

# Anna Korba

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## Academic positions

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| <b>Simons Institute for the Theory of Computing</b><br><i>Visiting Scientist</i>   | <b>Sep. 2021–Dec 2021</b><br><i>Berkeley, U.S.</i>   |
| <b>Statistics department, ENSAE, CREST, IP Paris</b><br><i>Assistant Professor</i>   | <b>Sep. 2020–Present</b><br><i>Palaiseau, France</i> |
| <b>Gatsby Unit, University College London (UCL)</b><br><i>Postdoctoral Researcher</i><br>Laboratory of Pr. Arthur Gretton. | <b>Dec. 2018–Aug. 2020</b><br><i>London, U.K.</i>    |

## Education

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| <b>Télécom ParisTech</b><br><i>Ph.D. in Applied Mathematics (Machine Learning)</i> <ul style="list-style-type: none"><li>○ Title: Learning from Ranking Data: Theory and Methods</li><li>○ Supervisor: Stephan Cléménçon</li></ul> | <b>Oct. 2015–Oct. 2018</b><br><i>Paris, France</i>  |
| <b>ENS Cachan</b><br><i>Master MVA, First class honours</i><br>Applied Mathematics for Computer Vision and Machine Learning.   | <b>Sep. 2014–Jun. 2015</b><br><i>Cachan, France</i> |
| <b>ENSAE ParisTech</b><br><i>Engineering degree, First class honours</i><br>Applied Mathematics, Advanced Statistics & Economics.  | <b>Sep. 2012–Jun. 2015</b><br><i>Paris, France</i>  |
| <b>Lycée Henri IV</b><br><i>Classes préparatoires in Mathematics, Physics, Computer Science.</i>   | <b>Sep. 2009–Jun. 2012</b><br><i>Paris, France</i>  |

## Publications

My research has been focused on kernel methods, optimal transport, sampling, optimisation and ranking data. My papers can be found at <https://scholar.google.fr/citations?user=dbH6E3kAAAAJ&hl=fr>. I have been regularly publishing in these Machine Learning conferences: International Conference on Machine Learning (ICML), Advances in Neural Information Processing Systems (Neurips), Artificial Intelligence and Statistics (Aistats), International Conference of Learning Representations (ICLR).

### Preprints

- [1] A. Vacher, O. Chehab, A. Korba. *Polynomial time sampling from log-smooth distributions in fixed dimension under semi-log-concavity of the forward diffusion with application to strongly dissipative distributions*. Submitted, 2025.
- [2] Z. Chen, A. Mustafi, P. Glaser, A. Korba, A. Gretton, B. K. Sriperumbudur. *(De)-regularized Maximum Mean Discrepancy Gradient Flow*. Submitted, 2024.
- [3] T. Huix, S. Majewski, A. Durmus, E. Moulines, A. Korba,. *Variational Inference for Overparametrized Bayesian Neural Networks: a Theoretical and Empirical Study*. Submitted, 2024.

### Published papers

- [1] C. Vauthier, A. Korba, Q. Mérigot. *Properties of Wasserstein gradient flows for the Sliced-Wasserstein distance*. ICML, 2025.
- [2] H. Yu, A. Klami, A. Hyvärinen, A. Korba, O. Chehab *Density Ratio Estimation with Conditional Probability Paths*. ICML, 2025.
- [3] J. Geuter, C. Bonet, A. Korba, D. Alvarez-Melis. *DDEQs: Distributional Deep Equilibrium Models through Wasserstein Gradient Flows*. AISTATS, 2025.
- [4] I. Aouali, V-E. Brunel, D. Rohde, A. Korba. *Bayesian Off-Policy Evaluation and Learning for Large Action Spaces*. AISTATS, 2025.
- [5] P. Marion, A. Korba, P. Bartlett, M. Blondel, V. De Bortoli, A. Doucet, F. Linares-López, C. Paquette, Quentin Berthet. *Implicit Diffusion: Efficient Optimization through Stochastic Sampling*. AISTATS, 2025.

