

Javier Aramayona

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1. PROFESSIONAL TRAJECTORY

1.1. Education.

- *Ph. D. in Mathematics*, 2005
University of Southampton (U.K.). Supervisor: Brian H. Bowditch.
- *Licenciatura en Ciencias Matemáticas*, 2001
Universidad Complutense de Madrid.

1.2. Academic positions.

- *Ramón y Cajal researcher*
Universidad Autónoma de Madrid. June 2015 – present.
- *Maître de Conférences* (On unpaid leave since June 2015.)
Université de Toulouse III (Paul Sabatier). 2013 – present.
- *Lecturer in Mathematics (permanent)*
National University of Ireland, Galway. July 2008 – August 2013.
- *Visiting Assistant Professor*
University of Illinois at Urbana-Champaign. January 2008 - May 2008.
- *Postdoctoral fellow*
M.S.R.I. (Berkeley). August 2007 – December 2007.
- *Postdoctoral fellow*
Aix-Marseille Université. October 2006 – March 2007.
- *Temporary Lecturer in Mathematics*.
University of Warwick. October 2004 – August 2007.

1.3. Academic affiliations.

- *Affiliated researcher* (Investigador asociado.)
ICMAT, Madrid. 2016 – present

2. RESEARCH PRODUCTION

(All items available from <http://verso.mat.uam.es/~javier.aramayona>)

2.1. Preprints.

- (1) Big Torelli groups: generation and commensuration
(with T. Ghaswala, A. Kent, A. McLeay, J. Tao, R. Winarski). [https:// arXiv:1810.03453](https://arxiv.org/abs/1810.03453)
- (2) The first integral cohomology group of big mapping class groups
(with P. Patel and N. Vlamis). [https:// arXiv:1711.03132](https://arxiv.org/abs/1711.03132).
- (3) Asymptotic mapping class groups of closed surfaces punctured along Cantor sets
(with L. Funar). [https:// arXiv:1701.08132](https://arxiv.org/abs/1701.08132)
- (4) A note on nilpotent subgroups of automorphism groups of graph groups.
(with A. Genevois. A short note, not intended for journal publication.

2.2. Published papers.

- (1) Quotients of mapping class groups by power subgroups.
(with L. Funar). *Bulletin of the London Math. Soc.*, in press.
- (2) Representations of pure symmetric automorphism groups.
(with C. Martínez-Pérez). *Israel Journal of Math.*, in press.
- (3) Trees, homology, and automorphism groups of RAAGs.
(with P. Fernández, J. L. Fernández, C. Martínez). *Journal of Algebraic Combinatorics*, in press.
- (4) Holomorphic maps between moduli spaces.
(with S. Antonakoudis and J. Souto). *Ann. Inst. Fourier* 68 (2018).
- (5) On the virtually-cyclic dimension of mapping class groups.
(with D. Juan-Pineda and A. Trujillo-Negrete). *Algebraic and Geometric Topology* 18 (2018).
- (6) On the geometry of graphs associated to infinite-type surfaces.
(with F. Valdez.) *Math. Z.* 289 (2018).
- (7) Combinatorial superrigidity for graphs associated to surfaces.
Invited article in the *Kokyuroku Bessatsu* 1991, RIMS Institute, Kyoto University.
- (8) Arc and curve graphs for infinite-type surfaces.
(with A. Fossas and H. Parlier.) *Proceedings of the AMS* 145 (2017)
- (9) Geometric dimension of lattices in classical simple Lie groups
(with D. Degrijse, C. Martínez-Pérez and J. Souto) *Journal of Topology* 10 (2017).
- (10) On the first cohomology of automorphism groups of graph groups.
(with C. Martínez-Pérez.) *Journal of Algebra* 452 (2016)
- (11) Exhausting curve complexes by finite rigid sets
(with C. Leininger) *Pacific Journal of Mathematics* 282 (2016)
- (12) Injective maps between flip graphs.
(with T. Koberda and H. Parlier) *Annales de l'Institut Fourier* 65 (2015).
- (13) The proper geometric dimension of the mapping class group.
(with C. Martínez-Pérez) *Algebraic and Geometric Topology* 14 (2014).
- (14) A remark on homomorphisms from right-angled Artin groups to mapping class groups
(with J. Souto.) *C. R. Acad. Sci. Paris* 351 (2013).
- (15) Finite rigid sets of the curve complex.
(with C. Leininger). *Journal of Topology and Analysis* 5 (2013).
- (16) Rigidity phenomena in the mapping class group.
(with J. Souto.) To appear in the *Handbook of Teichmüller Theory V*.
- (17) Convexity of strata in diagonal pants graphs of surfaces.
(with C. Lecuire, H. Parlier and K. Shackleton.) *Publicacions Matemàtiques* 57 (2013).
- (18) Homomorphisms between mapping class groups.
(with J. Souto.) *Geometry & Topology* 16 (2012).
- (19) Hyperbolic structures on surfaces (expository).
In *Geometry, Topology and Dynamics of Character Varieties*, World Scientific (IMS Lecture Note series).
- (20) Automorphisms of the graph of free splittings.
(with J. Souto.) *Michigan Mathematical Journal* 60 (2011), vol. 3.
- (21) Simplicial Embeddings of Pants Graphs.
Geometriae Dedicata 144 (2010), vol. 1.
- (22) Injections of Mapping Class Groups of Surfaces.
(with C. Leininger and J. Souto.) *Geometry & Topology* 13 (2009).
- (23) A characterisation of plane quasiconformal maps using triangles.
(with P. Haïssinsky.) *Publicacions Matemàtiques* 52 (2008), num. 2.
- (24) Constructing convex planes in the pants complex.
(with H. Parlier and K. Shackleton.) *Proc. Amer. Math. Soc* 137 (2009), no. 10.
- (25) Totally geodesic subgraphs of the pants complex.
(with H. Parlier and K. Shackleton) *Math. Res. Lett.* 15 (2008), 2

