Sami Douba

CV

Contact information

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Research interests

Geometric group theory, discrete subgroups of Lie groups, geometric topology, low-dimensional topology, dynamics

Academic positions

Universität Bonn

Assistant (Akademischer Rat auf Zeit), September 2025 - August 2032

Simons Laufer Mathematical Sciences Institute

SLMath Postdoc within the program *Geometry and Dynamics for Discrete Subgroups of Higher Rank Lie Groups*, January 2026 - May 2026

Institut des Hautes Études Scientifiques

Huawei Young Talents Program Fellow, September 2022 - August 2025

Education

McGill University

Ph.D. in Mathematics, October 2022

- Supervisors: Piotr Przytycki, Dmitry Jakobson
- Thesis title: *Unipotents and graph manifold groups*

M.Sc. in Mathematics, October 2017

- Supervisor: Eyal Goren
- Thesis title: *Towards a general theory of Weierstrass points on curves*

B.Sc. in Honours Mathematics, June 2015
First Class Honours in Mathematics

Publications

S. Douba and K. Tsouvalas, *On regular subgroups of* $\mathrm{SL}_3(\mathbb{R})$, Math. Res. Lett., to appear.
S. Douba, G.-S. Lee, L. Marquis, and L. Ruffoni, *Convex cocompact groups in real hyperbolic spaces with limit set a Pontryagin sphere*, Bull. London Math. Soc., to appear.
N. Bogachev and S. Douba, *Geometric and arithmetic properties of Löbell polyhedra*, Alg. Geom. Top. (2025)
S. Douba, B. Fléchelles, T. Weisman, and F. Zhu, *Cubulated hyperbolic groups admit Anosov representations*, Geom. Topol. (2025)
S. Douba, *Systoles of hyperbolic hybrids*, Tunis. J. Math. (2025).
S. Douba, *Proper* CAT(0) *actions of unipotent-free linear groups*, J. Inst. Math. Jussieu (2025).
S. Douba and J. Huang, *Density of systoles of hyperbolic manifolds*, C. R. Math. (2024).
N. Bogachev, S. Douba, and J. Raimbault, *Infinitely many commensurability classes of compact Coxeter polyhedra in* $\mathbb{H}^4$ *and* $\mathbb{H}^5$, Adv. Math. (2024).
S. Douba, *A novel witness to incoherence of* $\mathrm{SL}_5(\mathbb{Z})$, Proc. Am. Math. Soc. (2024).
S. Douba and K. Tsouvalas, *Anosov groups that are indiscrete in rank one*, Int. Math. Res. Not. (2023).
S. Douba, *Virtually unipotent curves in some non-NPC graph manifolds*, Internat. J. Algebra Comput. (2023).
S. Douba, *A hyperbolic lattice in each dimension with Zariski-dense surface subgroups*, Proc. Am. Math Soc. (2023).
S. Douba, *Thin right-angled Coxeter groups in some uniform arithmetic lattices*, Bull. London Math. Soc. (2022).
S. Douba, 2*-Systems of arcs on spheres with prescribed endpoints*, Mich. Math. J. (2021).

Preprints

S. Douba, G.-S. Lee, L. Marquis, and L. Ruffoni, *Convex cocompact groups with three-dimensional limit sets*, submitted.
S. Douba and K. Tsouvalas, *Matrix entries, unipotents, and linearity of amalgams*, submitted.

S. Douba, F. Fournier-Facio, S. Hughes, and S. Machado, *Quasihomomorphisms to real algebraic groups*, submitted.
S. Douba and F. Vargas Pallete, *On reflections of congruence hyperbolic manifolds*, submitted.
S. Douba, D. Kubrak, and K. Tsouvalas, *Ping-pong in the projective plane over a nonarchimedean field*, submitted.
J. Audibert, S. Douba, G.-S. Lee, and L. Marquis, *Zariski-closures of linear reflection groups*, submitted.

Honours and awards

2025	1851 Research Fellowship (declined)
2022	Carl Herz Prize (ISM)
2020	Alexis D. and W. Charles Pelletier Fellowship in Mathematics
2018–2020	ISM Graduate Scholarship
2014, 2015	NSERC Undergraduate Student Research Award
2010–2011	Sheila Baillie Scholarship

Talks (conferences & workshops)

June	2027	*Young Geometric Group Theory XV*, Madrid
Aug/Sep	2026	*Surface Group Representations* (mini-course), Lodha Mathematical Sciences Institute, Mumbai
July	2026	*Summer Conference on Topology and Its Applications (Geometric Group Theory Session)*, University of Split, Croatia
Sep	2025	*Hyperbolic manifolds in dimensions 4 (and more)*, Centre de recherches mathématiques, Montréal
June	2025	*Swiss Knots 2025*, Université de Genève
April	2025	*Higher-rank geometric structures* (mini-course), Institut Henri Poincaré, Paris
Jan	2025	*Hyperbolic manifolds, their submanifolds and fundamental groups*, IMPA, Rio de Janeiro
Dec	2024	*Arithmetic groups, hyperbolic manifolds, and computation*, Institut de Mathématiques de Bordeaux
July	2024	*Joint Meeting AMS-UMI*, Palermo, special session on Anosov representations and higher Teichmüller theory
Feb	2024	*Groups and Geometry in the South East*, University of Bristol
June	2023	*Groups Around* 3*-Manifolds*, Centre de recherches mathématiques, Montréal
June	2023	*CMS Summer Meeting: Session on Geometric Topology, Pseudo-Anosov Maps, and Complex Dynamics*, University of Ottawa
March	2023	*The 56th Spring Topology and Dynamical Systems Conference*, Rhodes College
Oct	2022	*Arbeitsgemeinschaft: Higher Rank Teichmüller Theory*, Mathematisches Forschungsinstitut Oberwolfach
Sep	2022	*Workshop on Complex Geometry and Geometric Group Theory*, Karlsruher Institut für Technologie
May	2022	*Colloque panquébécois de l'ISM XXIV*
April	2022	*Joint Mathematics Meetings: AMS Special Session on Geometric Group Theory*
August	2021	*World of Geometric Group Theory*
May	2021	*The 54th Spring Topology and Dynamical Systems Conference*, Murray State University

