

Germain POULLOT, post-doctorate

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🌐 <https://embrunforestier.github.io/germainpoullot.github.io/index.html>



Research positions

- 2023 – 2026 📌 **Post-doctorate at Osnabrück University**, advisors: **Martina Juhnke**
- 2020 – 2023 📌 **Ph.D. at Sorbonne University, IMJ-PRG**, advisors: **Arnau Padrol & Vincent Pilaud**
Thesis title: *Geometric combinatorics of paths and deformations of convex polytopes*
- 05 – 06 2022 📌 **Research internship** at Goethe Universität, Frankfurt, with Raman Sanyal
- 04 – 07 2019 📌 **Research internship** at HSE Moscow, under the supervision of Andrey Levin
Dissertation: *Creating an equivalent of elliptic curves for quartic (CM-)fields*

Education

- 2020 – 2023 📌 **Ph.D in Mathematics** at Sorbonne University, advisors: A. Padrol & V. Pilaud
Thesis: *Geometric combinatorics of paths and deformations of convex polytopes*
- 2019 – 2020 📌 **Master 2 (2nd year M.Sc.)** at Sorbonne University: fundamental mathematics
Dissertation: *Type cones of nestohedra*
- 2018 – 2019 📌 **Master 1 (1st year M.Sc.)** at École Polytechnique
Dissertation on: *Gaussian sums and cubic reciprocity*
Dissertation on: *Local Langlands conjecture and Satake isomorphism*
- 2017 – 2018 📌 **Licence (Bachelor)** at Nanterre University: philosophy
(in parallel of Engineer Degree at École polytechnique)
- 2016 – 2020 📌 **Engineer Degree at École Polytechnique** with *Outstanding Investment* award
Majors: *Theoretical and Applied Math, Computer Science, Biology*
- 2014 – 2016 📌 **Classes Préparatoires MPSI - MP*** at Lycée Pasteur
- 2014 📌 **Baccalauréat Scientifique** with honors

Teaching

- 2025 – 2026 📌 **Mathematic for natural sciences**, Bachelor, Osnabrück Uni., as assistant professor
- 2025 📌 **Simplicial complexes**, Master, Osnabrück Uni., as assistant professor
- 📌 **Matroids and oriented matroids**, Master, Osnabrück Uni., as main lecturer
- 2024 – 2025 📌 **Combinatorics of polytopes**, Master, Ph.D. students, Osnabrück Uni., as main lecturer
- 2024 & 2025 📌 **Discrete Mathematics**, Bachelor, Osnabrück Uni., as assistant professor
- 2024 📌 **Discrete geometry**, Student seminar, Osnabrück Uni., as assistant professor
- 2022 – 2023 📌 **Python**, 2nd year of Bachelor, Sorbonne Uni., as teaching fellow
- 2021 – 2022 📌 **Mathematics for Sciences**, 1st year of Bachelor, Sorbonne Uni., as teaching fellow
- 📌 **Theoretical mathematics**, 1st year of Bachelor, Sorbonne Uni., as teaching fellow
- 📌 **How to use Python, Sagemath and Jupyter**, Agrégation de Mathématiques, Sorbonne Uni., as main lecturer
- 2018 – 2020 📌 **Khôlles Classes Préparatoires (oral examinations in mathematics)**, 1st year of Classe Préparatoire MPSI, Lycée Pasteur, as examiner
- 2019 & 2020 📌 **1-week tutoring** for students entering classe préparatoire, as mentor
- 2018 – 2019 📌 **Tutoring in mathematics**, 2nd year of Bachelor, École Polytechnique, as tutor

Skills

Seminar	📌 Organizer of the DGeCo seminar (seminar in geometry and combinatorics)
Coding	📌 Sagemath, Python, $\text{\LaTeX}$, OCaml, HTML+CSS
Languages	📌 French (native), English (C2), Spanish (B2), German (I live in Germany), Japanese (A2)

Research Publications

Journal Articles

- 1 V. Pilaud and **G. Poullot**, “Pivot polytopes of products of simplices and shuffles of associahedra,” *Discrete Comput. Geom.*, Accepted, upcoming.
- 2 A. Padrol, V. Pilaud, and **G. Poullot**, “Deformed graphical zonotopes,” *Discrete Comput. Geom.*, vol. 73, no. 2, pp. 447–465, 2025, ISSN: 0179-5376,1432-0444. 🔗 DOI: 10.1007/s00454-023-00586-x.
- 3 A. Padrol, V. Pilaud, and **G. Poullot**, “Deformation cones of graph associahedra and nestohedra,” *European J. Combin.*, vol. 107, Paper No. 103594, 27, 2023, ISSN: 0195-6698,1095-9971. 🔗 DOI: 10.1016/j.ejc.2022.103594.

ArXiv pre-prints

- 1 J. B. Caicedo, M. Juhnke, and **G. Poullot**, *Ehrhart non-positivity and unimodular triangulations for classes of s -lecture hall simplices*, 2025. arXiv: 2508.18890 [math.CO]. 🔗 URL: <https://arxiv.org/abs/2508.18890>.
- 2 M. Juhnke and **G. Poullot**, *Unimodality of the number of paths per length on polytopes: Examples, counter-examples, and central limit theorem*, 2025. arXiv: 2504.20739 [math.CO, math.PR]. 🔗 URL: <https://arxiv.org/abs/2504.20739>.
- 3 G. Loho, A. Padrol, and **G. Poullot**, *Many rays of the submodular cone*, 2025. arXiv: 2510.03177 [math.CO]. 🔗 URL: <https://arxiv.org/abs/2510.03177>.
- 4 **G. Poullot**, *Rays of the deformation cones of graphical zonotopes*, 2025. arXiv: 2404.02669 [math.CO]. 🔗 URL: <https://arxiv.org/abs/2404.02669>.
- 5 **G. Poullot**, *Vertices of the monotone path polytopes of hypersimplicies*, 2024. arXiv: 2411.14102 [math.CO]. 🔗 URL: <https://arxiv.org/abs/2411.14102>.

Peer-reviewed Conference Proceedings

- 1 A. Padrol and **G. Poullot**, “New criteria for polytope indecomposability and new rays of the submodular cone,” vol. 93B, 2025, Art. 155, 12.
- 2 A. Padrol, V. Pilaud, and **G. Poullot**, “Deformation cones of hypergraphic polytopes,” vol. 86B, 2022, Art. 72, 12.

In preparation, coming on ArXiv next year

- 1 G. Loho, A. Padrol, and **G. Poullot**, *Dimensions of weight cones of the permutahedral variety*. 2027.
- 2 A. Benjes, R. Sanyal, and **G. Poullot**, *Pivot polytopes and fiber polytopes of cyclic polytopes*. 2026.
- 3 F. Gélinas and **G. Poullot**, *Diameters of some hypergraphic polytopes*. 2026.
- 4 L. Le Mogne and **G. Poullot**, *On doublings and SB-labeling of Framing Lattices*. 2026.
- 5 A. Padrol and **G. Poullot**, *Polytope algebra of graphical zonotopes: the second graded piece*. 2026.
- 6 A. Padrol and **G. Poullot**, *New criteria for polytope indecomposability & rays of the submodular cone*. 2025.