- (26) Free subgroups of mapping class groups.
(w/ J. Anderson and K. Shackleton.) *Conform. Geom. Dyn.* **11** (2007).
Corrigendum in *Conform. Geom. Dyn.* **13** (2009).
- (27) Uniformly exponential growth and mapping class groups of surfaces.
(with J. Anderson and K. Shackleton.)
In the Tradition of Ahlfors-Bers IV, Contemp. Math. 432, Amer. Math. Soc. (2007)
- (28) An obstruction to the strong relative hyperbolicity of a group.
(with J. Anderson and K. Shackleton.) *Journal of Group Theory* **10**, vol. 6 (2007).
- (29) *The Weil-Petersson geometry of the five-times punctured sphere.*
In *Spaces of Kleinian groups* London Math. Soc. Lecture Note Ser., 329 (2006).

2.3. Book.

- (1) *Algorithms and geometric topics around automorphisms of free groups*
(with V. Diekert, C. Leininger, P. Silva, A. Weiss). Advanced Courses CRM-Barcelona, Birkhäuser.

3. SUPERVISION AND MENTORING

3.1. Theses (co-)directed.

- *Ph.D. supervisor* of Julio Aroca (UAM).
In progress, started in September 2016.
Funded by a FPI-ICMAT scholarship.
- *Ph.D. supervisor* of Jesús Hernández (Marseille).
Degree obtained 13 May 2016, *mention très honorable*.
Title: *Combinatorial rigidity of complexes of curves and multicurves*.
Funded by a CONACyT (Mexico) doctoral grant.
Currently a tenure-track researcher at UNAM (Morelia).

3.2. Masters' theses directed.

- *Supervisor of the Masters thesis* of Kate Coogan (NUI Galway, 2011).

3.3. Undergraduate supervision.

- *Trabajo de fin de grado* of Jorge del Álamo (UAM, expected July 2019), Daniel Marín (UAM, July 2018), Pablo de la Guardia (UAM, 2017).

3.4. Graduate mentoring.

- Mentor for Alan McLeay (grad. student at Glasgow).
One-month visit to UAM, April 2017. Funded by U. Glasgow.
- Mentor for Mokoto Kato (grad. student at Univ of Tokyo).
Six-week visit to UAM, April-June 2017. Funded by JSPS.
- Mentor for Alejandra Trujillo (then grad. student at UNAM (Morelia)).
Two-week visit to UAM, February 2016. Funded by CONACyT.

