

Pierre-Louis Blayac

January 2024

Curriculum Vitae

Employment

- 2022–present **Postdoc in mathematics**, *University of Michigan*, Ann Arbor.
2021–2022 **Postdoc in mathematics**, *Max Planck Institut für Mathematik*, Bonn.

Education

- 2018–2021 **PhD thesis in mathematics**, *IHES, Université Paris-Saclay*, France.
PhD thesis under the supervision of Fanny Kassel, on the dynamics of the geodesic flow on convex projective manifolds. Defended on 19 July 2021.
2016–2017 **Master in mathematics**, *Université Pierre et Marie Curie*, Paris.
Thesis supervised by Anton Zorich: *Topology of the moduli space of translation surfaces*.
2014–2018 **Student at École Normale Supérieure**, Paris.
2012–2014 **Preparatory classes for the Grandes Écoles**, *Lycée Michel de Montaigne*, Bordeaux.

Papers

- 2020 **Topological mixing of the geodesic flow on convex projective manifolds**.
Preprint, arXiv:2009.05035, to appear in *Annales de l'Institut Fourier*.
2021 **Patterson–Sullivan densities in convex projective geometry**.
Preprint, arXiv:2106.08089.
2021 **Ergodicity and equidistribution in Hilbert geometry**, in collaboration with Feng Zhu.
Journal of Modern Dynamics 19 (2023) p. 879–945.
2021 **The boundary of rank-one divisible convex sets**.
Preprint, arXiv:2106.07581, to appear in *Bulletin de la Société Mathématique de France*.
2021 **Dynamical aspects of convex projective structures**, *PhD thesis*.
<http://www.theses.fr/2021UPASM029>
2023 **Divisible convex sets with properly embedded cones**, in collaboration with Gabriele Viaggi.
Preprint, arXiv:2302.07177.

Teaching

- Winter 2024 **Instructor (~30 hours)**, *University of Michigan*, Ann Arbor.
Introduction to Topology (math 590 in the local terminology). The teaching method was standard lectures.
Fall 2023 **Instructor (~60 hours)**, *University of Michigan*, Ann Arbor.
Principle of Analysis (math 351 in the local terminology). The teaching method was inquiry based learning.
Winter 2023 **Instructor (~90 hours)**, *University of Michigan*, Ann Arbor.
Linear Algebra (math 217 in the local terminology). The teaching method was inquiry based learning.

- Fall 2022 **Instructor (~60 hours)**, *University of Michigan*, Ann Arbor.
Calculus (math 115 in the local terminology). The teaching method was inquiry based learning.
- 2018–2019 **Teaching assistant (64 hours)**, *IUT d'Orsay*, Orsay.
I gave exercise sessions in graph theory and calculus to undergraduate students.
- 2019–2020 **Teaching assistant (64 hours)**, *IUT d'Orsay*, Orsay.
I gave exercise sessions in probability theory to undergraduate students.
- 2020–2021 **Teaching assistant (64 hours)**, *IUT d'Orsay*, Orsay.
I give exercise sessions in graph theory and calculus to undergraduate students.

Service

- 2019–2020 **Graduate students seminar**, Orsay.
Co-organiser.
- Oct. 2020 **Math competition “concours SMF junior”**, France.
Jointly with Matthieu Piquerez, we submitted a problem and marked the candidates' papers.

Talks

Invited talks in seminars and conferences

- Jan. 2024 **Geometry and discrete groups seminar**, Bures-sur-Yvette (IHES), France.
- Oct. 2023 **Topology seminar**, Tallahassee (Florida State University), USA.
- Sept. 2023 **Group Actions, Geometry and Dynamics seminar**, New Have (Yale University), USA.
- June 2023 **Conference “Homogeneous Dynamics and Geometry in Higher-Rank Lie Groups”**, Bures-sur-Yvette (IHES), France.
- March 2023 **Topology seminar**, Houston (Rice University), USA.
- Feb. 2023 **Dynamics seminar**, Chicago (University of Chicago), USA.
- Feb. 2023 **Dynamics seminar**, Madison, USA.
- Sept. 2022 **Geometry seminar**, Ann Arbor, USA.
- Feb. 2022 **Séminaire de géométrie différentielle**, Nancy, France.
- Jan. 2022 **Séminaire Géométrie et applications**, Strasbourg, France.
- Nov. 2021 **Geometry seminar**, Heidelberg, Germany.
- Oct. 2021 **Ergodic theory seminar**, Rennes, France.
- Sept. 2021 **Topology seminar**, Austin, USA.
Online
- Nov. 2020 **Oberseminar Differentialgeometrie**, Bonn, Germany.
Online
- Dec. 2019 **Ergodic theory seminar**, Rennes, France.
- Nov. 2019 **Graduate students seminar**, Orsay, France.
- June 2019 **Workshop “Perspective on convex projective geometry”**, Sète, France.

Talks in working seminars

- 2019–2020 **On the paper Surface groups in uniform lattices of some semi-simple groups**, by Kahn–Labourie–Mozes.
- 2019–2020 **On the book Discrete groups, expanding graphs and invariant measures**, by Lubotzky–Rogawski.
- 2019–2020 **On the paper Percolation on hyperbolic graphs**, by Hutchcroft.
- 2018–2019 **On Margulis' super-rigidity**.

2018–2019 **On the paper Quantitative properties of convex representations**, by A. Sambarino.

Attended conferences

- May 2023 **Groups and Geometry in Dynamics**, Ascona, Switzerland.
Conference in honor of Ursula Hamenstädt
- Jan. 2022 **Workshop on Positivity in Lie Groups**, Heidelberg, Germany.
- Dec. 2021 **Winterschool on Geometry and Dynamics**, Aussois, France.
- Sept. 2021 **Workshop on Anosov representations**, Aussois, France.
- June 2021 **Regards croisés en dynamique**, Brest, France.
- Nov. 2019 **Young researchers conference in geometry and dynamics**, Nancy, France.
Title of the conference: “Paroles aux jeunes chercheurs”.
- Oct. 2019 **Oberwolfach Arbeitsgemeinschaft on Zimmer’s Conjecture**, Oberwolfach, Germany.
- July 2019 **Aspects of geometric group theory**, Bures-sur-Yvette, France.
Summer school.
- July 2019 **Young Geometric Group Theory VIII**, Bilbao, Spain.
- May 2019 **Dynamics of group actions in honor of Yves Benoist**, Cetraro, Italy.
- Jan. 2019 **Geometric structures in Nice**, France.
Winter school and conference.
- Nov. 2018 **Young researchers conference in geometry and dynamics**, Lyon, France.
- Oct. 2018 **Oberwolfach arbeitgemeinschaft on Random walks on reductive groups**, Germany.
- Sept. 2018 **Representations of surface groups and beyond**, Lille, France.
- June 2018 **Pseudo-Riemannian geometry and Anosov representations**, Luxembourg.
- March 2018 **Young Geometric Group Theory VII**, Les Diablerets, Suisse.
- Sept. 2018 **Young researchers conference in geometry and dynamics**, Rennes, France.
- June 2017 **Contemporary perspective in geometry**, Strasbourg, France.
- Summer 2015 **Park city math institute (PCMI)**, Park city, Utah.
Summer school on algebraic geometry.

Math and physics competitions

- 2018 **Math competition “concours SMF junior”**, Paris, France.
With Louise Gassot and Matthieu Piquerez, joint second prize.
- April 2013 **International physics olympiad (IPHO)**, Paris, France.
I attended national selection.

Languages

Français	Mother tongue
English	Fluent
Español	Basics

Computer skills

Latex, Tikz, basics of Sage