

Alexandre Pasco

PH.D. · APPLIED MATHEMATICS · GRADUATED ENGINEER

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My research is mainly about dimension reduction methods for high-dimensional approximation. I try my best to promote open science.

Education

Ph.D. applied mathematics, ECOLE CENTRALE DE NANTES

Nantes, France Dec. 2022 - Jan. 2026

(Master's) Engineer's degree: applied mathematics, ECOLE CENTRALE DE NANTES

Nantes, France Sep. 2019 - Sep. 2022

Prepa Mathematics-Physics, LYCÉE CLÉMENCEAU

Nantes, France Sep. 2017 - Aug. 2019

Experience

Teacher assistant, ECOLE CENTRALE DE NANTES

Nantes, France Feb. 2023 - Mar. 2025

Researcher internship, LABORATOIRE JEAN LERAY

Nantes, France Apr. 2022 - Sep. 2022

Actuarial internship, UNION MUTUALISTE RETRAITE

Nantes, France Apr. 2021 - Aug. 2021

Publications

JOURNAL ARTICLES

- Nouy, A. and Pasco, A.: Dictionary-based model reduction for state estimation.
Adv Comput Math 50, 32. <https://doi.org/10.1007/s10444-024-10129-4> Apr. 2024

PREPUBLICATIONS

- Pasco, A. and Nouy, A.: Surrogate to Poincaré inequalities on manifolds for structured dimension reduction in nonlinear feature spaces.
Submitted. <https://arxiv.org/abs/2602.01143> Feb. 2026
- Nouy, A. and Pasco, A.: Surrogate to Poincaré inequalities on manifolds for dimension reduction in nonlinear feature spaces.
Submitted. <https://arxiv.org/abs/2505.01807> May. 2025

OTHER

- Pasco, A.: Nonlinear dimension reduction for high dimensional approximation and inverse problems.
HAL. <https://hal.science/tel-05469205v1> Jan. 2026

Presentations

ORAL PRESENTATIONS

- Séminaire des doctorants du LMJL
Model Reduction for parameterized PDEs: why and how ? *Nantes, France*
Mar. 2023
- Young Mathematicians in Model Order Reduction Conference (YMMOR)
Dictionary-based model reduction for state estimation. *Ulm, Germany*
Mar. 2023
- Séminaire de Mathématiques Appliquées du LMJL
Dictionary-based model reduction for state estimation. *Nantes, France*
Apr. 2023
- Congrès des Jeunes Chercheuses et Chercheurs en Mathématiques et Applications (CJC-MA)
Dictionary-based model reduction for state estimation. *Gif-sur-Yvette, France*
Sep. 2023
- SIAM Conference on Uncertainty Quantification
Dictionary-based model reduction for state estimation. *Trieste, Italy*
Feb. 2024
- Young Mathematicians in Model Order Reduction Conference (YMMOR)
Structured Nonlinear Dimension Reduction Using Gradient Evaluations. *Stuttgart, Germany*
Mar. 2024
- Rencontres Doctorales Lebesgue (RDL)
Dimension reduction using Poincaré inequalities. *Angers, France*
Apr. 2024

- Semaines d'Etudes Mathématiques - Entreprises et Société (SEMES).
Reconstruction of a latent space from a redox signal. Nantes, France Nov. 2024
- Séminaire des jeunes chercheurs en analyse de l'IRMAR.
Poincaré inequalities on manifolds for dimension reduction in nonlinear feature spaces. Rennes, France Dec. 2024
- Young Mathematicians in Model Order Reduction Conference (YMMOR)
Surrogate to Poincaré inequalities on manifolds for dimension reduction in nonlinear feature spaces. Trieste, Italy May. 2025
- RT-UQ PhD-day
Surrogate to Poincaré inequalities on manifolds for dimension reduction in nonlinear feature spaces. Grenoble, France May. 2025
- PhD Defense
Nonlinear dimension reduction for high dimensional approximation and inverse problems. Nantes, France Jan. 2026

POSTER PRESENTATIONS

- Mascot-Num Conference
Dictionary-based model reduction for state estimation. Le Croisic, France Apr. 2023
- 46ème Congrès National d'Analyse Numérique (CANUM)
Dictionary-based model reduction for state estimation. Ile de Ré, France May. 2024

Services

- Committee member**, YMMOR COMMITTEE Sep. 2023 - Present
- Doctoral student representative**, LABORATOIRE JEAN LERAY LABORATORY BOARD Nantes, France Sep. 2024 - Jun 2025
- Referent Researcher in middle schools**, MATH.EN.JEANS Nantes, France Oct. 2023 - Mar 2025
- Volunteer tutor in Maths and Physics**, ECOLE CENTRALE DE NANTES Nantes, France Oct. 2019 - Apr 2021

Teaching

TEACHER ASSISTANT

- Mathematics for engineering**, ECOLE CENTRALE DE NANTES, Undergraduate course Nantes, France Feb. 2023 - Jan 2025
- Ordinary Differential Equations**, ECOLE CENTRALE DE NANTES, Undergraduate course Nantes, France Feb. 2025 - Mar 2025
- Applied mathematics project**, ECOLE CENTRALE DE NANTES, Graduate project supervision Nantes, France Oct. 2023 - Apr 2025

Skills

- Programming** Python (Advanced), LaTeX (Advanced), MATLAB (Intermediate), C++ (Basic), F90 (Basic), SQL (Basic), SAS (Basic)
- Languages** French (Native), English (Advanced), Japanese (Intermediate JLPT N4), Spanish (Basic).