3.5. Ph.D. examination.

- UAM-ICMAT (scheduled 2017) Examiner of the thesis of A. del Pino.
- NUI Galway (2010) Internal examiner of the thesis of J. McLaughlin
Moduli Spaces of Planar Realizations of Weighted Graphs

4. RECENT ACADEMIC VISITS

Yale University, 1 September – 1 November 2018.

MSRI, Berkeley, October 2016.

IMS, Singapore, August 2016.

UIUC, USA, November 2015.

UNAM, Morelia (México), October 2015.

Facultad de Matemáticas, Zaragoza, March and June 2014.

Schrödinger Institute, Austria, February 2013.

Technion, Israel, December 2012.

Centre de Recerca Matemática, Barcelona, September-December 2012.

5. FUNDING

MINECO Proyecto I+D MTM2015-67781 (19,118 EUR)

(*PI*: Concepción Martínez Pérez (Zaragoza). Other participants: 1).

London Math. Soc. and Clay Institute. (30,000 GBP)

Funding for LMS-CMI Research School

Int. Centre for Mathematics and Computer Science (CIMI, Toulouse). (40,000 EUR)

Funding for Summer School on Quasi-Isometric Rigidity.

Campus Iberus (6,600 EUR)

(*2-month academic visit to the Univ. of Zaragoza, 2014*).

SFI (Ireland). Years 2009/10 & 2010/11 (10,000 EUR).

(*Organization of Hamilton workshop*).

Millennium Fund, NUI Galway, yearly since 2008 (2,000 EUR per year).

(*Organization of Groups in Galway*).

Registrar's Office, NUI Galway , yearly since 2008 (1,500 EUR per year).

(*Organization of Groups in Galway*).

Ulysses programme, IRCSET, 2008. (3,300 EUR) *PI*: J. Aramayona.

(*Research exchange France-Ireland*).

Millennium Fund, NUI Galway, 2008. (4,000 EUR)

(*Travel grant*).

Royal Society (U.K.), 2007.

(*Research visit to National University of Singapore*).

M.E.C. Proyecto MTM2006/14688, 2005.

PI: Raquel Díaz (UCM). Other participants: 6.

EPSRC Doctoral Grant, 2001-2004.

6. RECENT INVITED TALKS

- *Multiple perspectives on geometric inequalities*
CRM (Barcelona), June 2019.
- *Surfaces of infinite type*
AIM (San José, USA), April 2019.
- *Groups and Geometry in the South East*
Southampton, November 2018.
- *Summer school on Teichmüller spaces* (3.5 hours)
Grenoble, June 2018.
- *Geometry of Teichmüller spaces and mapping class groups*.
Warwick, April 2018.
- *Barcelona Topology Workshop*.
Barcelona, February 2018.
- *Geometry of Groups and 3-Manifolds - State of the Art and Perspectives* CIRM (Marseille), February 2018.
- *Winter Workshop on Geometry and Number Theory*.
Saarbrücken, December 2017.
- *Int. Conf. on Geometry and Mathematical Models in Complex Phenomena*.
Calcutta, December 2017.
- *In and around the mapping class group*.
Barcelona, April 2017.
- *Congreso de la RSME (Sesin Topologa Geomtrica)*.
Zaragoza, January 2017.

- *Congreso de la RSME (Sesin Teora de Grupos)*. Zaragoza, February 2017.
- *11th Barcelona Weekend in Group Theory*. Barcelona, May 2016.
- *Teichmüller Theory and Low-Dimensional Topology*. Sanya (China), January 2016.
- *Taller de Geometría y Topología*. Morelia (Mexico), October 2015.
- *London-Brussels geometry seminar VII*. London, September 2015.
- *Group Representations in Dynamical Systems and Geometry*. Marseille (France), July 2015.
- *Dubrovnik VIII - Geometric Topology, Geometric Group Theory & Dynamical Systems*. Dubrovnik (Croatia), June 2015.
- *French-Japanese Workshop on Teichmüller Spaces and Surface Mapping Class Groups*. Strasbourg (France), June 2015.
- *Topology, Geometry and Algebra of Low-Dimensional Manifolds*. Numazu (Japan), June 2015.

