

# Gabriel Pallier

French citizen.

Born in Paris on May 3rd, 1992.

gpallier.github.io  
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## CURRENT POSITION

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### Université de Lille

Assistant professor (MCF), laboratoire Paul Painlevé

Villeneuve d'Ascq (France)

2023 –

## PREVIOUS POSITIONS

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### Karlsruhe Institute of Technology

Postdoctoral researcher, with C. Llosa Isenrich

Karlsruhe (Germany)

2022 – 2023

### Sorbonne Université

Teaching and Research assistant (ATER), IMJ-PRG and Inspé de l'académie de Paris

Paris (France)

2021 – 2022

### Università di Pisa and université de Fribourg

Postdoctoral researcher (ERC Geomeg), with E. Le Donne

Pisa (Italy) and Fribourg (Switzerland)

2019 – 2021

## PH.D.

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*Sublinear asymptotic geometry: hyperbolicity, self-similarity, invariants.*

Advisor: Prof. Pierre Pansu

Université Paris-Sud, Orsay

2019

## RESEARCH INTERESTS

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I work in geometric group theory, using tools from analysis on metric spaces and combinatorial group theory.

*Keywords and phrases:* Hyperbolic groups, quasiisometry, quasiisometric rigidity, Dehn functions, nilpotent and solvable Lie groups, subriemannian geometry,  $L^p$ -cohomology.

## PUBLICATIONS AND PREPRINTS

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- [1] J. García-Mejía, C. L. Isenrich, and G. Pallier, “On the Dehn functions of central products of nilpotent groups”, 2023. arXiv: 2310.11144 [math.GR].
- [2] C. Llosa Isenrich, G. Pallier, and R. Tessera, “Cone-equivalent nilpotent groups with different Dehn functions”, *Proceedings of the London Mathematical Society*, vol. 126, no. 2, pp. 704–789, 2023. eprint: <https://londmathsoc.onlinelibrary.wiley.com/doi/pdf/10.1112/plms.12498>.
- [3] G. Pallier and Y. Qing, “Sublinear bilipschitz equivalence and sublinearly Morse boundaries”, 2023. arXiv: 2211.01023 [math.GR].
- [4] E. Le Donne, G. Pallier, and X. Xie, “Rough similarity of left-invariant Riemannian metrics on some Lie groups”, *Groups, Geom., Dyn.*, 2022.
- [5] G. Pallier, “On the logarithmic coarse structures of Lie groups and hyperbolic spaces”, *Geom. Dedicata*, vol. 216, no. 5, Paper No. 56, 2022, ISSN: 0046-5755.
- [6] G. Pallier, “Large-scale sublinearly Lipschitz geometry of hyperbolic spaces”, *J. Inst. Math. Jussieu*, vol. 19, no. 6, pp. 1831–1876, 2020, ISSN: 1474-7480.

- [7] G. Pallier, “Sublinear quasiconformality and the large-scale geometry of Heintze groups”, *Conform. Geom. Dyn.*, vol. 24, pp. 131–163, 2020.

## Appendix

- G. Pallier, Appendix to *Geometric rigidity of horospherical products* by T. Ferragut, arXiv eprint 2211.04093, submitted.

## Unpublished work containing original research

- G. Pallier, *Isoperimetrics of periodic metrics*, Master Thesis, université Paris-Sud, 2016.

