XABIER LEGASPI

Curriculum Vitæ

Instituto de Ciencias Matemáticas,
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Education

Exp. Jun 2023   **PhD in Mathematics**, *Univ. Complutense de Madrid & Univ. Rennes 1*
advisors: Yago Antolín & Rémi Coulon
thesis: *Exponential growth rates in groups of non-positive curvature*

Jul 2019   **MSc2 in Theoretical Mathematics**, *Univ. Rennes 1*
thesis: *Ergodicity of the geodesic flow in non-positive curvature*

Jul 2018   **MSc1 in IT Mathematics & Cryptography**, *Univ. Rennes 1*
thesis: *Shor's algorithm*

Jul 2017   **BSc in Mathematics**, *Univ. Santiago de Compostela*
thesis: *Classification of quadratic forms over the p-adic numbers*
international mobility: Univ. Wisconsin-Milwaukee, WI, USA, Spring 2016

Positions

Mathematics

Sep 2019 - Aug 2023   **Predoctoral researcher**, *Spanish National Research Council (CSIC), Madrid*
department: Instituto de Ciencias Matemáticas (ICMAT)

IT

July 2017   **Summer intern**, *Centro Singular de Investigación en Tecnoloxías Intelixentes*
Santiago de Compostela
topic: *Automatic generation of descriptions in natural language for analysis of social networks*
mentor: José María Alonso Moral

July 2016   **Summer intern**, *Galicia Supercomputing Center*
Santiago de Compostela
topic: *A review of software for analysing numerical uncertainties*
mentor: Andrés Gómez Tato

Research interests

Geometric group theory, hyperbolic groups and their generalisations, exponential growth rates, small cancellation theory, combinatorial non-positive curvature

Developer skills

Fortran 90/95, C/C++, Sage, Python, Maple, MATLAB, R

Academic publications

[1] X. Legaspi. Constricting elements and the growth of quasi-convex subgroups, 2022. Accepted in Groups, Geometry, and Dynamics. URL: `https://orcid.org/0000-0002-1497-6448`, `doi: 10.48550/ARXIV.2206.06749`.

[2] X. Legaspi and M. Steenbock. Uniform uniform exponential growth in small cancellation groups, 2023. URL: `https://orcid.org/0000-0002-1497-6448`.

Awards

Research Fellowships

2019-23 **Severo Ochoa Predoctoral Fellowship**
Grant SEV-2015-0554-18-4 funded by MCIN/AEI/10.13039/501100011033
Government of Spain - Ministry of Science and Innovation, 88,250 €

Scholarships

2017 **Lebesgue Master 1 Scholarship**
Centre Henri Lebesgue, 10,000 €

2017 **CiTIUS Summer Scholarship**
Univ. Santiago de Compostela, 1,000 €

2016 **IMAT BSc Research Scholarship**
Univ. Santiago de Compostela, 2,000 €

Mobility Grants

2022 **Kovalevskaya Travel Grant**
DMV & EMS, 400 €

2022 **Trimestre IHP Grant**
Fondation Sciences Mathématiques de Paris, 3,000 €

2021 **Outgoing Mobility Grant**
Rennes Métropole, 4,800 €

Conferences

Invited talks

Dec 2022 **On uniform growth in small cancellation groups**
II Encuentro RSME-UMA, Ronda

Contributed talks

April 2022 **Growth of quasi-convex subgroups of mapping class groups & friends**
Mapping Class Groups and $Out(F_n)$, Paris (lightning talk)

Oct 2021 **Constricting elements and the growth of quasi-convex subgroups**
IX Encuentro de Jóvenes Topólogos, Sevilla (session talk)

Oct 2019 **Counting in hyperbolic groups by Patterson-Sullivan measures**
VIII Encuentro de Jóvenes Topólogos, Santiago de Compostela (session talk)

