

Macarena Arenas

CONTACT INFORMATION

See: <https://www.macarena-arenas.com/>.

RESEARCH INTERESTS

Geometric and combinatorial group theory. Geometric, combinatorial, and low-dimensional topology.

ACADEMIC POSITIONS

Instituto de Ciencias Matemáticas (ICMAT)

- Postdoctoral Fellow, from Oct. 2026.

Clare College, University of Cambridge

- Denman Baynes Research Fellow (postdoc), Oct. 2023 - Oct. 2026.
- Denman Baynes Senior Student, Oct. 2022 - Oct. 2023.

EDUCATION

University of Cambridge

- PhD, Mathematics, July 2023
 - Supervisor: Prof. Henry Wilton
Thesis title: *Cubical small cancellation theory and large-dimensional hyperbolic groups*
- CULP Award in advanced Russian (=Certificate of Higher Ed.), 2023

McGill University

- M.Sc., Mathematics, June 2020
 - Supervisor: Prof. Daniel T Wise
Thesis title: *A linear isoperimetric function for genus 0 diagrams*

Universidad Nacional Autónoma de México

- B.Sc., Mathematics (*Licenciatura*), April 2018
Graduated with Honours
 - Supervisor: Prof. Max Neumann-Coto
Thesis title: *Medidas de complejidad de curvas en superficies*

PUBLICATIONS AND PREPRINTS

1. *Cohen–Lyndon asphericity, coherence, and immersions* with Henry Wilton, in preparation.
2. *Cubulating some relatively hyperbolic cubical small-cancellation quotients* with Mahan Mj and Daniel T. Wise, in preparation.
3. *Cubical small-cancellation quotients of non-products* with Kasia Jankiewicz and Daniel T. Wise, submitted.
4. *Morse Theory & Polyhedral Products* with Robert Kropholler and Jone Lopez de Gamiz, in preparation.
5. *Asphericity of cubical presentations: the general case*, submitted.
6. *Taut smoothings of arcs and curves* with Max Neumann-Coto, submitted.
7. *The Cohen–Lyndon property in non-metric small-cancellation*, with an appendix written jointly with K. Duda, accepted at **Groups, Geometry & Dynamics**.

8. *Grupos y geometría cubular*, **Memorias de la Sociedad Matemática Mexicana**.
9. *Asphericity of cubical presentations: the 2-dimensional case*, **IMRN**.
10. *Hyperbolicity in non-metric cubical small cancellation* with Kasia Jankiewicz and Daniel T. Wise, **Bulletin of the LMS**.
11. *A cubical Rips construction*, **Algebraic & Geometric Topology**.
12. *Linear isoperimetric functions for surfaces in hyperbolic groups* with Daniel T. Wise, submitted.
13. *Measuring complexity of curves on surfaces* with Max Neumann-Coto, **Geometriae Dedicata**.

AWARDS

2024	<i>Vicent Caselles Mathematical Research Award</i> granted by the Royal Spanish Mathematical Society and the BBVA Foundation.
2022	Smith Knight and Rayleigh Knight Prize, group 3.

GRANTS AND SCHOLARSHIPS

2026	Horizons Europe <i>Marie Curie</i> Fellowship at UPV/EHU
2024	Heilbronn Institute for Mathematical Research <i>Small Grants Call</i> funding for a collaboration with Alexandre Martin
2024	ICMS <i>Research in Groups</i> funding for a collaboration with Gil Goffer, Kasia Jankiewicz, Jone Lopez de Gamiz, and Genevieve Walsh
July 2022	LMS Grant for Early Career Researchers
July 2022	LMS Kovalevskaya Grant for the ICM 2022
2020 - 2023	Cambridge International & Newnham College Scholarship
2018 - 2019	Beca Complemento SEP
2015 - 2018	Scholarship student at IMATE-UNAM
2017	Scholarship for the XXVII Summer Research Programme of the Mexican Academy of Sciences
2016 - 2017	Beca de Excelencia Bécals - UNAM Licenciatura
2015 - 2016	Beca de Excelencia Bécals - UNAM Licenciatura
2015	Scholarship for the XXV Summer Research Programme of the Mexican Academy of Sciences