## RESEARCH TALKS

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- 2024** *upcoming*: ENS Lyon, séminaire Géométrie, Groupes et Dynamique; Université Paris-Saclay, “Rigidité en théorie des groupes : aspects géométriques et ergodiques”<sup>(\*\*)</sup>.
- 2023** Séminaire francophone Groupes et Géométrie; Westfälische Wilhelms – Universität Münster (Tee seminar); XIV<sup>th</sup> Heidelberg – Karlsruhe – Strasbourg Geometry Day; Fribourg MAPS: Metric Analysis, Parametrizations, Surfaces <sup>(\*)</sup>.
- 2022** Université Clermont – Auvergne, séminaire GAAO; Université de Bourgogne, séminaire GADC; Université de Nice; Université de Lille; Bern university, colloquium; University of California Santa Barbara, Topology seminar (en ligne); Fudan university Shanghai, Topology seminar (online).
- 2021** ETH Zürich, Géometry seminar; Université Paris-Cité, colloquium Géométrie et Dynamique; Bowling Green State University, colloquium.
- 2020** University of Wisconsin -Milwaukee (en ligne); University of Jyväskylä; Université de Fribourg, Oberseminar Geometrie.
- 2019** University of Bristol; University of Oxford; Université Aix-Marseille (séminaire Teich); Karlsruhe Institute of Technology.
- 2018** Paroles aux jeunes chercheurs : groupes et géométrie, Université Claude Bernard Lyon I <sup>(\*)</sup>.

(\*) Plenary talks in conferences or workshops.

(\*\*) Mini-course.

## TEACHING

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- **Université de Lille** september 2023 -  
Teaching assistant. *Mathématiques (L1 MPCSI), Analyse (L2 MIASHS)*
- **Karlsruhe Institute of Technology** october 2022 - july 2023  
Übungsleiter (Teaching assistant). *Advanced Mathematics III (3e année d'ingénierie mécanique), Geometric group Theory (last year of bachelor and first year of master)*
- **Inspé de l'académie de Paris** september 2021 - july 2022  
Lectures and Teaching assistant. *Mathematics and didactics of mathematics (for future primary school teachers and high-school teachers).*
- **Université de Fribourg** septembre 2020 - june 2021  
Assistant - docteur. *Analysis 3 (2nd year bachelor), organizer of the free seminar (3rd year bachelor).*
- **IUT d'Orsay, université Paris-Sud** september 2016 - june 2019

Teaching assistant. *Analysis, linear algebra, mathematical tools for physics, coding with Python.*

- **INSA de Lyon**

july 2014 - august 2014

Teaching assistant for the summer school for international students. *Mathematics.*

## SERVICE, COMMUNITY WORK

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### Organizer

- **“Geometry and Dynamics” weekly seminar.** Since 2023  
with D. Radchenko. *Laboratoire Paul Painlevé, Université de Lille*
- **Study group on the works of Kleiner, Müller et Xie.** march-april 2023  
with F. Tripaldi. *SNS, Pisa et KIT, Karlsruhe.*
- **PhD student seminar of the math doctoral school of Université Paris-Saclay.** 2017-2018  
with L. Lehericy and P. Roux. *Université Paris-Saclay.*

### Redactional

- **Referee, review** Since 2021  
Revues : *Anal. Geom. Metr. Spaces, Mem. Amer. Math. Soc.*  
Publication databases : *Mathematical Reviews.*
- **Images des mathématiques** february 2021 - june 2024  
Writer in the team publishing the website’s monthly press review on mathematical news. The website is hosted by the CNRS.

## OUTREACH

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- Seminar “Mathematic Park”, Institut Henri Poincaré 2017–2019  
Organiser. Intended to undergraduates and high-school teachers. The speakers are active reasearchers.
- MATH.en.Jeans, Académie de Créteil 2016–2018  
Advisor for math clubs in the Rosa Parks and Dulcie Sepember middle schools.
- General audience publications 2016 –2017  
2 papers on the game SET and on a proof of Erdős-Renyi-Sos friendship theorem using projective geometry, in the french magazine *Quadrature.*

## TOOLS

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- **Typesetting**,  $\text{\LaTeX}$ , PGF/TIKZ
- **Scientific computing** Matlab
- **Formal calculus** Sage, Maple, GAP
- **General** Python

## LANGUAGES

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- **French** Native speaker
- **English** professional practice
- **German, Spanish** beginner

## SCHOLARSHIPS AND GRANTS

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- Grant “Connecting Young Scientists” from the Karlsruhe House for Young Scientists, 5 000 € 2023
- Scholarship from the Fondation mathématiques Jacques Hadamard for master studies, 12 000 € 2015–2016