Talks (seminars & colloquia)

April	2026	*Geometry & Topology Seminar*, California Institute of Technology
April	2026	*Geometry & Topology Seminar*, University of California, Riverside
Feb	2026	*Mathematics Colloquium*, University of California, Santa Cruz
Nov	2025	*Geometry Seminar*, Max-Planck-Institut, Leipzig
Nov	2025	*Séminaire de géométrie topologie dynamique*, Université Paris-Saclay
Dec	2024	*Colloque de géométrie*, Université Paris-Est Créteil
Nov	2024	*Geometry & Topology Seminar*, University of Warwick
Nov	2024	*Topology Seminar*, University of Oxford
Oct	2024	*Séminaire virtuel francophone groupes et géométrie*, Institut Fourier
April	2024	*Séminaire géométrie et topologie*, IMJ-PRG
March	2024	*Geometry & Topology*, Yale University

March	2024	*Oberseminar Geometrie*, Université de Fribourg
Nov	2023	*Geometry Seminar*, Max-Planck-Institut, Leipzig
Nov	2023	*Geometric Group Theory Seminar*, University of Cambridge
Oct	2023	*Dioscuri Seminar*, Jagiellonian University, Kraków
Oct	2023	*Séminaire de théorie spectrale et géométrie*, Institut Fourier
Sep	2023	*Séminaire groupes, algèbres, et algèbres d'opérateurs*, Laboratoire de mathématiques Blaise Pascal, Clermont-Ferrand
May	2023	*Séminaire de géométrie et topologie de Marseille*, Institut de mathématiques de Marseille
May	2023	*Séminaire géométrie dynamique*, Laboratoire Paul Painlevé, Lille
March	2023	*Groups and Operator Algebras*, Université Paris-Saclay
Jan	2023	*Groups and Operator Algebras*, Université Paris-Saclay
Dec	2022	*Séminaire de théorie ergodique*, Institut de recherche mathématique de Rennes
Dec	2021	*Groups and Operator Algebras*, Université Paris-Saclay
Dec	2021	*Séminaire de géométrie topologie dynamique*, Université Paris-Saclay
Nov	2021	*Junior Geometry Seminar*, University of Cambridge
Nov	2021	*Group Theory Afternoon*, École normale supérieure (Paris)
Oct	2021	*Junior Topology and Group Theory Seminar*, University of Oxford
Oct	2021	*Geometry/Topology Seminar*, Rutgers University–New Brunswick
June	2021	*Dynamics and Group Geometry Early Researchers Seminar*, University of Warwick
May	2021	*Geometric Group Theory Seminar*, University of Cambridge
February	2021	*Topology Seminar*, University of Wisconsin-Milwaukee
February	2021	*Club Mathématique*, Université de Sherbrooke
November	2020	*Bristol Junior Geometry Seminar*, University of Bristol
July	2020	*Trends in Low Dimensional Topology*
March	2020	*Dynamics, Geometry, and Groups*, Queen's University

Teaching and marking

Fall	2025	Instructor, Graduate Seminar on Advanced Geometry, Introduction to homogeneous dynamics, Universität Bonn
Fall	2020	Teaching Assistant, Algebra I, McGill University
Fall	2019	Marker, Euclidean Geometry, McGill University
Winter	2019	Teaching Assistant, Analysis II, McGill University
Fall	2018	Teaching Assistant, Algebra I, McGill University
Fall	2018	Marker, Euclidean Geometry, McGill University
Winter	2018	Teaching Assistant, Calculus I, McGill University
Winter	2017	Teaching Assistant, Calculus I, McGill University
Fall	2016	Teaching Assistant, Analysis I, McGill University
Fall	2016	Marker, Honours Algebra III, McGill University
Winter	2016	Teaching Assistant, Calculus II, McGill University
Fall	2015	Teaching Assistant, Analysis I, McGill University

Mentoring

Winter	2019	McGill Directed Reading Program, geometry of the hyperbolic plane

Travel

Jan.–March	2024	Jagiellonian University, Kraków, visitor
April–July	2022	Laboratoire de mathématiques d'Orsay, visitor
Sep.–Dec.	2021	Laboratoire de mathématiques d'Orsay, visitor

Organization

Jan. 2026	*A Kleinian eye on mapping class groups and higher-rank Lie groups*, log cabin workshop, Groveland, CA
Apr. 2025	*Young Geometric Group Theory XIII*, University of Copenhagen
Feb. 2023	*Reflection Groups*, mini-workshop, IHÉS
June 2021	*Geometric Group Theory without Boundaries II*, virtual summer school
July 2020	*Geometric Group Theory without Boundaries*, virtual summer school

2018–2020	*Mathematics and Statistics Graduate Student Seminar*, McGill University
2018–2021	*Geometric Group Theory Seminar*, McGill University
Fall 2018	Reading course on ergodic theory, McGill University

Programs attended

April–July	2025	*Higher Rank Geometric Structures*, Institut Henri Poincaré
April–July	2024	*Group Actions and Rigidity: Around the Zimmer Program*, Institut Henri Poincaré
April–July	2022	*Hyperbolicity, Self-Similarity, and Groups Acting on Fractals*, Institut Henri Poincaré
May	2019	*Simons Semester on Geometric and Analytic Group Theory*, IMPAN