TEACHING, SUPERVISING, AND MARKING (LAST 5 YEARS)

2025	Supervisor, Part IA Groups, University of Cambridge
2024	Supervisor, Part IA Groups, University of Cambridge
2024	Lecturer, Part III Cubulating spaces and groups, University of Cambridge
2023	Supervisor, Part IA Groups, University of Cambridge
2023	Supervisor, Part IB Groups, Rings & Modules, University of Cambridge
2022	Supervisor, Part IA Groups, University of Cambridge
2022	Lecturer, <i>Grupos y Geometría Cubular</i> mini-course, Geometric Group Theory summer school in Morelia, Mexico
2022	Grader, Part III Coxeter Groups, University of Cambridge
2022	Supervisor, Part IB Geometry, University of Cambridge
2021	Supervisor, Part II Algebraic Topology, University of Cambridge
2021	Lecturer, <i>A crash course on isoperimetry</i> mini-course, Geometric group theory without boundaries summer school, online
2021	Supervisor, Part IB Geometry, University of Cambridge

Teaching before 2020: Grader for Topology & Geometry I at McGill University; Teaching Assistant for Algebra I at McGill University (twice), Teaching Assistant for Groupoids in Topology, Topology I, and Vector Bundles & K Theory at UNAM.

INVITED CONFERENCE TALKS (LAST 3 YEARS)

Oct. 2026	LiT IV, Pisa, Italy.
Sept. 2026	Fibrations in Group Theory and Topology, Oxford.
June 2026	XXV School of Mathematics "Lluís Santaló": Geometric Group Theory, Santander.
June 2026	Advanced school: Aspherical 2-complexes and their fundamental groups: past, present, and future, Madrid.
May 2026	Geometric Group Theory Around Cube Complexes (Michahfest), Luminy.
March 2026	Nineteenth Barcelona Weekend in Group Theory, Manresa.
Feb. 2026	Median Geometry and Applications workshop, Oberwolfach.
Nov. 2025	LMS Global Meeting Mumbai, India.
Sept. 2025	LiT III, Pisa, Italy.
Sept. 2025	Actions on graphs and metric spaces workshop, INI, Cambridge, UK.
July 2025	Non-positive curvature and applications workshop, INI, Cambridge, UK.
May 2025	60th Cornell Topology Festival, Ithaca, NY.
April 2025	Geometry at Large ICMAT-IMSA joint Conference, Madrid, Spain.
April 2025	Manifolds and Groups in Bologna III, Bologna, Italy.
Aug. 2024	British Topology Meeting, Aberdeen
July 2024	XXIV Coloquio Latinoamericano de Álgebra, Santiago de Chile, Chile
June 2024	X Dubrovnik Topology Conference, Dubrovnik, Croatia
June 2024	Ian Leary's 60th birthday conference, Bristol, UK
April 2024	Young Geometric Group Theory XII, Bristol, UK
May 2023	Interactions between Geometric group theory and Algebraic topology (BIRS Workshop), Casa Matematica Oaxaca.
May 2023	Geometry of Subgroups conference, Montreal.
April 2023	North British Geometric Group Theory meeting, Glasgow.
Feb. 2023	5-minute lightning talk, Young Geometric Group Theory XI, Munster
Feb. 2023	Groups Topology and Applications Gran Bilbao IV.

Invited conference talks before 2023: 3rd International Meeting on Geometric Group Theory and Low Dimensional Topology (online); Modern Advances in geometric group theory Workshop, Manchester; World of geometric group theory (online); 5-minute lightning talk at Hyperbolic groups and their generalisations (conference), IHP, Paris; 54th National Congress of the Mexican Mathematical Society, special session in Geometric Group Theory, BUAP, Mexico.

