David Saulpic

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Employment and Education

2024-	**Chargé de recherche, CNRS**, *IRIF, Université Paris Cité*
2022-2024	**Marie Skłodowska-Curie Post-Doctorate Fellow**, *University of Vienna and IST Austria* Hosted by Pr. Monika Henzinger
2020-2022	**Science Facilitator**, *Cité des Sciences et de l'Industrie*, Paris
2019-2022	**PhD Student**, *Sorbonne Université*, Paris Under the supervision of Christoph Dürr and Vincent Cohen-Addad. Awarded with the Gilles Kahn award of the Société Française d'Informatique. Honorary mention for the 2024 ERCIM Cor Baayen Young Researcher Award. First price of EDITE doctoral school.
2018	**M.Sc.**, *École Normale Supérieure*, Paris Master Parisien de Recherche en Informatique (MPRI).

Selected Publications

2024	Making old things new: a unified algorithm for differentially private clustering. Oral presentation (top 2%) at ICML 2024 with Max Dupré la Tour and Monika Henzinger.
2023	Deterministic Clustering in High Dimensional Spaces: Sketches and Approximation. *FOCS, invited presentation at HALG 2024.* with Vincent Cohen-Addad and Chris Schwiegelshohn.
2022	Découpage Électoral des Circonscriptions Législatives en France : Déséquilibres Démographiques et Contraintes Territoriales. *Revue française de science politique* with T.Ehrhard, S. Attias, E. Bampis, V. Cohen-Addad, B. Escoffier, C. Mathieu, F.Pascual and A. Pass-Lanneau
2021	A New Coreset Framework for Clustering, *STOC.* with Vincent Cohen-Addad and Chris Schwiegelshohn

Service

	PC Member, Mathematical Foundations of Computer Science (MFCS) 2023, Gilles Kahn thesis award 2024, International Joint Conference on Theoretical Computer Science - Frontier of Algorithmic Wisdom (IJTCS-FAW) 2025
	Reviewer, ACM Transaction on Algorithms, Theoretical Computer Science, Distributed Computing, STOC, FOCS, SODA, ICALP, ICML, ITCS, SOCG, SOSA, ESA, Approx, LATIN, SIROCCO, STACS, WG
2021-2022	**Elected member of the Faculty Council**, Sorbonne Université, Faculté des Sciences, Paris
2020	**French PhD Day in Computer Science**, Local point of contact for the PhD students day of the Société Française d'Informatique (SIF)
2018	**French PhD Day in Computer Science**, Co-Organizer of the PhD students day of the Société Française d'Informatique (SIF)

Popular Science and Teaching

2020-2022	**Cité des sciences et de l'Industrie**, *Paris*, Science facilitator
2018-2019	**Teaching Assistant**, *Sorbonne Université*, Paris
2015	**Interventions in High School**, Scientific mediations about graphs, algorithms, mathematics for high school students
2013-2018	**France-IOI**, Teaching in training camp in Algorithm for students preparing the International Olympiads in Informatics (IOI)

All Refereed Publications

2025 Estimating the Electoral Consequences of Legislative Redistricting in France.
Facct 2025.
with Evripidis Bampis, Thomas Ehrhard, Bruno Escoffier, Claire Mathieu and Fanny Pascual.

2025 A Tight VC-Dimension Analysis of Clustering Coresets with Applications.
SODA 2025.
with Vincent Cohen-Addad, Andrew Draganov, Matteo Russo and Chris Schwiegelshohn.

2024 Fully Dynamic k-Means Coreset in Near-Optimal Update Time.
ESA 2024
with Max Dupré la Tour and Monika Henzinger.

2024 Sensitivity Sampling for k-Means: Worst Case and Stability Optimal Coreset Bounds.
FOCS 2024.
with Nikhil Bansal, Vincent Cohen-Addad, Milind Prabhu, and Chris Schwiegelshohn .

2024 Making old things new: a unified algorithm for differentially private clustering.
Oral presentation at ICML 2024
with Max Dupré la Tour and Monika Henzinger.

2024 Sensitivity Sampling for Coreset-Based Data Selection.
Poster at ICML 2024
with Kyriakos Axiotis, Vincent Cohen-Addad, Monika Henzinger, Sammy Jerome, Vahab Mirrokni, David Woodruff and Michael Wunder.

2024 Settling Time vs. Accuracy Tradeoffs for Clustering Big Data.
SIGMOD 2024
with Andrew Draganov and Chris Schwiegelshohn.

2024 Experimental Evaluation of Fully Dynamic k-Means via Coresets.
SIAM Symposium on Algorithm Engineering and Experiments (ALENEX) 2024.
with Monika Henzinger and Leonard Sidl.