Over 50 research talks in different institutions of various countries, including: France (Bordeaux, Grenoble, Marseille, Montpellier, Rennes, Paris, Toulouse), Germany (Bonn), Ireland (Dublin, Galway, Maynooth), India (Jadavpur), Israel (Technion), Spain (UAB, UAM, UNED, UCM, Zaragoza), Switzerland (Lausanne, Fribourg), UK (Cambridge, Glasgow, Oxford, Southampton, Warwick), USA (Austin, Brown, Columbia, Cornell, Michigan, UIC, UIUC, Yale).

7. CONFERENCE ORGANIZATION

Co-organizer of the following conferences and programmes:

- Summer school on *Introduction to geometry, dynamics and moduli in low dimensions* Warwick (U.K.), September 2017. *Funds:* Clay Inst., LMS.
- Summer school on *Quasi-isometric rigidity* Toulouse (France), June-July 2017. *Funds:* Isnt. Math. Toulouse.
- *Groups in Madrid*. Madrid, November 2016. *Funds:* Mineco.
- Research programme on *Geometry, Topology and Dynamics of Moduli Spaces* IMS (Singapore), August 2016. *Funds:* IMS, NSF
- *William Rowan Hamilton Geometry and Topology Workshop*. Yearly conference at Trinity College, Dublin. 2008 – 2014. *Funds:* SFI, NSF.
- *Groups in Galway*. Yearly conference at NUI Galway. 2008–2013. *Funds:* NUI Galway.
- *Aspects of hyperbolicity in geometry, topology and dynamics*. Warwick, July 2011. *Funds:* EPSRC.
- *Irish Geometry Conference*. Galway, 2011. *Funds:* IMS., NUI Galway.
- *4th de Brún workshop on Group Actions*. Galway, 2010. *Funds:* SFI.
- *Geometry, Topology and Dynamics of Character Varieties*. Singapore, 18 June – 15 August, 2010. *Funds:* IMS, NSF.
- *Hyperbolic structures on 3-manifolds and large scale geometry of Teichmüller space*. Warwick, July 2007. *Funds:* EPSRC, NSF.

8. PROJECT AND ARTICLE EVALUATION

8.1. Projects.

- Assessor for the *Early Career Research Fellowship* programme of the University of Cambridge.
- *Evaluator for NSF's International Research Fellowship Program (USA)*.
- *Evaluator for Agence National de Recherche's "Project générique" program (France)*
- *Project evaluator for ANEP (Spain)*.

8.2. **Articles.** Referee for various mathematics journals.

9. TEACHING ACTIVITIES

9.1. Courses taught.

- 2016-17 & 2017-18: Geometría de Curvas y Superficies, UAM.
- 2016-17 & 2017-18: Curso avanzado de Geometría (Master), UAM.
- 2015-16: Análisis II, Ingeniería de Telecomunicaciones, UAM.
- 2014-15: Analyse I, Analyse et Algèbre Elementaires.
- 2013-14: Analyse I, Analyse et Algèbre Elementaires.
- 2012-13: On sabbatical leave.
- 2011-12: Analysis I, Computer Packages, Calculus & Algebra II, Complex Analysis.
- 2010-11: Hyperbolic Geometry, Analysis I, Calculus & Algebra II , Geometry, Complex Analysis.
- 2009-10: Hyperbolic Geometry, Analysis I, Calculus & Algebra II , Geometry, Complex Analysis.
- 2008-09: Probability, Complex Analysis, Calculus I.
- 2007-08: Finite Mathematics, Fundamental Mathematics.
- 2004-07: Experimental Maths, Hyp. Geometry, Maths by Computer, Number Theory.

9.2. **Awards.** Nominated for the *Teaching Excellence Award* at the National University of Galway, 2012. University-wide yearly award.

10. ADMINISTRATION

- Academic coordinator for ICMAT library.
- UAM liaison person with ICMAT.
- Colloquium organizer (with Y. Antolín and T. Gómez). UAM, from 2017.
- *Erasmus coordinator*: 2009-2012 at NUI Galway, and 2005-06 at Warwick University.
- *Member of Academic Council* (NUI Galway governing body). 2010–2012.

11. OUTREACH

- Participation in the math bootcamp “UAMMAT”, 2018.
- *Co-design and implementation of workshop* “Poliedros” at *Semana de la Ciencia*. Years 2015/16 and 2016/17, UAM.
- *Outreach seminar* “Cuando el espacio se curva” at *I. E. S. José Luis Sampedro* (Tres Cantos)