INVITED SEMINAR TALKS (LAST 3 YEARS)

May 2026	Nantes Geometry seminar.
Feb 2026	Karlsruhe Topology and Geometric Group Theory seminar.
Jan 2026	Oxford Topology Seminar.
Jan 2026	Heriot-Watt Geometry Groups and Topology Seminar.
Nov. 2025	Séminaire Virtuel Francophone Groupes et Géométrie.
Oct. 2025	Cambridge Geometric Group Theory Seminar.
April 2025	Geometric Group Theory and Topology at Tufts Seminar.
April 2025	Bilbao Algebra Seminar.
March 2025	Warwick Geometry & Topology Seminar.
March 2025	Durham Geometry Seminar.
Feb. 2025	London Geometry Seminar, UCL.
Jan 2025	Southampton Pure Mathematics Colloquium.
Jan. 2025	Pisa Geometry Seminar.
Jan. 2025	UCLouvain Group Theory Seminar.
Jan. 2025	Wroclaw Geometry Seminar.
Nov. 2024	Bristol Topology Seminar.
Oct. 2024	Geometric Group Theory seminar, Institute for Advanced Study in Mathematics, HIT, China (online).

Oct. 2024	Bonn GGT Oberseminar.
Oct. 2024	Madrid Group Theory Seminar.
May 2024	Toronto Randomness Seminar.
April 2024	Madrid Group Theory Seminar.
Jan 2024	Cambridge DG&T Seminar.
Jan 2024	Birmingham Analysis Seminar.
Dec 2023	Vienna Geometry and Analysis on Groups Seminar.
Dec 2023	Groups and Geometry in the Southeast, Southampton.
Nov 2023	Karlsruhe Topology and Geometric Group Theory seminar.
May 2023	University of Newcastle Algebra Seminar.
April 2023	Oxford Geometric Group Theory Seminar.

Invited seminar talks before 2023: Topology Seminar at UW-Milwaukee; Heriot-Watt algebra, geometry, & topology Seminar; Bristol geometry & topology Seminar; University of Buenos Aires topology Seminar; Strasbourg Geometry & Topology Seminar; Bilbao Algebra Seminar; Geometry & Topology Online Seminar; Warwick Dynamics & Group Geometry Early Researchers Seminar; Seminario a Distancia en Teoría geométrica de grupos, UNAM; Queen's University Dynamics, Geometry & Groups Seminar; Oxford Junior Group Theory Seminar; Cambridge GGT Seminar; ENS Paris Group Theory Seminar; Fico González Acuña Low Dimensional Topology Seminar.

INVITED WORKSHOPS AND PROGRAMMES

Dec. 2026	Normal Rank and Dehn Surgery Numbers in Group Theory and Topology, Brin centre workshop
Feb. 2026	Median Geometry and Applications, Oberwolfach workshop
Jun-Dec. 2025	Operators, Graphs, and Groups semester programme, Cambridge INI
Sept. 2024	Combinatorial Nonpositive Curvature, Banff workshop
May-June 2024	Randomness and Geometry semester programme, Fields Institute, Toronto
June 2023	Interactions between algebraic topology and geometric group theory workshop, Casa Matematica Oaxaca (BIRS)

SHORT ACADEMIC VISITS

March 2025	Three-week visit to Montse Casals and Ilya Kazachkov at Bilbao
Jan. 2025	One-week visit to Motiejus Valiunas at the University of Wroclaw
April 2024	One-week visit to Andrei Jaikin-Zapirain and Pablo Sanchez Peralta at the ICMAT (Madrid)
Dec. 2023	One-week visit to Chris Cashen at the University of Vienna
April 2023	One-week visit to Rachael Boyd at the University of Glasgow

SERVICE

Referee work/reviewer for: Duke Math Journal, Journal of the EMS, Algebraic and Geometric Topology, Math. Z., Proceedings of the AMS, Int. J. Math., UKRI, zbMATH

Organisational work:

June 2027	YGGT XV at ICMAT Madrid, co-organiser.
June 2026	Escuela de verano en Teoría Geométrica de grupos, Oaxaca, co-organiser.
Sept 2025	Group theory session – Brazil-Mexico Joint Math meeting, co-organiser.
June 2025	Hyperbolicity and Generalizations conference, co-organiser.
May 2025	Summer school: Homological aspects of groups and their classifying spaces, co-organiser.
2023 – 2026	Cambridge Geometric Group Theory Seminar, organiser.
2021 –2023	Cambridge Junior Geometry Seminar, organiser.