2023 Deterministic Clustering in High Dimensional Spaces: Sketches and Approximation.
Proceedings of the 64th Annual IEEE Symposium on Foundations of Computer Science (FOCS).
with Vincent Cohen-Addad and Chris Schwiegelshohn.

2022 Découpage Électoral des Circonscriptions Législatives en France : Déséquilibres Démographiques et Contraintes Territoriales.
Revue française de science politique
with Thomas Ehrhard, Solal Attias, Evripidis Bampis, Vincent Cohen-Addad, Bruno Escoffier, Claire Mathieu, Fanny Pascual and Adèle Pass-Lanneau

2022 Improved Coresets for Euclidean k-Means.
Proceedings of the conference on Neural Information Processing Systems (NeurIPS).
with Vincent Cohen-Addad, Kasper Green Larser, Chris Schwiegelshohn and Omar Ali Sheikh-Omar.

2022 Scalable Differentially Private Clustering via Hierarchically Separated Trees.
Proceedings of the 28th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD).
with Vincent Cohen-Addad, Alessandro Epasto, Silvio Lattanzi, Vahab Mirrokni, Andres Munoz, Chris Schwiegelshohn and Sergei Vassilvitskii.

2022 Community Recovery in the Degree-Heterogeneous Stochastic Block Model.
Proceedings of Thirty Fifth Conference on Learning Theory (COLT).
with Vincent Cohen-Addad and Frederik Mallmann-Trenn.

2022 A Massively Parallel Modularity-Maximizing Algorithm With Provable Guarantees.
Proceedings of the 2022 ACM Symposium on Principles of Distributed Computing (PODC).
with Vincent Cohen-Addad and Frederik Mallmann-Trenn.

2022 Towards Optimal Lower Bounds for k-median and k-means Coresets.
Proceedings of the 54th ACM Symposium on Theory of Computing (STOC).
with Vincent Cohen-Addad, Kasper Green Larser and Chris Schwiegelshohn.

2022 An Improved Local Search Algorithm for k-Median.
Proceedings of the 32nd Annual ACM-SIAM Symposium on Discrete Algorithms (SODA).
with Vincent Cohen-Addad, Anupam Gupta, Lunjia Hu and Hoon Oh.

2021 Improved Coresets and Sublinear Algorithms for Power Means in Euclidean Spaces.
Proceedings of the conference on Neural Information Processing Systems (NeurIPS) - Spotlight presentation.
with Vincent Cohen-Addad and Chris Schwiegelshohn.

2021 A New Coreset Framework for Clustering.
Proceedings of the 53rd ACM Symposium on Theory of Computing (STOC).
with Vincent Cohen-Addad and Chris Schwiegelshohn.

2020   On the Power of Louvain for Graph Clustering.
Proceedings of the conference on Neural Information Processing Systems (NeurIPS).
with Vincent Cohen-Addad, Adrian Kosowski and Frederik Mallmann-Trenn.

2020   Polynomial Time Approximation Schemes for Clustering in Low Highway Dimension Graphs.
Journal of Computer and System Sciences – Special issue on ESA 2020. Preliminary version appeared in the 28th Annual European Symposium on Algorithms (ESA 2020).
with Andreas Emil Feldmann.

2019   Fully Dynamic Consistent Facility Location.
Proceedings of the conference on Neural Information Processing Systems (NeurIPS).
with Vincent Cohen-Addad, Niklas Hjuler, Nikos Parotsidis and Chris Schwiegelshohn.

2019   Linear-Time Approximation Schemes for Clustering in Doubling Metrics.
Journal of the A.C.M. – Proceedings of the 60th Annual IEEE Symposium on Foundations of Computer Science (FOCS).
with Vincent Cohen-Addad and Andreas Emil Feldmann.

2019   Dominating Sets and Connected Dominating Sets in Dynamic Graphs.
36th International Symposium on Theoretical Aspects of Computer Science (STACS 2019).
with Niklas Hjuler, Giuseppe F. Italiano and Nikos Parotsidis.

2018   Polynomial-Time Approximation Schemes for k-center, k-median, and Capacitated Vehicle Routing in Bounded Highway Dimension.
Proceedings of the 26th Annual European Symposium on Algorithms (ESA).
with Amariah Becker and Phil Klein.

2017   A Quasi-Polynomial-Time Approximation Scheme for Vehicle Routing on Planar and Bounded-Genus Graphs.
Proceedings of the 25th Annual European Symposium on Algorithms (ESA).
with Amariah Becker and Phil Klein.