- [6] O. Chehab, A. Korba, A. Stromme, A. Vacher. *Provable Convergence and Limitations of Geometric Tempering for Langevin Dynamics*. ICLR, 2025.
- [7] C. Bonet, T. Uscidda, A. David, P-C. Aubin-Frankowski, A. Korba. *Mirror and Preconditioned Gradient Descent in Wasserstein Space*. Neurips, 2024.
- [8] L. Chamon, M. Karimi, A. Korba. *Constrained Sampling with Primal-Dual Langevin Monte Carlo*. Neurips, 2024.
- [9] C. Chazal, A. Korba, F. Bach. *Statistical and Geometrical properties of Kernel Kullback-Leibler divergence*. NeurIPS, 2024.
- [10] T. Huix, A. Korba, A. Durmus, E. Moulines. *Theoretical Guarantees for Variational Inference with Fixed-Variance Mixture of Gaussians*. ICML, 2024.
- [11] N. Chopin, F. Crucinio, A. Korba. *A connection between Tempering and Entropic Mirror Descent*. ICML, 2024.
- [12] I. Aouali, V-E. Brunel, D. Rohde, A. Korba. *Unified PAC-Bayesian Study of Pessimism for Offline Policy Learning with Regularized Importance Sampling*. Uncertainty in Artificial Intelligence (UAI), 2024.
- [13] I. Aouali, D. Rohde, V-E. Brunel, A. Korba. *Exponential Smoothing for Off-Policy Learning*. ICML, 2023.
- [14] L. Li, Q. Liu, A. Korba, M. Yurochkin, J. Solomon. *Sampling with Mollified Interaction Energy Descent*. ICLR, 2023.
- [15] P.-C. Aubin-Frankowski, A. Korba, F. Léger. *Mirror Descent with Relative Smoothness in Measure Spaces, with application to Sinkhorn and EM*. Neurips, 2022.
- [16] L. Xu, A. Korba, D. Slepcev. *Accurate Quantization for Particle-Based Optimization*. ICML, 2022.
- [17] A. Korba, F. Portier. *Adaptive Importance Sampling Meets Mirror Descent*. Aistats, 2022.
- [18] A. Korba, P-C. Aubin-Frankowski, S. Majewski, P. Ablin. *Kernel Stein Discrepancy Descent*. ICML, 2021.
- [19] A. Mastouri, Y. Zhu, L. Gultchin, A. Korba, M. Kusner, R. Silva, K. Muandet, A. Gretton. *Proximal Causal Learning with Kernels: Two-Stage Estimation and Moment Restriction*. ICML, 2021.
- [20] A. Korba, A. Salim, M. Arbel, G. Luise, A. Gretton. *A Non Asymptotic Analysis of Stein Variational Gradient Descent*. Neurips, 2020.
- [21] A. Salim, A. Korba, G. Luise. *Wasserstein Proximal Gradient*. Neurips, 2020.
- [22] M. Arbel, A. Korba, A. Salim, A. Gretton. *Maximum Mean Discrepancy Gradient Flow*. Neurips, 2019.
- [23] M. Achab\*, A. Korba\*, S. Cléménçon. *Dimensionality Reduction for Bucket Ranking: A Mass Transportation Approach*. Algorithmic Learning Theory (ALT), 2019. (\*: equal contribution).
- [24] A. Korba, A. Garcia, F. D'Alché-Buc. *A Structured Prediction Approach for Label Ranking*. Neurips, 2018.
- [25] S. Cléménçon, A. Korba, E. Sibony. *Ranking Median Regression: Learning to Order through Local Consensus*. Algorithmic Learning Theory (ALT), 2018.
- [26] A. Korba, S. Cléménçon, E. Sibony. *A Learning Theory of Ranking Aggregation*. Aistats, 2017.
- [27] Y. Jiao, A. Korba, E. Sibony. *Controlling the distance to a Kemeny consensus without computing it*. ICML, 2016.

## Selected/Recent Invited talks

The list of (most of) my talks (along with the slides) is available at [akorba.github.io/Talks.html](https://akorba.github.io/Talks.html).

- Department of Decision Sciences seminar, Bocconi, November 2024.
- Stochastic and Statistics seminar series of MIT, October 2024.
- Workshop on recent advances and future directions on sampling, Yale, October 2024.
- Frontiers in interacting particle systems, aggregation-diffusion equations & collective behavior, Centre International de Rencontres Mathématiques (CIRM), Marseille, France. 3 day Lecture on "Wasserstein gradient flows and applications to sampling in machine learning" to young researchers in a summer school organized by Jose Carrillo, June 2024.

