Eloi MARTINET

Current situation

2024 - **Post-doc in Variational methods in Machine Learning**, *JMU*, Würzburg, Germany.

Publications and preprints

2025 **Spherical caps do not always maximize Neumann eigenvalues on the sphere**, *with Dorin Bucur, Richard S. Laugesen and Mickaël Nahon*, Preprint.

2025 **Meshless Shape Optimization using Neural Networks and Partial Differential Equations on Graphs**, *with Leon Bungert*, Scale Space and Variational Methods in Computer Vision.

2024 **Sharp inequalities for Neumann eigenvalues on the sphere**, *with Dorin Bucur and Mickael Nahon*, Journal of Differential Geometry, (to appear).

2024 **Numerical optimization of Neumann eigenvalues on the sphere**, Journal of Computational Physics.

2023 **Maximization of Neumann Eigenvalues**, *with Dorin Bucur and Edouard Oudet*, Archive for Rational Mechanics and Analysis 247(2).

Conferences and seminars

2025 **CalcVarNL 2025**, Roermond.

2025 **Synergies of Machine Learning and Numerics**, Osaka.

2024 **MIPA Seminar**, *MIPA*, Nîmes.

2024 **Seminar Mathematics of Machine Learning and Applied Analysis**, *JMU*, Würzburg.

2024 **Partial Differential Equations seminar**, *IECL*, Nancy.

2023 **POEMS seminar**, *ENSTA*, Paris.

2023 **Calculus of Variations and Applications**, *Univesité Paris Cité*, Paris.

2023 **Partial Differential Equations seminar**, *IRMA*, Strasbourg.

2023 **Shape Optimization, Geometric Inequalities and Related Topics**, *Dip. Mat. Appl.*, Naples.

2021 **Meeting of the ANR SHAPO**, *Autrans*.

2019 **EDPs2 discussion group**, *USMB*, Chambery.

Research Stays

2025 **One-week invitation from Martin Rumpf and Christoph Smoch**, *Bonn*, Germany.

Teaching

2025 **Project of Machine Learning**, *JMU*, Würzburg.

2025 **Lectures on Finite Elements Methods and Physics Informed Neural Networks**, *JMU*, Würzburg.

2024-2025 **Lectures and exercises on Introduction to Data Science**, *JMU*, Würzburg.

2024-2025 **Seminar of Introduction to Machine Learning**, *JMU*, Würzburg.

2024 **Lectures on Finite Elements Methods and Physics Informed Neural Networks**, *JMU*, Würzburg.

2024 **Seminar of Machine Learning on graphs**, *JMU*, Würzburg.

2022-2023 **Tutoring of practical sessions of Fourier Transform and Numerical Analysis**, *ENSIMAG*, Grenoble.

2021-2022 **Tutoring of practical sessions and courses of Basic Analysis**, *UGA*, Grenoble.

2019-2020 **Tutoring of practical sessions of Numerical Analysis**, *USMB*, Chambery.

Supervision

2025 **Co-supervison of the MSc Internship of Nick Burk**, *JMU Würzburg student*, with Leon Bungert.

2024 **Co-supervison of the MSc Internship of Nicolas Roblet**, *ENSIMAG student*, with Romain Joly.

Outreach

2025 **"Machine Learning on Graphs"**, *one week project for high schoolers*, JMU, Würzburg, Germany.

2025 **"Comment les machines apprennent-elles ?"**, *for teachers*, Collège Maurice Clavel, Avallon, France.

2025 **"Maths et Machines"**, *for middle and high schoolers*, Collège Maurice Clavel and Lycée des Chaumes, Avallon, France.

2023 **"What is it to be a PhD student ?"**, *for high schoolers*, LJK, Grenoble, France.

Administrative responsibilities

2024- **Organization of the team seminar of Mathematics of Machine Learning and Applied Analysis**, *JMU Würzburg*.

Education

2019-2023 **PhD in spectral shape optimization**, *LAMA*, Chambery, Under the supervision of D. BUCUR and E. OUDET.

2020-2021 **Master's degree "Préparation à l'agrégation"**, *UGA*, Grenoble, Ranked 88.

2016-2019 **Master's degree in computer science and applied mathematics**, *ENSIMAG*, Grenoble.
Double Engineer/Master degree programme.

2013–2016 **Classes préparatoires MP***, *Lycée Carnot*, Dijon.
Post secondary academic course specialised in mathematics and physics.

Internships

March-July 2019 **Intership in shape optimization**, *LAMA/LJK*, Chambery/Grenoble.

May-July 2018 **Intership in machine learning and image processing**, *GIPSA-Lab*, Grenoble.