Conferences attended

July 2023 **Group actions and low-dimensional topology**, *El Barco de Ávila*

June 2023	**Workshop on Profinite Rigidity**, *Madrid*
May 2023	**Geometry of Subgroups**, *Montreal*
Feb 2023	**Young Geometric Group Theory XI**, *Münster*
Feb 2023	**GTA: Gran Bilbao IV**, *Bilbao*
June 2022	**Hyperbolic Groups and their Generalisations**, *Paris*
April 2022	**Mapping Class Groups and $Out(F_n)$**, *Paris*
April 2022	**Groups Acting on Fractals**, *Luminy*
Nov 2021	**III Jornada para doctorand@s del CSIC**, *Madrid*
Nov 2021	**Groups in Madrid 2021**, *Madrid*
Oct 2021	**IX Encuentro de Jóvenes Topólogos y XXVII Encuentro de Topología**, *Seville*
July 2021	**Young Geometric Group Theory X**, *Online*
June 2021	**Geometric Group Theory Without Boundaries II**, *Online*
Dec 2020	**Paroles Aux Jeunes Chercheuses et Chercheurs 2020 : Groupes, Géométrie, Dynamique**, *Online*
Feb 2020	**Geometric Group Theory Without Boundaries**, *Online*
Feb 2020	**Virtual Geometric Group Theory Conference**, *Online*
Feb 2020	**Young Geometric Group Theory IX**, *Saint-Jacut-de-la-Mer*, France
July 2019	**Groups in Madrid**, *Madrid*
July 2019	**VIII Encuentro de Jóvenes Topólogos y XXVI Encuentro de Topología**, *Santiago de Compostela*
July 2019	**Aspects of Geometric Group Theory**, *Bures-sur-Yvette*
June 2019	**Young Geometric Group Theory VIII**, *Bilbao*
Jan 2019	**XXème Journées Louis Antoine**, *Rennes*
Jan 2019	**Master Class on Groups and Geometry**, *Luminy*
Dec 2018	**Master Class on Ergodicity of Stochastic Processes**, *Angers*
Oct 2016	**VI Encuentro RSME-SPM**, *Santiago de Compostela*

Seminars

June 2023	**Growth in Groups of Non-Positive Curvature** Group Theory Seminar, Madrid
Oct 2022	**Constricting Elements and the Growth of Quasi-convex Subgroups** Geometry and Analysis on Groups Research Seminar, Vienna
June 2022	**"**, *Learning Seminar at IHP's "Groups acting on fractals"*, Paris
June 2022	**"**, *Geometric Group Theory Seminar*, Münster
Jan 2022	**"**, *DAGGER Seminar*, Warwick
Nov 2021	**"**, *Algebra Seminar*, Bilbao
Oct 2021	**"**, *BRIJGES Seminar*, Bristol
Sept 2021	**"**, *Group Theory Seminar*, Madrid

Nov 2020	**À travers les trous de l'entropie volumique**
	Séminaire Pampers, Rennes
June 2020	**Groupes à courbure négative ou nulle**
	Séminaire Pampers, Rennes

Research stays

May 2023	**Centre de Recherches Mathématiques**, *Montreal*, Canada, 3 weeks
Apr 2023	**University of Oxford**, *Oxford*, UK, 3 days
Apr-June 2022	**Institute Henri Poincaré**, *Paris*, France, 3 months
Oct 2022	**Universität Wien**, *Vienna*, Austria, 1 week

Teaching

Spring 2021-22	**Algèbre et Géométrie 2**, Univ. Rennes 1
	Licence en Mathématiques, 1st Year, TA, 24h
Fall 2021-22	**Geometría Lineal**, Univ. Complutense de Madrid
	Grado en Matemáticas, 2nd Year, TA, 30h

Popularisation

Oct 2022	**Fête de la Science 2022**, *Rennes*
	Co-organiser of the workshop *"Pavages du plan"*
June 2021	**5ª Jornada PhDay Complutense**, *Madrid*
	Talk *"¿Cómo crecen las simetrías cuando las observamos desde muy muy lejos?"*
Nov 2019	**XIX Semana de la Ciencia y la Innovación**, *Madrid*
	Co-organiser of the workshop *"Juegos de estrategia"*

Service activities

Fall 2021-22	**Organiser of the Dehn's Army Seminar**, *Univ. Rennes 1*
Fall 2020-21	**Co-organiser of the Séminaire Pampers**, *Univ. Rennes 1*
Spring 2017-18	**MSc Student Representative**, *Univ. Rennes 1*
Spring 2016-17	**BSc Student Representative**, *Univ. Santiago de Compostela*

Languages

Galician	Mother tongue
Spanish	Mother tongue
English	*Certificate in Advanced English* (C1 level)
French	*Diplôme d'Études en Langue Française* (B2 level)
German	*Level 2 course in CLM* at Univ. Santiago de Compostela (A2.1 level)