- International Conference of Machine Learning (ICML) tutorial (talk shared with Adil Salim), Baltimore, July 2022.

## Other research activities

### Supervision.....

- Phd students: Tom Huix, co-supervised with Eric Moulines and Alain Durmus at CMAP, Polytechnique, 2021-2024; Imad Aouali (CIFRE), co-supervised with Victor-Emmanuel Brunel (CREST) and David Rohde (Criteo Research), 2022-2025; Christophe Vauthier, co-supervised with Quentin Mériçot (Université Paris-Saclay), 2023-2026; Clémentine Chazal, co-supervised with Arnak Dalalyan (CREST), 2024-2027.
- Postdocs: 2023-?: Omar Chehab, Adrien Vacher, Clément Bonet.
- Interns: Mahdi Attia (Ensta, M1 student, summer 2022); Adam David (Polytechnique, M2 student, summer 2023), Clémentine Chazal (ENS, M2 student, fall 2023), Marguerite Petit-Talamon (Dauphine, fall 2024).

### Committees.....

- PhD committees (13 since 2022): [list](#).
- Hiring committees (2/3 per year, for assistant professor positions): Télécom ParisTech, Télécom SudParis, Ecole Polytechnique, Université Paris-Dauphine.
- PGMO Phd award committee (July 2023).

### Reviewing.....

- **Conferences:** Neural Information Processing System (NeurIPS), International Conference of Machine Learning (ICML), Artificial Intelligence and Statistics (AISTATS).
- **Journals:** (recurrent) Journal of Machine Learning Research; (occasionally) Bernoulli, Journal of the Royal Statistical Society, Mathematical Programming, International Journal of Forecasting, Biometrika.

### Scientific events organization.....

- July 2025: Co-organizer of the workshop [Wasserstein Gradient Flows in Math and Machine Learning](#) at [Banff International Research Station](#), Canada.
- December 2023: Co-organizer of the workshop [Optimal Transport and Machine Learning](#) at [NeurIPS 2023](#), New Orleans.
- May 2023: Co-organizer with Adil Salim and Avetik Karagulyan of a mini-symposium on "Wasserstein gradient flows and applications" at [Siam conference of Optimization](#), Seattle.
- 2021: Organizer of the weekly working group/seminar on "Sampling with kernelized Wasserstein gradient flows" at the [Simons program "Geometric Methods in Optimization and Sampling"](#).
- 2019-20: Co-organizer of the [CSML seminar](#) (Computer Science and Machine Learning) at University College London and of Gatsby Unit [external seminar](#).

### Funding/awards.....

- 2022: Co-recipient of [Square funding](#) of American Institute of Mathematics for a research project for 4 years.
- 2023: Co-recipient of [PEPR funding](#) led by [Antonin Chambolle](#)
- 2023: Recipient of [ANR JCJC](#) "Wasserstein gradient flows for Optimization and Sampling", ~202k, 3 years.
- 2023: Recipient of Google and Apple Research funding for my research (30k and 70k\$ respectively).

## Professional experience

### Teaching.....

**ENSAE ParisTech**

*Lecturer*

**Sep. 2020- Present**

*Palaiseau, France*

- Measure theory lectures for 1st year students at ENSAE.

- Statistics lectures for 3rd year students at ENSAE (Master 2).
- Sampling with MCMC and Generative Modeling lectures and practical sessions for 3rd year students at ENSAE.

**Télécom ParisTech**

**Oct. 2015–Oct. 2018**

*Teaching assistant*

*Paris, France*

- Practical sessions for Master's students for several courses: Machine Learning (Python), Econometrics (Matlab), Introduction to Bayesian Learning (R).
- Supervision of long-run Master's students Machine Learning projects with companies.

### Admin responsibilities.....

**Polytechnique**

**Sep. 2021- Present**

*Co-administrator*

*Palaiseau, France*

Shared management of the Master Data Science, one of the most selective masters in machine learning in France.

## Skills

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**Languages:** French (native), English (fluent), Italian (intermediate).

**Programming:** Python, R, MATLAB (advanced).

**Others:** Latex (advanced), HTML/CSS, D3.js (basics).