

# ALEXIS MARCHAND

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## RESEARCH INTERESTS

Geometric Group Theory. Stable commutator length, bounded cohomology, topology of surfaces, hyperbolicity and nonpositive curvature.

## EDUCATION

*Ph.D. in Pure  
Mathematics*

2021-... · University of Cambridge (UK)

Expected graduation date: 2024

Supervisor: HENRY WILTON

*Dipl. ENS*

2017-21 · École Normale Supérieure de Lyon (France)

*M.Sc. in  
Mathematics*

2020-21 · Université Grenoble Alpes (France)

*Mention Très Bien*

Thesis: Automorphismes extérieurs de produits libres : revêtements abéliens caractéristiques et représentations libres

Supervisor: FRANÇOIS DAHMANI

*M.A.St. in  
Mathematics*

2019-20 · University of Cambridge (UK)

*Pass with Merit*

Essay: Rigidity Theorems for Hyperbolic Groups

Supervisor: HENRY WILTON

*B.Sc. in  
Mathematics*

2017-19 · École Normale Supérieure de Lyon (France)

Research internships:

- Topology of complex affine varieties, with HOSSEIN MOVASATI in IMPA, Rio de Janeiro (2019)
- Geometry of Coxeter groups, with CATERINA CAMPAGNOLO in KIT, Karlsruhe (2018)

## PREPRINTS

2024 · From letter-quasimorphisms to angle structures and spectral gaps for scl

arXiv:[2402.13856](https://arxiv.org/abs/2402.13856)

2023 · Bavard duality for the relative Gromov seminorm

arXiv:[2305.02149](https://arxiv.org/abs/2305.02149)

## ACCEPTED PAPERS

2023 · Isometric embeddings of surfaces for scl

To appear in *Groups Geom. Dyn.* · arXiv:[2302.04133](https://arxiv.org/abs/2302.04133)

2023 · Free representations of outer automorphism groups of free products via characteristic abelian coverings

*J. Group Theory* · DOI:10.1515/jgth-2021-0154 · arXiv:2107.11230

#### EXPOSITORY ARTICLES

2020 · Makers of patterns: from Escher to Coxeter

*Eureka*, Issue 66

2020 · Géométrie des groupes et courbure négative

*Journal de Mathématiques des Élèves de l'ENS de Lyon*, Vol. IV

#### TEACHING EXPERIENCE

2021-24 · Undergraduate supervisions · *Trinity College & Peterhouse College, Cambridge*

- Analysis & Topology (IB) — 46 contact hours
- Geometry (IB) — 28 contact hours
- Linear Algebra (IB) — 16 contact hours
- Riemann Surfaces (II) — 31 contact hours

2024 · Part III examples classes · *University of Cambridge*

Teaching assistant for Geometric Group Theory — 8 contact hours

2022-23 · Admissions interviews · *Christ's College, Cambridge*

Co-interviewer for undergraduate admissions in mathematics

2021-23 · Part III drop-in sessions · *University of Cambridge*

Drop-in session leader for Group Cohomology, Mapping Class Groups

2019-20 · School tutoring · *Stimulus, Cambridge*

Volunteer tutor in mathematics in secondary schools

2018-19 · Colles · *Lycée Aux Lazaristes, Lyon*

Oral examiner in mathematics for first-year students in a preparatory class

— 44 contact hours

2017-21 · French as a foreign language · *ItinérENS, Lyon*

Volunteer teacher of French classes for refugees and migrants

— more than 100 contact hours

#### ORGANISATIONAL EXPERIENCE

2023-24 · Junior geometry seminar · *University of Cambridge*

Co-organiser of the graduate students' seminar in geometry

2022 · Reading seminar · *University of Cambridge*

Organiser of a reading seminar on generalisations of hyperbolic groups

## AWARDS

2023 · Smith-Knight & Rayleigh-Knight prize · *University of Cambridge*

Grade 3, for the essay *Isometric embeddings of surfaces for scl*

2021 · EPSRC PhD studentship · *University of Cambridge*

Three-year studentship funded by the Engineering & Physical Sciences Research Council

2017 · ENS studentship · *École Normale Supérieure de Lyon*

Four-year studentship with civil servant status funded by the French government

## INVITED TALKS

May 2024 · Seminari dei baby geometri · *Università di Pisa / Scuola Normale Superiore*

Apr. 2024 · International young seminar on bounded cohomology & simplicial volume · *Online*

Apr. 2024 · Geometry and geometric analysis seminar · *Purdue University (online)*

Mar. 2024 · Geometric group theory seminar · *University of Oxford*

Dec. 2023 · Bristol junior geometry seminar · *University of Bristol*

Jun. 2023 · International young seminar on bounded cohomology & simplicial volume · *Online*

Apr. 2023 · Methusalem junior seminar · *KU Leuven*

Mar. 2023 · Geometry graduate colloquium · *ETH Zürich*

Feb. 2023 · Junior topology & group theory seminar · *University of Oxford*

Feb. 2023 · Geometric group theory seminar · *University of Cambridge*

Jan. 2023 · International young seminar on bounded cohomology & simplicial volume · *Online*

Jun. 2022 · Séminaire compréhensible · *Université Grenoble Alpes*

Apr. 2022 · Séminaire des doctorants de St-Charles · *Aix-Marseille Université*

## CONFERENCES ATTENDED

Apr. 2024 · Groups, topology, & applications Gran Bilbao · *Euskal Herriko Unibertsitatea*

Mar. 2024 · Topological & homological methods in group theory · *Universität Bielefeld*

Feb. 2024 · GAGTA · *CIRM, Marseille*

Contributed talk

Jul. 2023 · Postgraduate group theory conference · *Heriot-Watt University, Edinburgh*

Contributed talk

May 2023 · Geometry of subgroups · *CRM, Montréal*

Jan. 2023 · LMS regional meeting · *University of Southampton*

Sep. 2022 · Recent advances in bounded cohomology · *Universität Regensburg*

*Jun. 2022* · Hyperbolic groups and their generalisations · *IHP, Paris*

*Apr. 2022* · Mapping class groups and  $\text{Out}(F_n)$  · *IHP, Paris*

*Apr. 2022* · Groups acting on fractals · *CIRM, Marseille*

*Feb. 2022* · Workshop on finiteness properties · *KIT, Karlsruhe*

#### LANGUAGES

FRENCH · Native speaker

ENGLISH · Fluent (C2). Passed the CAE

GERMAN · Advanced (B2)

PORTUGUESE · Advanced (B2)

RUSSIAN · Intermediate (B1)

March 29, 2024