June 2021	<i>Geometric Group Theory without Boundaries II</i> Virtual Summer School, co-organiser
July 2020	<i>Geometric Group Theory without Boundaries</i> Virtual Summer School, co-organiser
2018–2020	McGill’s Geometric Group Theory Seminar, co-organiser
2016–2018	Students’ Seminar, IMATE-UNAM, co-organiser

Mentoring:

2025 –2026	Cambridge women and non-binary mentorship scheme, mentor.
Fall 2023	<i>Pares Ordenados</i> (Latin-American undergrad mentorship scheme), mentor.
2022 –2023	Cambridge Women and non-binary mentorship scheme, mentor.

Committees:

2024 –	Internationalisation Commission of the Mexican Mathematical Society, member.
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Panels and round-tables:

Nov. 2025	LMS Global Meeting, women in maths panel discussion, panellist.
Oct 2023	<i>Quimera Matemática</i> (conference for Mexican undergraduate students), participated in a panel discussion on pursuing graduate studies abroad.
March 2017	<i>Jornada Universitaria por la Igualdad 2017</i> (panel discussion on equality and diversity), Mathematics Institute, UNAM, panellist

Volunteering/ math dissemination activities:

2017	VII <i>Festival Matemático</i> , volunteer and co-organiser
2016	VI <i>Festival Matemático</i> , volunteer
2015	V <i>Festival Matemático</i> , volunteer.

LANGUAGES

- Spanish (native)
- English (fluent)
- French (proficient)
- Russian (conversant)
- Hebrew (elementary)

CONFERENCE ATTENDANCE

This list does not include the conferences already listed under “Invited conference talks” nor under the “Organisational work” section

Sept. 2025	Groups in Madrid 2025, ICMAT, Madrid
July 2025	William Rowan Hamilton Geometry and Topology Workshop (Bridsonfest), Trinity College Dublin
March 2025	Groups Topology and Applications Gran Bilbao VI.
Sept 2024	BIRS Workshop on Combinatorial Nonpositive Curvature, Banff Research Station, Canada
May 2024	6th Meeting of Mexican Mathematicians in the World (online)
July 2023	Women in groups, geometry, & dynamics retreat, Idaho, USA
June 2023	Cube Complexes and Combinatorial Geometry, CRM, Montreal
June 2023	Groups around 3-Manifolds, CRM, Montreal
May 2023	BIRS Workshop on the interactions between Geometric group theory and Algebraic topology, Casa Matematica Oaxaca
Feb. 2022	Young Geometric Group Theory XI, Munster
Jan. 2023	LMS South West and South Wales Regional Meeting 2023, Southampton
April-Jun. 2022	Groups acting on fractals, hyperbolicity and self-similarity, Institut Henri Poincare, Paris, France

March 2022	Topological and Homological Methods in Group Theory, Bielefeld, Germany
Feb. 2022	Workshop on Finiteness Properties, KIT, Karlsruhe, Germany
July 2021	Young Geometric Group Theory X, Newcastle (online)
Jan. 2021	Postgraduate Group Theory Conference 2020, University of Southampton (via Zoom)
June 2020	Topology Students Workshop, Georgia Tech (via Zoom)
Feb. 2020	Young Geometric Group Theory IX, Saint-Jacut-de-la-Mer, France
Jul. 2019	Aspects of Geometric Group Theory, IHÉS
Jul. 2019	Young Geometric Group Theory VIII, Universidad del País Vasco
May-Jun. 2019	Simons Semester on Geometric and Analytic Group Theory, IMPAN
Aug. 2017	PRIMA Third Congress, Oaxaca, México.
Jul. 2017	Summer School, Centre of Mathematical Sciences UNAM, Morelia.
Dec. 2016	Winter School Fico Gonzalez Acuña de Nudos y 3-Variedades, Guanajuato.