University SPEIT bachelor research project.
2024-2025	Optimal Sup-Spé – tutoring, tutorial and mock exams for CPGE students, 4 hours/saturday. Private teacher for one Terminale, 4 hours/weeks.
2022-2025	Tutor for CPES SEnS 1st and 2nd year (joint bachelor of ENS Rennes and Chateaubriand Highschool), 5 hours/ week. Private teacher for Highschool students, 4 hours/week. 2 weeks pedagogy internship at Chevrollier Highshool (2nde, Tale, BTS, CPGE) with S. BRIDONNEAU, 2023.

ATTTENDED WORKSHOPS AND CONFERENCES

2025	COMETA Uncertainty Quantification Workshop. CEA Saclay : PhD organized conferences.
2022 - 2024	ENS Rennes mandatory maths and pluridisciplinary conferences.

VOLUNTEERING AND STUDENT JOBS

Rendez-vous des Jeunes Mathématiciennes & Informaticiennes Rennes 2022.
ENS Rennes BDE : sponsors manager and events advisors.
ENS Rennes BDS : Head of Table Tennis team.
Summer jobs at Farm Chailloux (2016) and ICO Angers (2018-2022).