

Armand Gissler

Curriculum Vitae

✉ [firstname.lastname\[at\]polytechnique\[dot\]jedu](mailto:firstname.lastname[at]polytechnique[dot]jedu)
🌐 [agissler.github.io](https://github.com/agissler)

Research

- (currently) **PhD in applied mathematics**, *Inria & CMAP, École polytechnique*, supervised by Anne Auger and Nikolaus Hansen
2021–
Convergence analysis of Evolution Strategies with Covariance Matrix Adaptation (CMA-ES)
- Octobre **Pre-doctoral research internship**, *McGill University, Montreal*, supervised by T. Hoheisel
2020–June
2021
A note on the K -epigraph.
- April–August **Research internship (M2)**, *Inria Saclay - CMAP École Polytechnique*, supervised by A. Auger
2020
Influence of a line search and of the learning rate on the convergence of Evolution Strategies.
- April–August **Research internship (M1)**, *Maxwell Institute for Mathematical Sciences, University of Edinburgh*, supervised by L. Szpruch
2019
Mean-field stochastic control : Studies of mean-field games, stochastic optimisation under McKean-Vlasov dynamics, Markovian controls depending only on the law of the process.
- February–
June 2018 **Initiation to research internship (L3)**, *Centre de Mathématiques et de leurs Applications (CMLA), ENS Cachan*, supervised by A. Durmus
Studies of non-reversible discrete-time Markov chain : efficiency of MCMC methods, theoretical and numerical comparison of non-reversible MCMC algorithm with the Metropolis-Hastings algorithm and the Gibbs sampler.

Studies

- 2019–2020 **Master's degree 2nd year (M2) - Mathematics, Vision, Learning**, *École normale supérieure (ENS) Paris-Saclay*
Computational Optimal Transport, Computational Statistics, Convex Optimization, Large-Scale Optimization, Mathematical Methods for Neurosciences, Probabilistic Graphical Models, Geometry and shapes, Biostatistics, Geometrical approaches in statistics, Bayesian machine learning
- 2018–2019 **Master's degree 1st year (M1) - Mathematics**, *ENS Paris-Saclay, Université Paris-Saclay, École polytechnique*
Algebra, Analysis, Probabilities, Geometry, Statistics, Optimisation, Stochastic processes, Images, Networks
- 2017–2018 **Bachelor's degree 3rd year (L3) - Mathematics**, *ENS Paris-Saclay*
Algebra, Differential calculus, Measure theory, Hilbert and Fourier analysis, Complex analysis, ODE numerical analysis, PDE numerical approximation, Probabilities, Quantum mechanics
- 2015–2017 **Preparatory class - Mathematics, Physics, Engineering science (MPSI-MP)**, *Lycée Michelet, Vanves*, (equivalent to first two years of a Bachelor's degree)
Mathematics (algebra, analysis, probabilities), Physics (mechanics, thermodynamics, optics, electromagnetism), Chemistry, Engineering science, Computer science, Philosophy, English

Scientific publications

Preprints

- 2024 **On the irreducibility and convergence of a class of nonsmooth nonlinear state-space models on manifolds**, *Armand Gissler, Alain Durmus and Anne Auger*, <https://arxiv.org/pdf/2402.06447.pdf/>

Journal articles

- 2024 **Asymptotic estimations of a perturbed symmetric eigenproblem**, *Applied Mathematics Letters*, Armand Gissler, Anne Auger and Nikolaus Hansen, <https://inria.hal.science/hal-04386103v1/document/>
- 2022 **A note on the K -epigraph**, *Optimization*, Armand Gissler and Tim Hoheisel, <https://arxiv.org/pdf/2107.00117.pdf/>
- 2021 **Scaling-invariant functions versus positively homogeneous functions**, *Journal of Optimization Theory and Applications (JOTA)*, Cheikh Touré, Armand Gissler, Anne Auger and Nikolaus Hansen, <https://arxiv.org/abs/2101.03755/>

Conference proceedings

- 2023 **Evaluation of the impact of various modifications to CMA-ES that facilitate its theoretical analysis**, *GECCO 2023*, Armand Gissler, https://hal.science/hal-04089923/file/evaluation2023author_version.pdf/
- 2022 **Learning Rate Adaptation by Line Search in Evolution Strategies with Recombination**, *GECCO 2022*, Armand Gissler, Anne Auger and Nikolaus Hansen, <https://inria.hal.science/hal-03644404/document/>

Conferences and Seminars

- July 2024 **ISMP 2024**, *Convergence analysis of CMA-ES*
- July 2024 **Dagstuhl seminar Theory of Randomized Optimization Heuristics**, *Convergence proof of CMA-ES - Analysis of underlying Markov chains*
- Apr. 2024 **CMA-ES PhD students seminar**, *Convergence analysis of evolution strategies with covariance matrix adaptation*
- Oct. 2023 **JPS 2023**, *Irreducibility and convergence of nonlinear state-space models*
- Sept. 2023 **CJC-MA 2023**, *Convergence of CMA-ES*
- July 2023 **BBOB Workshop (GECCO 2023)**, *Evaluation of the impact of various modifications to CMA-ES that facilitate its theoretical analysis*
- June 2023 **SIAM OP23**, *Convergence Analysis of Evolution Strategies with Covariance Matrix Adaptation (CMA-ES) via Markov Chain Stability Analysis*
- July 2022 **GECCO 2022**, *Learning Rate Adaptation by Line Search in Evolution Strategies with Recombination*
- Feb. 2022 **Theory of Randomized Optimization Heuristics (Dagstuhl Seminar 22081)**, *State-dependent drift condition for stability of Markov chains*, Editorial assistant

Teaching

- 2021–2024 **Teaching assistant**, *Bachelor of Science, École polytechnique*
LAB 102: How to write mathematics

- 2017–2018 **Oral examinations**, *Lycée Michelet*, Vanves
Two hours oral interrogations every week of mathematics of groups of three students
- 2017–2018 **Tutoring**, *Institut Villebon-Charpak*, Université Paris-Sud
Tutoring in mathematics and physics for two students in bachelor first year

Laboratory life

- 2022–2024 **CMAP & CMLS PhD students seminar**, Co-organizer
- 2022–2024 **Laboratory life commission member**, *CMAP*